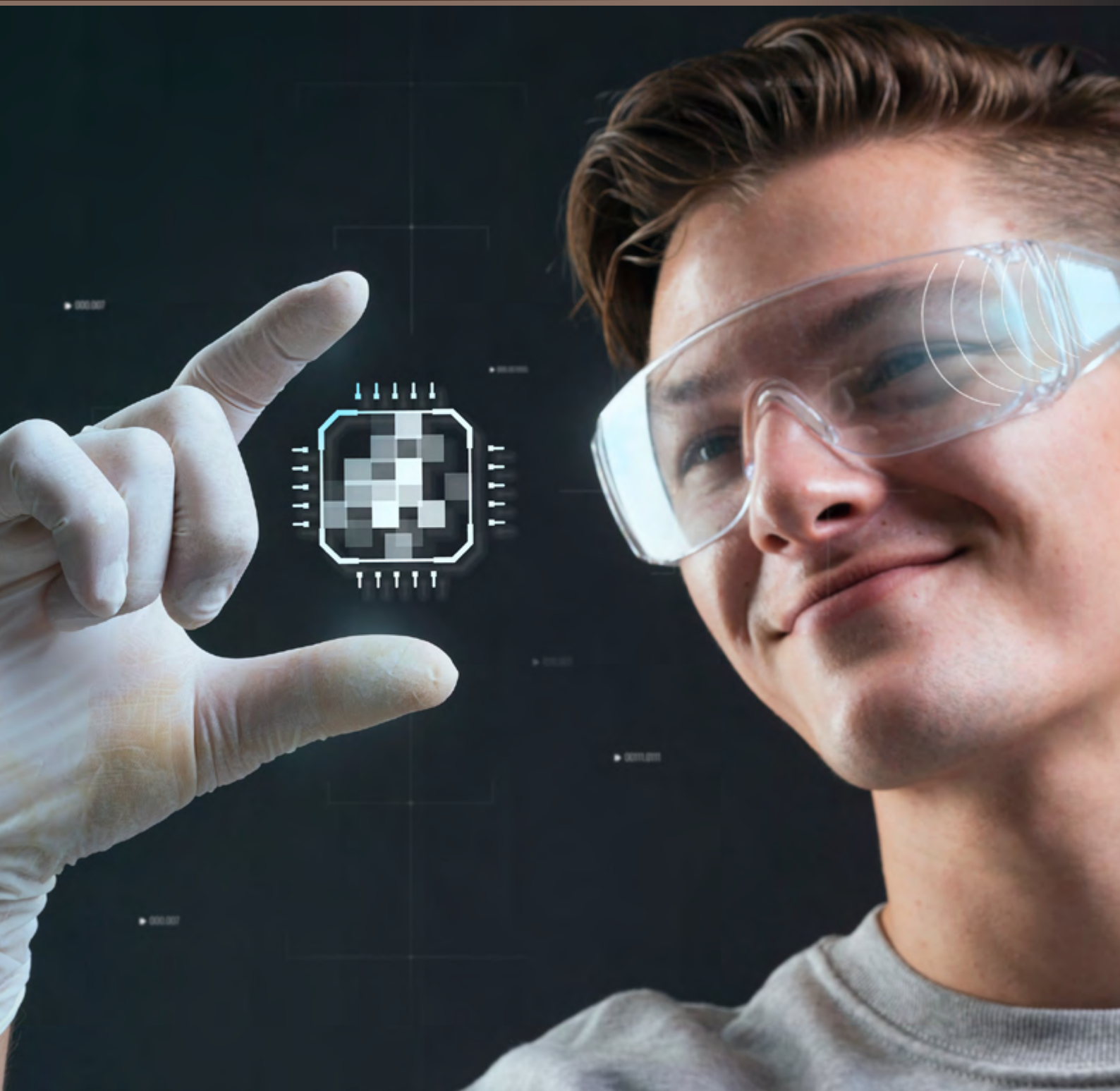




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# Engineering

2021, Asia

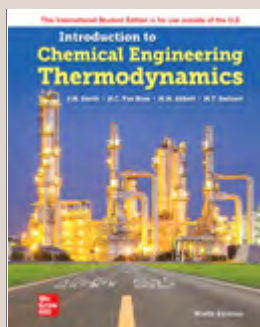


## An exciting new collection of titles recommended for 2021



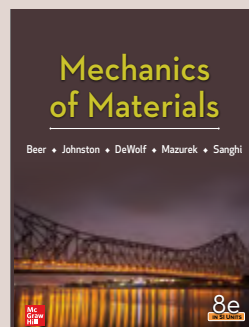
**Heat and Mass Transfer:  
Fundamentals and  
Applications,  
SI Edition**  
Yunus Cengel, Afshin Ghajar,  
Edition 6

[21](#)



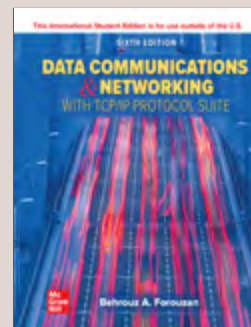
**Introduction to  
Chemical Engineering  
Thermodynamics**  
J.M. Smith, Ness, Hendrick  
C. Van Michael Abbott,  
Mark Swihart,  
Edition 9

[22](#)



**Mechanics of  
Materials, SI Edition**  
Ferdinand Beer, E. Russell  
Johnston, Jr., John DeWolf,  
David Mazurek  
Edition 8

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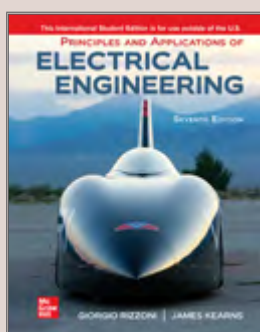
**Data Communications  
and Networking with  
TCP/IP Protocol Suite**  
Behrouz A. Forouzan  
Edition 6

[35](#)



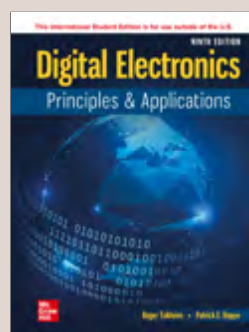
**Fundamentals of  
Electrical Engineering**  
Giorgio Rizzoni,  
James Kearns  
Edition 2

[36](#)



**Principles and  
Applications of  
Electrical  
Engineering**  
Giorgio Rizzoni,  
James Kearns,  
Edition 7

[37](#)



**Digital Electronics:  
Principles and  
Applications**  
Roger L. Tokheim,  
Patrick E. Hoppe  
Edition 9

[41](#)



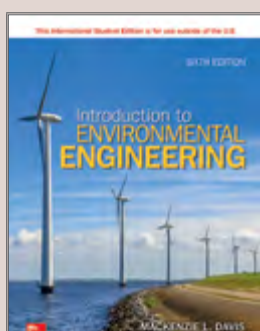
**Shigley's Mechanical  
Engineering Design  
(SI Edition)**  
Richard Budynas, Keith  
Nisbett  
Edition 11

[70](#)



**Fundamentals of  
Thermal-Fluid Sciences**  
Yunus A. Cengel, John M.  
Cimbala, Afshin J. Ghajar.  
Edition 6

[74](#)



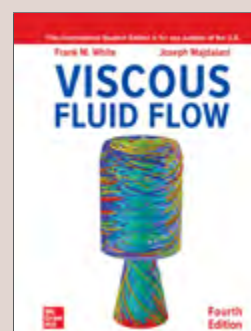
**Introduction to  
Environmental  
Engineering**  
Mackenzie L. Davis,  
David A. Cornwell  
Edition 6

[23](#)



**Fluid Mechanics**  
Frank White  
Edition 9

[24](#)



**Viscous Fluid Flow**  
Frank White  
Edition 4

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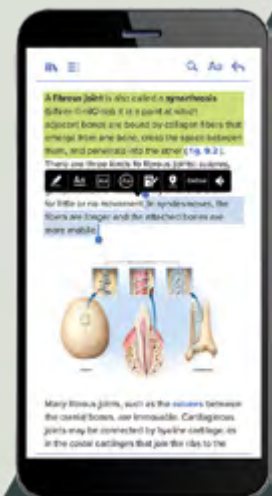
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# McGraw-Hill Academic Integrity

## Remote Proctoring & Browser Locking Capabilities

McGraw-Hill and Proctorio have partnered to incorporate learning integrity tools within Connect®.

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Automated Proctoring  
Live Proctoring



### Browser Locking

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Only One Screen  
Disable Tabs



### ID Verification

Live and Automated  
ID Verification



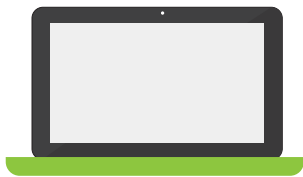
### Content Protection

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No Copy/Print/Download  
Restrictions

# Learning Integrity Platform

Connect® include options for customizable, secure exam settings, including new remote proctoring options and live ID verification to allow institutions to set-up unscheduled, on-demand proctoring specific to their assessment needs. This ensures fairness for test-takers by increasing accountability, securing exam content, deterring cheating, and promoting a culture of integrity while improving learning outcomes.

## Our Advantages



### Integration

Seamless integration between Connect®, Proctorio, and your LMS.

### Limitless

No scheduling, time limits, or maximum proctoring sessions.



### Secure

Restricts students' access to resources and protects McGraw-Hill content and students' personal information.

### Requirements

Lowest bandwidth requirements.

### Simplicity

Utilizes Connect® login and does not require Proctorio account creation.



### Insight

Reports provide suspicious indicators allowing faculty to pinpoint where questionable activity occurred.

### Support

Built-in 24/7/365 support for instructors and students.

# OUR PARTNERSHIP WITH THE ONLINE LEARNING CONSORTIUM

Bringing expertise to institutions looking to ensure their online learning programs are designed, facilitated, and evaluated according to best practices.

## Supporting College Instructors and Administrators

As online learning expands due to COVID-19, McGraw Hill has partnered with the Online Learning Consortium (OLC), a higher education community dedicated to advancing quality digital teaching and learning experiences, to help transition in-person courses to hybrid or online delivery.

## Certifying Faculty Consultants as Online Learning Specialists and Course Builders

The partnership includes a co-branded Quality in Online Learning Certification Program, completed by McGraw Hill Faculty Consultants and staff to help support, mentor, and provide virtual coaching to faculty. Coaching on effective practices of quality online learning includes course design, facilitation, and assessment.

## Providing Free On-Demand Toolkits for Development of Online Courses

Instructors and administrators will also have access to free on-demand toolkits to guide them through the process of designing and facilitating online courses and assessing student learning. These resources will be available on the [SupportAtEveryStep.com](https://SupportAtEveryStep.com) webpage.

## Implementing High-Quality Online Instruction and Assessment through Preconfigured Courseware

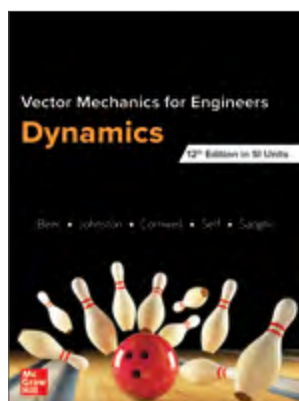
In consultation with OLC and our certified Faculty Consultants, McGraw Hill has created pre-configured courseware using OLC's quality scorecard to align with best practices in online course delivery. This turnkey courseware contains a combination of formative assessments, summative assessments, homework and application activities, and can easily be customized to meet an individual's needs and course outcomes.

**For more information, visit these webpages:**

**McGraw Hill** <http://bit.ly/MHEOLCPartnership> | **OLC** <https://onlinelearningconsortium.org>

## AEROSPACE ENGINEERING

### Dynamics



#### Vector Mechanics for Engineers: Dynamics (SI Edition)

Ferdinand P. Beer, Jr., E.  
Russell Johnston, Phillip J.  
Cornwell, Brian Self

Edition: 12  
2019©  
928 Pages  
Print: 9789813157866  
Connect: 9789353166670

### OVERVIEW

A primary objective in a first course in mechanics is to help develop a student's ability first to analyze problems in a simple and logical manner, and then to apply basic principles to their solutions. A strong conceptual understanding of these basic mechanics principles is essential for successfully solving mechanics problems. This edition of Vector Mechanics for Engineers will help instructors achieve these goals. Continuing in the spirit of its successful previous editions, this edition provides conceptually accurate and thorough coverage together with a significant refreshment of the exercise sets and online delivery of homework problems to your students. The 12th edition has new case studies and enhancements in the text and in Connect. The hallmark of the Beer-Johnston series has been the problem sets and this edition is no different. Over 650 of the homework problems in the text are new or revised. One of the characteristics of the approach used in this book is that mechanics of particles is clearly separated from the mechanics of rigid bodies. This approach makes it possible to consider simple practical applications at an early stage and to postpone the introduction of the more difficult concepts. Additionally, Connect has over 100 Free-Body Diagram Tool Problems and Process-Oriented Problems.

### FEATURES

- 100% of the free-body diagram problems have been added to Connect.
- Stand-alone Process-Oriented Problems are now included in Connect.
- Each chapter now features a case study. Connect contains videos based on each case-study to demonstrate more applications to students. Questions in Connect will relate back to the video.
- Statics and Dynamics offer Case Study Videos.
- Only Dynamics offers Working Model Videos.
- Thoroughly Refreshed Problem Set in the Twelfth

Edition. Approximately 20% of the problems are updated from the previous edition.

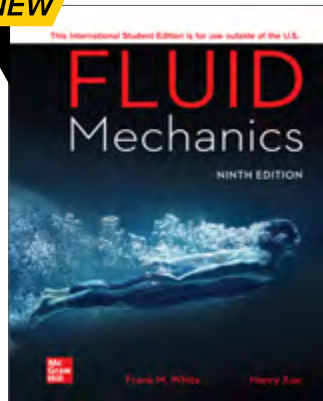
- Concept Questions are multiple choice problems that require few, if any, calculations are included. Students are encouraged to solve these problems using the principles and techniques discussed in the text and to use these principles to help develop their intuition.
- Computer and Design Problems are offered at the end of each chapter. While the problems are generic they are designed to be easily solved using popular computational programs like Matlab® and Mathcad®. The computer problems focus on symbolic manipulation and plotting rather than programming.
- A Careful, Step-By-Step Presentation is followed in each lesson of each chapter, and every chapter starts with a real-life example and an outline previewing the chapter objectives and lessons. Each lesson is accompanied by sample problems and Solving Problems On Your Own boxes that prepare students for the problem sets. Each chapter finishes with a brief Review Problem set and an assortment of computer and design problems.
- Well-Respected Sample Problems are a signature Beer and Johnston text feature that allow students to see important key problem types and with the solution laid out on a single page, organized to provide a potent model for student problem solving. Sample Problems serve the dual purpose of amplifying the text and demonstrating the type of neat and orderly work that students should cultivate in their own solutions.

### CONTENTS

11. Kinematics of Particles
  12. Kinetics of Particles: Newton's Second Law
  13. Kinetics of Particles: Energy and Momentum Methods
  14. Systems of Particles
  15. Kinematics of Rigid Bodies
  16. Plane Motion of Rigid Bodies: Forces and Accelerations
  17. Plane Motion of Rigid Bodies: Energy and Momentum Methods
  18. Kinetics of Rigid Bodies in Three Dimensions
  19. Mechanical Vibrations
- Appendix Fundamentals of Engineering Examination

## Fluid Mechanics (Introduction)

**NEW**



### Fluid Mechanics

**Frank White**

**Edition: 9**

**2021©**

**880 Pages**

**Mar 2021**

**Print: 9781260575545**

**Connect: 9781260446531**

### OVERVIEW

Fluid Mechanics is the study of fluids as an important branch of engineering mechanics. Almost everything on this planet either is a fluid or moves within or near a fluid. The essence of the subject of fluid flow is a judicious compromise between theory and experiment. This textbook not only makes a great deal of theoretical treatment available, but also provides experimental results as a natural and easy complement to the theory. The principles considered in the book are fundamental and have been well established. However, in presenting this important subject, we have drawn on our own ideas and experience. Throughout the revisions, the informal and student-oriented writing style has been retained and further enhanced, and if it succeeds, has the flavor of an interactive lecture by the authors.

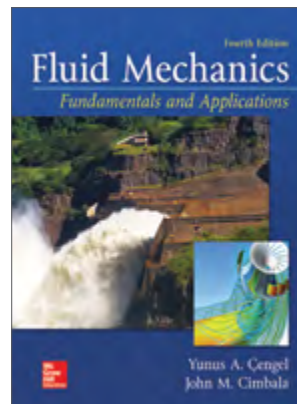
### FEATURES

- Merged topics on the choice of variable and scaling parameter with the Pi theorem in Chapter 5 to make it easier for students to follow the arguments.
- Classified applications for the linear momentum equation in Chapter 3 to help students to relate the equation with the applicable engineering problems.
- Concepts and definitions in Chapter 1 have been centralized to help them stand out in the text.
- Provided new data for worldwide wind power capacity in Chapter 11 to reflect the advancement in the application of fluid mechanics.

### CONTENTS

1. Introduction
2. Pressure Distribution in a Fluid
3. Integral Relations for a Control Volume
4. Differential Relations for Fluid Flow
5. Dimensional Analysis and Similarity

6. Viscous Flow in Ducts
  7. Flow Past Immersed Bodies
  8. Potential Flow and Computational Fluid Dynamics
  9. Compressible Flow
  10. Open-Channel Flow
  11. Turbomachinery
- Appendix A - Physical Properties of Fluids  
Appendix B - Compressible Flow Tables  
Appendix C - Conversion Factors  
Appendix D - Equations of Motion in Cylindrical Coordinates  
Appendix E - Estimating Uncertainty in Experimental Data



### Fluid Mechanics: Fundamentals and Applications (SI Edition)

**Yunus Cengel, John Cimbala**

**Edition: 4**

**2018©**

**Print: 9789813157880**

**Connect: 9789353167295**

### OVERVIEW

This book communicates directly with tomorrow's engineers in a simple yet precise manner while covering the basic principles and equations of fluid mechanics in the context of numerous and diverse real-world engineering examples. The text helps students develop an intuitive understanding of fluid mechanics by emphasizing the physics using figures numerous photographs and visual aids to reinforce the physics. The highly visual approach enhances the learning of fluid mechanics by students. This text distinguishes itself from others by the way the material is presented – in a progressive order from simple to more difficult, building each chapter upon foundations laid down in previous chapters. In this way, even the traditionally challenging aspects of fluid mechanics can be learned effectively.

### FEATURES

- New subsections "Uniform versus Non-Uniform Flow" and "Equation Solvers" have been added to Chapter 1.
- Two new sections, "Flying Birds and Insects" by guest author Azar Eslam Panah of Penn State Berkley and "CFD Methods for Two-Phase Flows" by guest author Alex Rattner of Penn State have been added to Chapter 11 and Chapter 15.
- In Chapter 8, we now highlight the explicit

Churchill equation as an alternative to the implicit Colebrook equation.

- Two new Application Spotlights, "Smelling Food; the Human Airway" by Rui Ni of Penn State and "Multicolor Particle Shadow Velocimetry/ Accelerometry" by Michael McPhail and Michael Krane of Penn State have been added to Chapter 4 and Chapter 8.

## CONTENTS

1. Introduction and Basic Concepts
2. Properties of Fluids
3. Pressure and Fluid Statics
4. Fluid Kinematics
5. Bernoulli and Energy Equations
6. Momentum Analysis of Flow Systems
7. Dimensional Analysis and Modeling
8. Internal Flow
9. Differential Analysis of Fluid Flow
10. Approximate Solutions of the Navier-Stokes Equation
11. External Flow: Drag and Lift
12. Compressible Flow
13. Open-Channel Flow
14. Turbomachinery
15. Introduction to Computational Fluid Dynamics

## Appendices:

1. Property Tables and Charts (SI Edition)
2. Property Tables and Charts (English Units)

motors-all of which are fundamental to understanding mechatronic systems. Mechatronics design considerations are presented throughout the text, and in "Design Example" features. The text's numerous illustrations, examples, class discussion items, and chapter questions & exercises provide an opportunity to understand and apply mechatronics concepts to actual problems encountered in engineering practice. This text has been tested over several years to ensure accuracy. Introduction to Mechatronics and Measurement Systems, Fifth Edition - is a multifaceted resource which is designed to serve as a text for modern instrumentation and measurements courses, hybrid electrical and mechanical engineering courses replacing traditional circuits and instrumentation courses, as well as for stand-alone mechatronics courses, or the first course in a mechatronics sequence. It can also work for hybrid courses, providing an opportunity to reduce the number of credit hours in a typical mechanical engineering curriculum. Written by the academic award-winning author and mechanical engineering professor, Dr. David G. Alciatore. The author's webpage (linked to from OLC) has additional computer files and resources, including MATLAB examples, videos demonstrations, and lab exercises.

## FEATURES

- New and expanded mechatronics system flowchart used at the beginning of each chapter.
- Additional end-of-chapter questions throughout the book provide more homework and practice options for professors and students.
- MATLAB solutions added for all MathCAD analysis files provided in previous editions.
- The Laboratory Exercises Manual that supplements and supports this book is now available on-line for free and unlimited use by faculty and students. It is located, along with video demonstrations, on the Lab Book web page at: [mechatronics.colostate.edu/lab\\_book.html](http://mechatronics.colostate.edu/lab_book.html)
- Coverage of New Measurement Technologies including rapidly changing subjects like MEMS, cutting edge sensor technology, and micromachines.
- Design Examples are featured throughout the text to help students learn the material in context.
- Broad Coverage of Mechatronics. The text provides an overview of measurement systems, circuits, interfacing, sensors, actuators and design analysis and synthesis of mechatronic systems.

## CONTENTS

1. Introduction
2. Electric Circuits and Components

## Mechatronics



### Introduction to Mechatronics and Measurement Systems

David G. Alciatore

Edition: 5

2019©

608 Pages

Print:9781260085198

Connect:9781260049350

## OVERVIEW

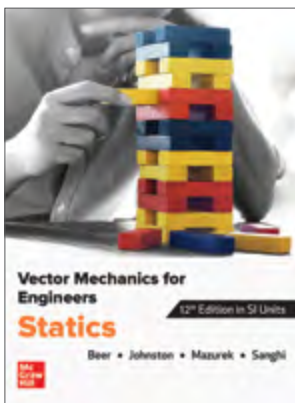
Introduction to Mechatronics and Measurement Systems, Fifth Edition, provides comprehensive and accessible coverage of the field of mechatronics for mechanical, electrical and aerospace engineering majors. The author presents a concise review of electrical circuits, solid-state devices, digital circuits, and

3. Semiconductor Electronics
4. System Response
5. Analog Signal Processing Using Operational Amplifiers
6. Digital Circuits
7. Microcontroller Programming and Interfacing
8. Data Acquisition
9. Sensors
10. Actuators
11. Mechatronic Systems—Control Architectures and Case Studies

## Appendices:

- A. Measurement Fundamentals
- B. Physical Principles
- C. Mechanics of Materials

## Statics



### Vector Mechanics for Engineers: Statics (SI Edition)

Ferdinand P. Beer, Jr.,  
E. Russell Johnston,  
David Mazurek

Edition: 12  
2019©  
656 Pages  
Print: 9789813157859  
Connect: 9789353166618

## OVERVIEW

A primary objective in a first course in mechanics is to help develop a student's ability first to analyze problems in a simple and logical manner, and then to apply basic principles to their solutions. A strong conceptual understanding of these basic mechanics principles is essential for successfully solving mechanics problems. This edition of Vector Mechanics for Engineers will help instructors achieve these goals.

Continuing in the spirit of its successful previous editions, this edition provides conceptually accurate and thorough coverage together with a significant refreshment of the exercise sets and online delivery of homework problems to your students. The 12th edition has new case studies and enhancements in the text and in Connect.

The hallmark of the Beer-Johnston series has been the problem sets and this edition is no different. Over 650 of the homework problems in the text are new or revised. One of the characteristics of

the approach used in this book is that mechanics of particles is clearly separated from the mechanics of rigid bodies. This approach makes it possible to consider simple practical applications at an early stage and to postpone the introduction of the more difficult concepts. Additionally, Connect has over 100 Free-Body Diagram Tool Problems and Process-Oriented Problems.

## FEATURES

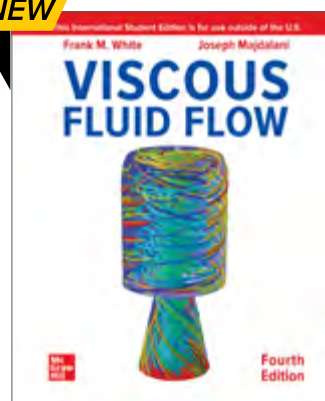
- 100% of the free-body diagram problems have been added to Connect.
- Stand-alone Process-Oriented Problems are now included in Connect.
- Each chapter now features a case study. Connect contains videos based on each case-study to demonstrate more applications to students. Questions in Connect will relate back to the video.
- Thoroughly Refreshed Problem Set in the Twelfth Edition. Approximately 20% of the problems are updated from the previous edition.
- Concept Questions are multiple choice problems that require few, if any, calculations are included. Students are encouraged to solve these problems using the principles and techniques discussed in the text and to use these principles to help develop their intuition.
- Computer and Design Problems are offered at the end of each chapter. While the problems are generic they are designed to be easily solved using popular computational programs like Matlab® and Mathcad®. The computer problems focus on symbolic manipulation and plotting rather than programming.
- A Careful, Step-By-Step Presentation is followed in each lesson of each chapter, and every chapter starts with a real-life example and an outline previewing the chapter objectives and lessons. Each lesson is accompanied by sample problems and Solving Problems On Your Own boxes that prepare students for the problem sets. Each chapter finishes with a brief Review Problem set and an assortment of computer and design problems.
- Well-Respected Sample Problems are a signature Beer and Johnston text feature that allow students to see important key problem types and with the solution laid out on a single page, organized to provide a potent model for student problem solving. Sample Problems serve the dual purpose of amplifying the text and demonstrating the type of neat and orderly work that students should cultivate in their own solutions.

## CONTENTS

1. Introduction
  2. Statics of Particles
  3. Rigid Bodies: Equivalent Systems of Forces
  4. Equilibrium of Rigid Bodies
  5. Distributed Forces: Centroids and Centers of Gravity
  6. Analysis of Structures
  7. Internal Forces and Moments
  8. Friction
  9. Distributed Forces: Moments of Inertia
  10. Method of Virtual Work
- Fundamentals of Engineering Examination

### Viscous Fluid Flow/Boundary Layer Theory

**NEW**



#### Viscous Fluid Flow

Frank White

Edition: 4

2022©

544 pages

Mar 2021

Print: 9781260597806

#### OVERVIEW

Since 1974 this book has been known for its academic rigor and effectiveness at serving as a convenient “one-stop shop” for those interested in expanding their knowledge of the rich and evolving field of fluid mechanics. The fourth edition contains important updates and over 200 new references while maintaining the tradition of fulfilling the role of a senior or first-year graduate textbook on viscous motion with a well-balanced mix of engineering applications.

#### FEATURES

- Readers are introduced to several supplementary techniques including the Bragg–Hawthorne approach, a simplified momentum-integral formulation, and new Blasius solutions.
- Chapter 4 has been substantially improved. We have explained the 1921 Pohlhausen paradox and provided new analytical velocity profiles that are considerably more precise, including a closed-form solution to the Blasius equation.
- 128 new problems have been added to the original set of 255. Many of the new problems are realistic and either self-guided or leading to prescribed answers.
- Over 50% of Chapter 5 is new and extends the 1D hydrodynamic stability approach to the biglobal framework so readers can tackle more complex configurations using the fast growing biglobal approach.
- Readers will find a wealth of material, fluid mechanics videos, supplementary handouts, PowerPoint slides for lectures, sample exams, biographical information on key contributors, password-protected solutions to exercise problems, and the ability to provide feedback in the instructor's manual and the student resource website.
- This text provides detailed procedures to solve a wide range of viscous and thermal flow problems, so readers are better prepared to tackle real-world problems and to better interpret simulation results.

#### CONTENTS

1. Preliminary Concepts
2. Fundamental Equations of Compressible Viscous Flow
3. Solutions of the Newtonian Viscous-Flow Equations
4. Laminar Boundary Layers
5. The Stability of Laminar Flows
6. Incompressible Turbulent Mean Flow
7. Compressible Boundary Layer Flow

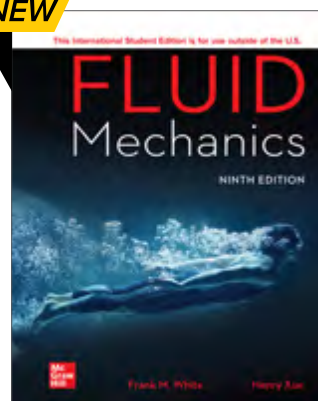
#### Appendices

- A. Transport Properties of Various Newtonian Fluids
- B. Equations of Motion of Incompressible Newtonian Fluids in Cylindrical and Spherical Coordinates
- C. A Runge-Kutta Subroutine for N Simultaneous Differential Equations

### CHEMICAL ENGINEERING

#### Fluid Mechanics (Introduction)

**NEW**



#### Fluid Mechanics

Frank White

Edition: 9

2021©

880 Pages

Mar 2021

Print: 9781260575545

Connect: 9781260446531

#### OVERVIEW

Fluid Mechanics is the study of fluids as an important branch of engineering mechanics. Almost everything on this planet either is a fluid or moves within or

near a fluid. The essence of the subject of fluid flow is a judicious compromise between theory and experiment. This textbook not only makes a great deal of theoretical treatment available, but also provides experimental results as a natural and easy complement to the theory. The principles considered in the book are fundamental and have been well established. However, in presenting this important subject, we have drawn on our own ideas and experience. Throughout the revisions, the informal and student-oriented writing style has been retained and further enhanced, and if it succeeds, has the flavor of an interactive lecture by the authors.

## FEATURES

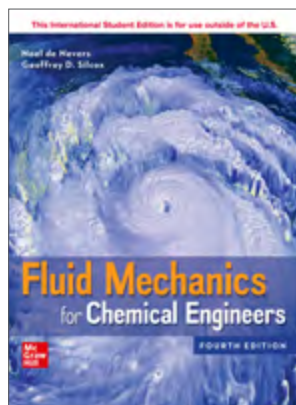
- Merged topics on the choice of variable and scaling parameter with the Pi theorem in Chapter 5 to make it easier for students to follow the arguments.
- Classified applications for the linear momentum equation in Chapter 3 to help students to relate the equation with the applicable engineering problems.
- Concepts and definitions in Chapter 1 have been centralized to help them stand out in the text.
- Provided new data for worldwide wind power capacity in Chapter 11 to reflect the advancement in the application of fluid mechanics.

## CONTENTS

1. Introduction
2. Pressure Distribution in a Fluid
3. Integral Relations for a Control Volume
4. Differential Relations for Fluid Flow
5. Dimensional Analysis and Similarity
6. Viscous Flow in Ducts
7. Flow Past Immersed Bodies
8. Potential Flow and Computational Fluid Dynamics
9. Compressible Flow
10. Open-Channel Flow
11. Turbomachinery

## Appendices

- A. Physical Properties of Fluids
- B. Compressible Flow Tables
- C. Conversion Factors
- D. Equations of Motion in Cylindrical Coordinates
- E. Estimating Uncertainty in Experimental Data



## Fluid Mechanics for Chemical Engineers

Noel de Nevers

Edition: 4

2021©

688 Pages

Print:9781260575149

## OVERVIEW

Fluid Mechanics for Chemical Engineers third edition retains the characteristics that made this introductory text a success in prior editions. It is still a book that emphasizes material and energy balances and maintains a practical orientation throughout. No more math is included than is required to understand the concepts presented. To meet the demands of today's market the author has included many problems suitable for solution by computer. Two brand new chapters are included. The first on mixing augments the book's coverage of practical issues encountered in this field. The second on computational fluid dynamics (CFD) shows students the connection between hand and computational fluid dynamics.

## FEATURES

- The fourth edition includes numerous new and revised examples with about 30 new problems that draw on the new material.
- New material on hydraulic fracturing: Chapters 2 (Fluid Statics) and 6 (Fluid Friction in Steady, 1D Flow) introduce hydraulic fracturing through calculations of the minimum surface pressure required to fracture rock and the surface pressure required to steadily force fluid into the rock.
- New material on wind turbines: Chapter 10 (Pumps, Compressors, and Turbines) now includes new material on wind turbines. It also describes three new positive displacement pumps including peristaltic pumps and a one-use liquid dispenser.
- New chapter on microfluidics: Chapter 21 has important applications in biology, medicine, and chemical analysis.
- Updated examples using household items: Chapter 2 and Chapter 10 contain updated examples that use household items, such as a coffee maker and a one-use liquid dispenser, which make the material more accessible.

**CONTENTS**

1. Introduction

**Part 1: Preliminaries**

2. Fluid Statics
3. The Balance Equation and the Mass Balance
4. The First Law of Thermodynamics

**Part 2: Flows which are Practically One-Dimensional or can be Treated as Such**

5. Bernoulli's Equation
6. Fluid Friction in Steady One-Dimensional Flow
7. The Momentum Balance
8. One-Dimensional High-Velocity Gas Flow

**Part 3: Some Other Topics, Which can be Viewed by the Methods of One-Dimensional Fluid Mechanics**

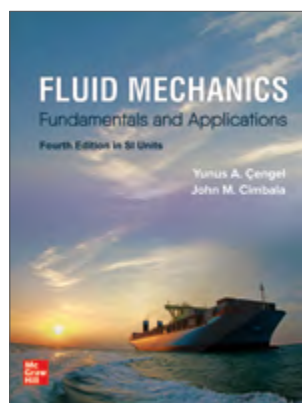
9. Model Studies, Dimensional Analysis, and Similitude
10. Pumps, Compressors, and Turbines
11. Flow Through Porous Media
12. Gas-Liquid Flow
13. Non-Newtonian Fluid Flow in Circular Pipes
14. Surface Forces

**Part 4: Two- and Three-Dimensional Fluid Mechanics**

15. Two- and Three-Dimensional Fluid Mechanics
16. Potential Flow
17. The Boundary Layer
18. Turbulence
19. Mixing
20. Computational Fluid Dynamics, (CFD)

**Appendices:**

- A Tables and Charts of Fluid Properties, Pipe Dimensions and Flows, and High-Velocity Gas Flows
- B Derivations and Proofs
- C Equations for Two- and Three-Dimensional Fluid Mechanics
- D Answers to Selected Problems



**Fluid Mechanics:  
Fundamentals and  
Applications (SI Edition)**  
Yunus Cengel, John Cimbala  
Edition:4  
2018©  
Print: 9789813157880  
Connect: 9789353167295

**OVERVIEW**

This book communicates directly with tomorrow's engineers in a simple yet precise manner while

covering the basic principles and equations of fluid mechanics in the context of numerous and diverse real-world engineering examples. The text helps students develop an intuitive understanding of fluid mechanics by emphasizing the physics using figures numerous photographs and visual aids to reinforce the physics. The highly visual approach enhances the learning of fluid mechanics by students. This text distinguishes itself from others by the way the material is presented – in a progressive order from simple to more difficult, building each chapter upon foundations laid down in previous chapters. In this way, even the traditionally challenging aspects of fluid mechanics can be learned effectively.

**FEATURES**

- New subsections "Uniform versus Non-Uniform Flow" and "Equation Solvers" have been added to Chapter 1.
- Two new sections, "Flying Birds and Insects" by guest author Azar Eslam Panah of Penn State Berkley and "CFD Methods for Two-Phase Flows" by guest author Alex Rattner of Penn State have been added to Chapter 11 and Chapter 15.
- In Chapter 8, we now highlight the explicit Churchill equation as an alternative to the implicit Colebrook equation.
- Two new Application Spotlights, "Smelling Food; the Human Airway" by Rui Ni of Penn State and "Multicolor Particle Shadow Velocimetry/Accelerometry" by Michael McPhail and Michael Krane of Penn State have been added to Chapter 4 and Chapter 8.

**CONTENTS**

1. Introduction and Basic Concepts
2. Heat Conduction Equation
3. Steady Heat Conduction
4. Transient Heat Conduction
5. Numerical Methods in Heat Conduction
6. Fundamentals of Convection
7. External Forced Convection
8. Internal Forced Convection
9. Natural Convection
10. Boiling and Condensation
11. Heat Exchangers
12. Fundamentals of Thermal Radiation
13. Radiation Heat Transfer
14. Mass Transfer
15. Cooling of Electronic Equipment (Web Chapter)

**Appendices:**

1. Property Tables and Charts

## Heat Transfer (Introduction)

**NEW**



### Heat and Mass Transfer: Fundamentals and Applications, SI Edition

Yunus Cengel, Afshin Ghajar

Edition: 6

2020©

1,056 Pages

May 2020

Print: 9789813158962

Connect: 9789390185306

### OVERVIEW

With complete coverage of the basic principles of heat transfer and a broad range of applications in a flexible format, Heat and Mass Transfer: Fundamentals and Applications, by Yunus Cengel and Afshin Ghajar provides the perfect blend of fundamentals and applications. The text provides a highly intuitive and practical understanding of the material by emphasizing the physics and the underlying physical phenomena involved. This text covers the standard topics of heat transfer with an emphasis on physics and real-world every day applications, while de-emphasizing mathematical aspects. This approach is designed to take advantage of students' intuition, making the learning process easier and more engaging.

### FEATURES

- Added 20 new example problems and over 600 new and modified end-of-chapter problems.
- Addition of five new sections or subsections to this edition of the text.
- In Chapter 4 the graphical representation of the one-dimensional transient conduction solutions (Heisler charts) have been eliminated and the emphasis has been placed on the solution with more accurate approximate or exact analytical expressions.
- New section in Chapter 1 on Engineering Codes and Standards (C&S). Throughout the text, as appropriate, example problems and end-of-chapter problems related to engineering codes and standards have been presented to introduce this concept to tomorrow's engineers.

### CONTENTS

1. Introduction and Basic Concepts
2. Heat Conduction Equation
3. Steady Heat Conduction
4. Transient Heat Conduction
5. Numerical Methods in Heat Conduction

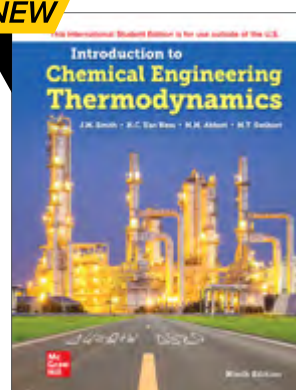
6. Fundamentals of Convection
7. External Forced Convection
8. Internal Forced Convection
9. Natural Convection
10. Boiling and Condensation
11. Heat Exchangers
12. Fundamentals of Thermal Radiation
13. Radiation Heat Transfer
14. Mass Transfer
15. Cooling of Electronic Equipment (Online Chapter)
16. Heating and Cooling of Buildings (Online Chapter)
17. Refrigeration and Freezing of Foods (Online Chapter)

### Appendices:

Appendix - Property Tables and Charts

## Thermodynamics (Introduction)

**NEW**



### Introduction to Chemical Engineering Thermodynamics

J.M. Smith, Ness, Hendrick C. Van Michael Abbott, Mark Swihart

Edition: 9

2022©

768 Pages

May 2021

Print: 9781260597684

Connect: 9781260792782

### OVERVIEW

Introduction to Chemical Engineering Thermodynamics presents comprehensive coverage of thermodynamics from a chemical engineering viewpoint. The text provides a thorough exposition of the principles of thermodynamics and details their application to chemical processes. The chapters are written in a clear, logically organized manner, and contain an abundance of realistic problems, examples, and illustrations to help students understand complex concepts. This text is structured to alternate between the development of thermodynamic principles and the correlation and use of thermodynamic properties as well as between theory and applications.

### FEATURES

- New and updated examples throughout the text that are relevant to student interests and experience. In particular, many more examples are shown in contexts outside of the traditional petrochemical industry.
- The material on phase equilibrium (Chapters 10, 11, 12, and 14) has been reorganized to more clearly

show how the general criterion of equality of fugacities in two phases is simplified to produce common, practical equations for treating phase equilibrium.

## CONTENTS

1. Introduction
2. The First Law and Other Basic Concepts
3. Volumetric Properties of Pure Fluids
4. Heat Effects
5. The Second Law of Thermodynamics
6. Thermodynamic Properties of Fluids
7. Applications of Thermodynamics to Flow Processes
8. Production of Power from Heat
9. Refrigeration and Liquefaction
10. The Framework of Solution Thermodynamics
11. Mixing Processes
12. Vapor/Liquid Equilibrium: Introduction
13. Thermodynamic Formulations for Vapor/Liquid Equilibrium
14. Chemical-Reaction Equilibria
15. Topics in Phase Equilibria
16. Thermodynamic Analysis of Processes



### Thermodynamics: An Engineering Approach (SI Edition)

Yunus A. Cengel, Michael A. Boles

Edition: 9

2019©

1,008 Pages

Print: 9789813157873

Connect: 9789353167370

## OVERVIEW

The subject of thermodynamics deals with energy and has long been an essential part of engineering curricula all over the world. Its broad application area ranges from microscopic organisms to common household appliances, transportation vehicles, power generation systems, and even philosophy. This introductory book contains sufficient material for two sequential courses in thermodynamics, and students are assumed to have an adequate background in calculus and physics. A conscious effort is made to emphasize the basic principles of thermodynamics while also providing students with a perspective of how computational tools are used in engineering practice. The traditional classical, or macroscopic, approach is used throughout the text, with microscopic

arguments serving in a supporting role as appropriate. This approach is more in line with students' intuition and makes learning the subject matter much easier.

## FEATURES

- A large number of the end-of-chapter problems in the text have been modified and many problems were replaced by new ones. Also, several of the solved example problems have been replaced.
- Video Resources have been added. Using the student response data from the 8th edition SmartBook, 2D/3D animation videos have been added to the ebook to help clarify challenging concepts. In addition to these conceptual video resources and , worked example problem videos are included in the ebook to help students apply their conceptual understanding to problem solving.
- Extensive Use of Artwork. This edition features an enhanced art program done in four colors to provide more realism and pedagogical understanding. Further, a large number of figures have been upgraded to become three-dimensional and thus more real-life. Figures attract attention and stimulate curiosity and interest. Most of the figures in this text are intended to serve as a means of emphasizing some key concepts that would otherwise go unnoticed; some serve as page summaries.
- Over 1,000 engaging illustrations provides a motivating visual program for the text.
- This edition includes over 500 new problems. A significant number of the existing problems have also been modified.
- Renewable energy is covered in a new chapter available online, and up-to-date examples of solar, wind, geothermal, and other types of energy are covered with their thermodynamics underpinnings.
- A distinctive feature of this book is its emphasis on the physical aspects of the subject matter in addition to mathematical representations and manipulations. Cengel uses ordinary day-to-day experiences that build up to a mathematical problem.

## CONTENTS

1. Introduction and Basic Concepts
2. Energy, Energy Transfer, and General Energy Analysis
3. Properties of Pure Substances
4. Energy Analysis of Closed Systems
5. Mass and Energy Analysis of Control Volumes
6. The Second Law of Thermodynamics
7. Entropy
8. Exergy

9. Gas Power Cycles
10. Vapor and Combined Power Cycles
11. Refrigeration Cycles
12. Thermodynamic Property Relations
13. Gas Mixtures
14. Gas-Vapor Mixtures and Air-Conditioning
15. Chemical Reactions
16. Chemical and Phase Equilibrium
17. Compressible Flow

### Appendices:

1. Property Tables and Charts

7. Water Pollution
8. Wastewater Treatment
9. Air Pollution
10. Noise Pollution
11. Solid Waste Management
12. Hazardous Waste Management
13. Sustainability and Green Engineering
14. Ionizing Radiation

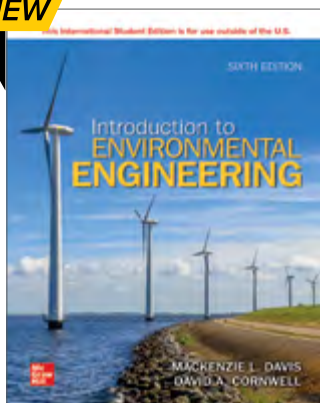
### Appendices:

- A. Properties of Air, Water, and Selected Chemicals
- B. Noise Computation Tables and Nomographs
- C. U.S. Customary System Units Conversion Factors

## CIVIL ENGINEERING

### Environmental Engineering (Intro)

**NEW**



### Introduction to Environmental Engineering

Mackenzie L. Davis, David A. Cornwell

Edition:6  
2022©  
April 2021  
Print: 9781260598025  
Connect: 9781264567874

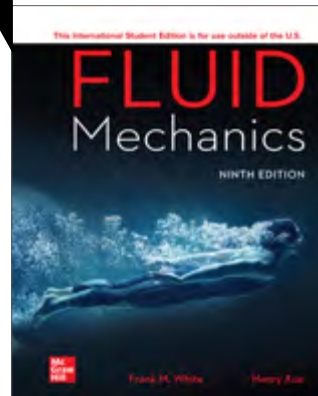
### OVERVIEW

Introduction to Environmental Engineering 6th edition contains the fundamental science and engineering principles needed for introductory courses and used as the basis for more advanced courses in environmental engineering. Updated with latest EPA regulations Davis and Cornwell apply the concepts of sustainability and materials and energy balance as a means of understanding and solving environmental engineering issues. With over 720 end-of-chapter problems as well as provocative discussion questions and a helpful list of review items found at the end of each chapter the text is both a comprehensible and comprehensive tool for any environmental engineering course. Standards and Laws are the most current and up-to-date for an environmental engineering text.

### CONTENTS

1. Introduction
2. Materials and Energy Balances
3. Risk Assessment
4. Water Resources Engineering
5. Water Chemistry
6. Water Treatment

**NEW**



### Fluid Mechanics

Frank White

Edition:9  
2021©  
880 Pages  
Mar 2021  
Print: 9781260575545  
Connect: 9781260446531

### OVERVIEW

Fluid Mechanics is the study of fluids as an important branch of engineering mechanics. Almost everything on this planet either is a fluid or moves within or near a fluid. The essence of the subject of fluid flow is a judicious compromise between theory and experiment. This textbook not only makes a great deal of theoretical treatment available, but also provides experimental results as a natural and easy complement to the theory. The principles considered in the book are fundamental and have been well established. However, in presenting this important subject, we have drawn on our own ideas and experience. Throughout the revisions, the informal and student-oriented writing style has been retained and further enhanced, and if it succeeds, has the flavor of an interactive lecture by the authors.

### FEATURES

- Merged topics on the choice of variable and scaling parameter with the Pi theorem in Chapter 5 to make it easier for students to follow the arguments.
- Classified applications for the linear momentum equation in Chapter 3 to help students to relate the equation with the applicable engineering problems.

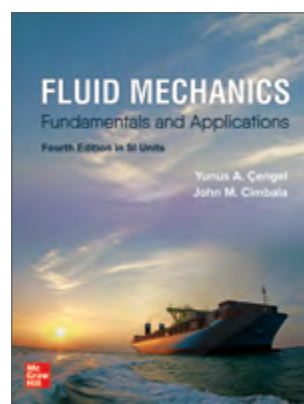
- Concepts and definitions in Chapter 1 have been centralized to help them stand out in the text.
- Provided new data for worldwide wind power capacity in Chapter 11 to reflect the advancement in the application of fluid mechanics.

## CONTENTS

1. Introduction
2. Pressure Distribution in a Fluid
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5. Dimensional Analysis and Similarity
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7. Flow Past Immersed Bodies
8. Potential Flow and Computational Fluid Dynamics
9. Compressible Flow
10. Open-Channel Flow
11. Turbomachinery

## Appendices:

- A. Physical Properties of Fluids
- B. Compressible Flow Tables
- C. Conversion Factors
- D. Equations of Motion in Cylindrical Coordinates
- E. Estimating Uncertainty in Experimental Data



**Fluid Mechanics:  
Fundamentals and  
Applications (SI Edition)**  
Yunus Cengel, John Cimbala

**Edition:4**  
**2018©**  
**Print: 9789813157880**  
**Connect: 9789353167295**

## OVERVIEW

This book communicates directly with tomorrow's engineers in a simple yet precise manner while covering the basic principles and equations of fluid mechanics in the context of numerous and diverse real-world engineering examples. The text helps students develop an intuitive understanding of fluid mechanics by emphasizing the physics using figures numerous photographs and visual aids to reinforce the physics. The highly visual approach enhances the learning of fluid mechanics by students. This text distinguishes itself from others by the way the material is presented – in a progressive order from simple to more difficult, building each chapter upon foundations laid down in previous chapters. In this way, even the traditionally challenging

aspects of fluid mechanics can be learned effectively.

## FEATURES

- New subsections "Uniform versus Non-Uniform Flow" and "Equation Solvers" have been added to Chapter 1.
- Two new sections, "Flying Birds and Insects" by guest author Azar Eslam Panah of Penn State Berkley and "CFD Methods for Two-Phase Flows" by guest author Alex Rattner of Penn State have been added to Chapter 11 and Chapter 15.
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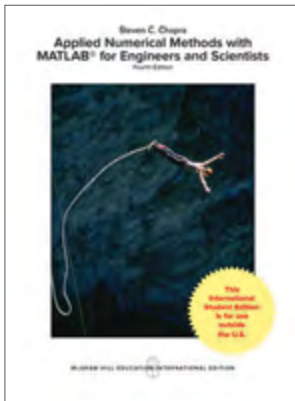
## CONTENTS

1. Introduction and Basic Concepts
2. Properties of Fluids
3. Pressure and Fluid Statics
4. Fluid Kinematics
5. Bernoulli and Energy Equations
6. Momentum Analysis of Flow Systems
7. Dimensional Analysis and Modeling
8. Internal Flow
9. Differential Analysis of Fluid Flow
10. Approximate Solutions of the Navier-Stokes Equation
11. External Flow: Drag and Lift
12. Compressible Flow
13. Open-Channel Flow
14. Turbomachinery
15. Introduction to Computational Fluid Dynamics

## Appendices:

1. Property Tables and Charts

## Numerical Methods



### Applied Numerical Methods with MATLAB for Engineers and Scientists

Chapra

Edition: 4

2018©

Print: 9781260083255

Connect: 9781259547690

### OVERVIEW

This text is written for students who want to learn and apply numerical methods in order to solve problems in engineering and science. As such, the methods are motivated by problems rather than by mathematics. That said, sufficient theory is provided so that students come away with insight into the techniques and their shortcomings.

### FEATURES

- New content has been added, as well as enhanced sections on a number of topics. Primary additions include: material on some MATLAB functions not included in previous editions, some new applications of Monte Carlo for problems such as integration and optimization, and MATLAB's new way to pass parameters to function functions.
- A short primer on Simulink has been added, intended for students to read prior to covering that topic. This has been included as a teaching aid for those that cover Simulink.

### CONTENTS

#### Part 1: Modeling, Computers, and Error Analysis

1. Mathematical Modeling, Numerical Methods, and Problem Solving
2. MATLAB Fundamentals
3. Programming with MATLAB
4. Roundoff and Truncation Errors

#### Part 2: Roots and Optimization

5. Roots: Bracketing Methods
6. Roots: Open Methods
7. Optimization

#### Part 3: Linear Systems

8. Linear Algebraic Equations and Matrices
9. Gauss Elimination
10. LU Factorization
11. Matrix Inverse and Condition
12. Iterative Methods

13. Eigenvalues

#### Part 4: Curve Fitting

14. Linear Regression
15. General Linear Least-Squares and Nonlinear Regression
16. Fourier Analysis
17. Polynomial Interpolation
18. Splines and Piecewise Interpolation

#### Part 5: Integration and Differentiation

19. Numerical Integration Formulas
20. Numerical Integration of Functions
21. Numerical Differentiation

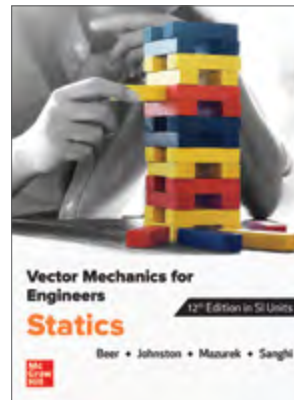
#### Part 6: Ordinary Differential Equations

22. Initial-Value Problems
23. Adaptive Methods and Stiff Systems
24. Boundary-Value Problems

#### Appendices:

- A. MATLAB Built-In Functions
- B. MATLAB M-File Functions Index

## Statics



### Vector Mechanics for Engineers: Statics (SI Edition)

Ferdinand P. Beer, Jr.,  
E. Russell Johnston,  
David Mazurek

Edition: 12

2019©

656 Pages

Print: 9789813157859

Connect: 9789353166618

### OVERVIEW

A primary objective in a first course in mechanics is to help develop a student's ability first to analyze problems in a simple and logical manner, and then to apply basic principles to their solutions. A strong conceptual understanding of these basic mechanics principles is essential for successfully solving mechanics problems. This edition of Vector Mechanics for Engineers will help instructors achieve these goals.

Continuing in the spirit of its successful previous editions, this edition provides conceptually accurate and thorough coverage together with a significant refreshment of the exercise sets and online delivery of homework problems to your students. The 12th edition has new case studies and enhancements in the text and in Connect.

The hallmark of the Beer-Johnston series has been the problem sets and this edition is no different. Over 650 of the homework problems in the text are new or revised. One of the characteristics of the approach used in this book is that mechanics of particles is clearly separated from the mechanics of rigid bodies. This approach makes it possible to consider simple practical applications at an early stage and to postpone the introduction of the more difficult concepts. Additionally, Connect has over 100 Free-Body Diagram Tool Problems and Process-Oriented Problems.

### FEATURES

- 100% of the free-body diagram problems have been added to Connect.
- Stand-alone Process-Oriented Problems are now included in Connect.
- Each chapter now features a case study. Connect contains videos based on each case-study to demonstrate more applications to students. Questions in Connect will relate back to the video.
- Thoroughly Refreshed Problem Set in the Twelfth Edition. Approximately 20% of the problems are updated from the previous edition.
- Concept Questions are multiple choice problems that require few, if any, calculations are included. Students are encouraged to solve these problems using the principles and techniques discussed in the text and to use these principles to help develop their intuition.
- Computer and Design Problems are offered at the end of each chapter. While the problems are generic they are designed to be easily solved using popular computational programs like Matlab® and Mathcad®. The computer problems focus on symbolic manipulation and plotting rather than programming
- A Careful, Step-By-Step Presentation is followed in each lesson of each chapter, and every chapter starts with a real-life example and an outline previewing the chapter -objectives and lessons. Each lesson is accompanied by sample problems and Solving Problems On Your Own boxes that prepare students for the problem sets. Each chapter finishes with a brief Review Problem set and an assortment of computer and design problems.
- Well-Respected Sample Problems are a signature Beer and Johnston text feature that allow students to see important key problem types and with the solution laid out on a single page, organized to provide a potent model for student problem solving. Sample Problems serve the dual purpose

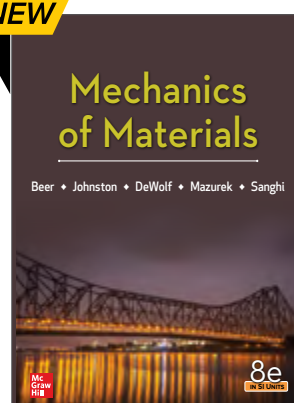
of amplifying the text and demonstrating the type of neat and orderly work that students should cultivate in their own solutions.

### CONTENTS

1. Introduction
  2. Statics of Particles
  3. Rigid Bodies: Equivalent Systems of Forces
  4. Equilibrium of Rigid Bodies
  5. Distributed Forces: Centroids and Centers of Gravity
  6. Analysis of Structures
  7. Internal Forces and Moments
  8. Friction
  9. Distributed Forces: Moments of Inertia
  10. Method of Virtual Work
- Fundamentals of Engineering Examination

### Strength of Materials / Mechanics of Materials

**NEW**



### Mechanics of Materials (SI Edition)

**Ferdinand Beer, E. Russell Johnston, Jr., John DeWolf, David Mazurek**

**Edition: 8**  
**2020©**  
**896 Pages**  
**Jul 2020**  
**Print: 9789813158979**  
**Connect: 9789390219445**

### OVERVIEW

Mechanics of Materials provides a precise presentation of subjects illustrated with numerous engineering examples that students both understand and relate to theory and application. The tried and true methodology for presenting material gives students the best opportunity to succeed in this course. From the detailed examples to the homework problems to the carefully developed solutions manual instructors and students can be confident the material is clearly explained and accurately represented.

### FEATURES

- Over 25% of the assigned problems from the previous edition have been replaced or revised.
- Photographic content has been modified to provide a more suitable conceptual context to the important principles discussed.
- This edition includes videos that show key mechanics of materials experiments being conducted.

- Connect has been updated to include a new ebook format that enables off-line reading, free-body diagram drawing problems and process-oriented problems have been added to the question bank and HTML5 Dynamic Interactivities will be in the online learning center.

## CONTENTS

1. Introduction-Concept of Stress
2. Stress and Strain-Axial Loading
3. Torsion
4. Pure Bending
5. Analysis and Design of Beams for Bending
6. Shearing Stresses in Beams and Thin-Walled Members
7. Transformations of Stress and Strain
8. Principal Stresses Under a Given Loading
9. Deflection of Beams
10. Columns
11. Energy Methods

### Appendices:

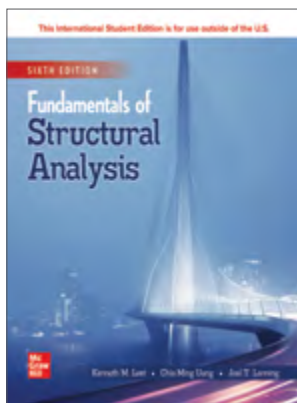
- A. Principal Units Used in Mechanics
- B. Centroids and Moments of Areas
- C. Centroids and Moments of Inertia of Common Geometric Shapes
- D. Typical Properties of Selected Materials Used in Engineering
- E. Properties of Rolled-Steel Shapes
- F. Beam Deflections and Slopes
- G. Fundamentals of Engineering Examination

and indeterminate structures and provides an introduction to the matrix formulation on which computer analysis is based. Although it is assumed that readers have completed basic courses in statics and strength of materials the basic techniques from these courses are briefly reviewed the first time they are mentioned. To clarify discussion this edition uses many carefully chosen examples to illustrate the various analytic techniques introduced and whenever possible examples confronting engineers in real-life professional practice have been selected.

## FEATURES

- This edition has significant revisions to coverage of the basic topics in determinate structural analysis like drawing moment and shear diagrams. Revisions emphasize the consistent use of sign conventions for internal forces.
- Over 300 figures have been revised, sometimes extensively, to provide even more consistency and accuracy in the presentation of important aspects of the analysis methods.
- Expanded treatment of design loads. Material from Chapter 2 on design loads has been incorporated into the "Practical Application" portions of the end-of-chapter problems throughout the text.
- New homework problems and a new focus on loadings - A substantial number of the problems are new or revised for this edition (in both metric and U.S. Customary System units), and many are typical of analysis problems encountered in practice.
- Review topics - Chapters 3, 4, and 5 provide a useful review of fundamental skills of statics and basic structures like trusses and beams. This edition features many revisions in these chapters aimed at helping students more quickly and effectively refresh their skills in these topics.
- Computer Problems & Applications - some new to this edition, provide readers with a deeper understanding of the structural behavior of trusses, frames, arches, and other structural systems. These carefully tailored problems illustrate significant aspects of structural behavior that, in the past, experienced designers needed many years of practice to understand and analyze correctly.

## Structural Analysis



### Fundamentals of Structural Analysis

Kenneth M. Leet, Chia-Ming Uang, Joel Lanning

Edition: 6  
2021©  
800 Pages  
Print: 9781260570441

## OVERVIEW

Fundamentals of Structural Analysis introduces engineering and architectural students to the basic techniques for analyzing the most common structural elements including beams trusses frames cables and arches. The content in this textbook covers the classical methods of analysis for determinate

## CONTENTS

1. Introduction
2. Design Loads
3. Statics of Structures—Reactions
4. Trusses
5. Beams and Frames

6. Cables
7. Arches
8. Live Load Forces: Influence Lines for Determinate Structures
9. Deflections of Beams and Frames
10. Work-Energy Methods for Computing Deflections
11. Analysis of Indeterminate Structures by the Flexibility Method
12. Analysis of Indeterminate Beams and Frames by the Slope-Deflection Method
13. Moment Distribution
14. Indeterminate Structures: Influence Lines
15. Approximate Analysis of Indeterminate Structures
16. Introduction to the General Stiffness Method
17. Matrix Analysis of Trusses by the Direct Stiffness Method
18. Matrix Analysis of Beams and Frames by the Direct Stiffness Method

## Structures: Concrete



### Design of Concrete Structures

David Darwin, Charles W. Dolan, Arthur H. Nilson

Edition: 16

2021©

800 Pages

Print: 9781260575118

### OVERVIEW

For almost a century, Design of Concrete Structures has been the authoritative source for the behavior of reinforced concrete structures and design approaches in accordance with the ACI 318 Building Code. The 2019 ACI Building Code contains over 150 technical changes. These changes address higher strength reinforcement, revisions to flexural design, shear capacity, and development of reinforcement. The changes have profound and important impacts on the design of concrete structures. The 16th edition of Design of Concrete Structures by Darwin and Dolan presents current concrete behavior theory and updated code-based design rules. The text and illustrated examples are essential for faculty members, students, and practitioners to understand current concrete design.

### FEATURES

- New member and detailed design information

is provided. This new material addresses strut-and-tie methods for design, wall design, deep foundations, anchorage to concrete, shear lugs, and updated seismic design.

- Deflection calculations have been modified to be based on equations that better reflect member performance. The new equations result in larger calculated deflections and the possible need for larger members to meet deflection limitations.
- Updates have been made to the description of shear behavior and incorporates revised design equations. New shear equations were added with discussions based on the empirical formulas, the flexural reinforcement ratio, and size effects.
- Inclusion of higher strength reinforcement: Design limits are expanded, and behavior is modified by higher strength materials. Reinforcement limits in beam design are revised, and determination of maximum reinforcement ratios has been simplified.
- The 16th edition of the classic text, Design of Concrete Structures, is completely revised to be in full compliance with the 2019 American Concrete Institute (ACI) Building Code. This new edition has the same dual objectives as the previous editions: first to establish a firm understanding of the behavior of structural concrete, then to develop proficiency in the methods used in current design practice.
- Reinforcement development lengths are modified: New development length equations are explained and examples that demonstrate their application are included.

### CONTENTS

1. Introduction
2. Materials
3. Design of Concrete Structures and Fundamental Assumptions
4. Flexural Analysis and Design of Beams
5. Shear and Diagonal Tension in Beams
6. Bond, Anchorage, and Development Length
7. Serviceability
8. Analysis and Design for Torsion
9. Short Columns
10. Slender Columns
11. Analysis, Idealization, and Preliminary Design of Reinforced Concrete Beams and Frames
12. Analysis and Design of One-Way Slabs
13. Analysis and Design of Two-Way Slabs
14. Walls
15. Footings and Foundations
16. Retaining Walls
17. Strut-and-Tie Method
18. Design of Reinforcement at Joints

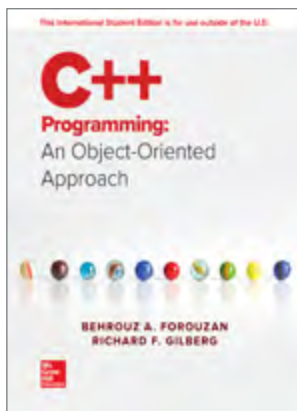
19. Concrete Building Systems
20. Seismic Design
21. Anchoring to Concrete
22. Prestressed Concrete
23. Yield Line Analysis for Slabs
24. Strip Method for Slabs

### Appendices:

- A. Design Aids
- B. SI Conversion Factors: Inch-Pound Units to SI Units

## COMPUTER SCIENCE

### C++ /CS1



### C++ Programming: An Object-Oriented Approach

**Behrouz A. Forouzan, Richard  
Gilberg**

**Edition: 1  
2020©**

**960 Pages**

**Print: 9781260547726**

### OVERVIEW

Computer Science: An Object-Oriented Approach Using C++ has two primary objectives: to teach the basic principles of programming as outlined in the ACM curriculum for a CS1 class and to teach the basic constructs of the C++ language. While C++ is a complex and professional language, our experience has shown that beginning students can easily understand and use it. This text uses a combination of thorough, well-ordered explanations and a strong visual framework to make programming concepts accessible to students. The authors stress incremental program development, wherein program analysis is followed by building a structure chart, constructing UML flow diagrams, writing algorithms, undertaking program design, and finally testing. This foundation, combined with a focus on the benefits of a consistent and well-documented programming style, prepares students to tackle the academic and professional programming challenges they will encounter down the road with confidence.

### FEATURES

- Principle before Practice: Whenever possible, we develop concepts before we introduce the language implementation.

- Objects Early: Our approach to objects is to introduce them early but gradually.
- Structure and Style: We consistently emphasize a good consistent style and practice. Every complete program uses a consistent style and practice.
- Visual Approach: We have more than 440 figures, 110 tables and 325 program examples.
- High-Quality Programming Examples: Programming examples vary in complexity but each use a consistent style.
- Incremental Development: One major objective of this text is to teach students how to develop programs. We use a concept called incremental development.
- Pedagogical End Material: Each chapter contains three sets of pedagogical materials: Tips and Common Programming Errors, Key Terms and a Summary.
- Practice Sets: The Practice sets are divided into four sections of increasing complexity: Review Questions, Exercises, Problems and Projects.
- A text website will feature instructor's solutions manual, answers to selected exercises for students, source code, and power points.

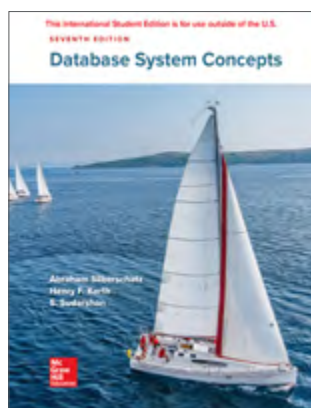
### CONTENTS

1. Computers and Object Oriented Programming
2. Basic Elements of C++ Language
3. Functions
4. Predefined Classes
5. Defining Classes
6. Decision
7. Repetition (Loops)
8. Arrays and Vectors
9. Pointers
10. More Class Elements
11. Inheritance and Aggregation
12. Templates and Virtual Functions
13. Searching and Sorting
14. Exception Handling
15. Files
16. Recursion
17. ADTs (Lists, Stacks, and Queues)
18. Introduction to STL

### Appendices:

- A. Unicode
- B. Reserved Words
- C. UML
- D. Numbering System
- E. Preprocessor Directives
- F. Manipulators
- G. Bitwise Operators
- H. Command-Line Argument
- I. Name Spaces

## Database Systems



### Database System Concepts

**Silberschatz, Abraham, Henry F. Korth, S. Sudarshan**

**Edition: 7**

**2020©**

**1,392 Pages**

**Print: 9781260084504**

### OVERVIEW

Database System Concepts by Silberschatz, Korth and Sudarshan is now in its 6th edition and is one of the cornerstone texts of database education. It presents the fundamental concepts of database management in an intuitive manner geared toward allowing students to begin working with databases as quickly as possible.

The text is designed for a first course in databases at the junior/senior undergraduate level or the first year graduate level. It also contains additional material that can be used as supplements or as introductory material for an advanced course. Because the authors present concepts as intuitive descriptions, a familiarity with basic data structures, computer organization, and a high-level programming language are the only prerequisites. Important theoretical results are covered, but formal proofs are omitted. In place of proofs, figures and examples are used to suggest why a result is true.

### FEATURE

- **Revised Coverage of SQL:** The coverage of SQL is earlier and more complete, with greater attention to the variants of SQL that exist in actual systems.
- **Running Example of a University Organization:** A new database schema based on university data is used as a running example throughout the book.
- **Revised and Expanded Coverage of Database Design:** An updated chapter on ER modeling makes good use of the new running example of the university database.
- **Updated Chapter on Relational Design:** The Relational Design chapter has been updated with a more readable style, providing more intuition about normalization before covering functional dependency theory.
- **Expanded and Updated Applications:** The material on application security has been significantly

expanded and emphasis is on practical issues over abstract concepts. Additionally, new material on application development has been included, mirroring rapid changes in the field and early coverage of OLAP is featured.

- **Transaction Management:** Coverage has been moved earlier in the book, with chapter 14 providing basics for an introductory course and details following in Chapters 15 and 16. The new edition also features coverage of snapshot isolation including coverage of potential hazards when using it.
- **Expanded Coverage of Distributed Data Storage Systems:** Also known as cloud data storage, distributed data storage systems are increasingly used for storing Web scale data and are more and more significant for today's computer professionals.
- **Object Database and XML Chapters Postponed to Later in the Book:** Although object-oriented languages and XML are widely used outside of databases, their support and use in databases is limited, making them appropriate for more advanced courses. Placing this material later in the book allows it to be more easily skipped.
- **Upgraded Chapter on Web Applications and Their Relationship to Databases:** The updated material on Web Applications answers the increasing need for web-related expertise in the computing field.
- **Emphasis on practical issues, applications and implementation, coupled with intuitive coverage of key theoretical concepts.**
- **Case studies covering the latest versions of IBM DB2, Oracle, Microsoft SQL Server and PostgreSQL.**
- **Detailed coverage of database internals and architectures.**
- **Chapters on data mining and analysis and information retrieval.**

### CONTENTS

1. Introduction

#### Part 1: Relational Databases

2. Introduction to the Relational Model
3. Introduction to SQL
4. Intermediate SQL
5. Advanced SQL
6. Formal Relational Query Languages

#### Part 2: Database Design

7. Database Design and the E-R Model
8. Relational Database Design
9. Application Design and Development

#### Part 3: Data Storage and Querying

10. Storage and File Structure

11. Indexing and Hashing
12. Query Processing
13. Query Optimization

#### Part 4: Transaction Management

14. Transactions
15. Concurrency Control
16. Recovery System

#### Part 5: System Architecture

17. Database-System Architectures
18. Parallel Databases
19. Distributed Databases

#### Part 6: Data Mining and Information Retrieval

20. Data Mining
21. Information Retrieval

#### Part 7: Specialty Databases

22. Object-Based Databases
23. XML
24. Advanced Application Development
25. Advanced Data Types and New Applications
26. Advanced Transaction Processing

#### Part 8: Case Studies

27. PostgreSQL
28. Oracle
29. IBM DB2 Universal Database
30. Microsoft SQL Server

#### Part 9:

#### Appendices:

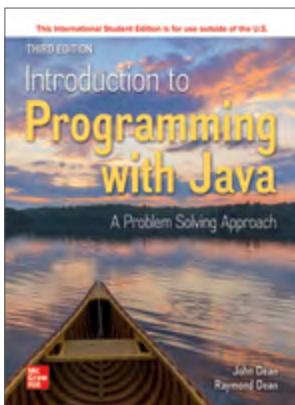
- A. Detailed University Schema
- B. Other Relational Query Languages
- C. Advanced Relational Database Design
- D. Network Model
- E. Hierarchical Model

The book transitions smoothly through a carefully selected set of procedural programming fundamentals to object-oriented fundamentals. During this early transition and beyond, the book emphasizes problem solving. For example, Chapter 2 is devoted to algorithm development, Chapter 8 is devoted to program design, and problem-solving sections appear throughout the book. The third edition introduces several new Java language features, most of the end-of-chapter GUI sections and the final GUI chapters use JavaFX, and almost all end-of-chapter exercises are new.

#### FEATURE

- **Switching Structures** - With the advent of Java 12, improvements have been made to the venerable switch statement, and this edition describes those improvements. The book uses the new switching techniques (multiple comma-separated case constants and no break statements) for programs throughout the book. And the text uses switch statements versus switch expressions according to what the problem calls for.
- **New Exercises** - The authors have substantially changed most of the exercises and altered almost all of them in some way. As before, they provide exercise solutions on the password-protected instructor's portion of the book's website.
- **Three New Chapters – JavaFX** - The text includes three new chapters in the main body of the book that describe GUI programming using the JavaFX platform. As part of that presentation, you'll learn how to format your programs using JavaFX CSS properties.
- The end-of-chapter GUI sections have been rewritten to take advantage of Java's newer GUI constructs.

## Java/CS1



#### Introduction to Programming with Java: A Problem Solving Approach

John A. Dean, Ray Dean

Edition:3

2021©

960 Pages

Print: 9781260575248

Connect: 9781260249989

#### OVERVIEW

Introduction to Programming with Java: A Problem Solving Approach teaches the reader how to write programs using Java. It does so with a unique approach that combines fundamentals first with objects early.

#### CONTENTS

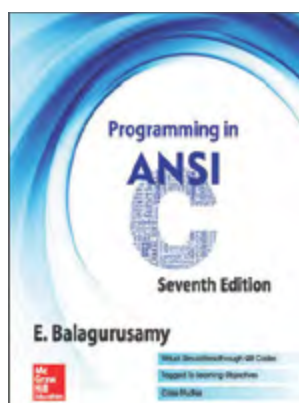
1. Introduction to Computers and Programming
2. Algorithms and Design
3. Java Basics
4. Control Statements
5. Using Pre-Built Methods
6. Object-Oriented Programming
7. Object-Oriented Programming-Additional Details
8. Software Engineering
9. Arrays
10. Arrays Lists and an Introduction to the Java Collections Framework
11. Recursion
12. Type Details and Alternative Coding Mechanisms
13. Aggregation, Composition, and Inheritance
14. Inheritance and Polymorphism
15. Exception Handling

16. Files, Buffers, Channels, and Paths
17. GUI Programming Basics
18. GUI Programming-Layout Panes, Additional GUI Components
19. GUI Programming-Additional GUI Components, Additional Listeners, Animation

#### Appendices:

1. ASCII Character Set
2. Operator Precedence
3. Java Reserved Words
4. Packages and Modules
5. Java Coding-Style Conventions
6. Javadoc with Tags
7. UML Diagrams
8. Number Systems and Conversions Between Them

## Programming



### Programming in ANSI C

E. Balaguruswamy

Edition:8

2020©

Print: 9789353165130

#### OVERVIEW

Programming in ANSI C' keeps up with its predecessors by balancing between theory and practical approach of the subject. In order to build a firm foundation, a new chapter 'Introduction to Computing' has been introduced. The appendix 'Projects' has been revamped with two new and exciting projects, that will help students to hone their programming skills and bring them to practical usefulness. Existing chapters have been further enriched with additional write-ups, tips and a new 'Test Your Skills' section around the content. Two new sections, Multiple Choice Questions and Interview Questions, have been introduced in each chapter, with the intent to give more practice to students and prepare them for different interviews and competitive exams. The section on Programming Exercises has also been enriched with some new questions.

#### CONTENTS

1. Introduction to Computing
2. Overview of C
3. Constants, Variables and Data Types
4. Operators and Expressions
5. Managing Input and Output Operations
6. Decision Making and Branching
7. Decision Making and Looping
8. Array
9. Character Arrays and Strings
10. User-Defined Functions
11. Structures and Unions
12. Pointers
13. File Management in C
14. Dynamic Memory Allocation and Linked Lists
15. 6 Developing a C Program: Some Guidelines

#### Appendices:

- I. Bit-Level Programming
- II. ASCII Values of Characters
- III. ANSI C Library Functions
- IV. Projects
- V. C99/C11 Features
- VI. Graphics Programming Using C

## Software Engineering



### Software Engineering: A Practitioner's Approach

Roger Pressman, Bruce Maxim

Edition:9

2020©

704 Pages

Print:9781260548006

Connect:9781260423365

#### OVERVIEW

For almost four decades Software Engineering: A Practitioner's Approach (SEPA) has been the world's leading textbook in software engineering. The ninth edition represents a major restructuring and update of previous editions solidifying the book's position as the most comprehensive guide to this important subject.

#### FEATURE

- A reduction in the amount of survey content and an emphasis on a more prescriptive approach have resulted in a reduced page count, making the book stronger from a pedagogical viewpoint and less daunting for the reader who desires to journey

through the entire book.

- Chapters have been restructured and organized with a direct emphasis on the major activities that are part of a generic software process. The intent is to provide a more targeted, prescriptive, and focused approach, while maintaining SEPA's reputation as a comprehensive guide to software engineering.
- The 30 chapters of this edition are organized into five parts – The Software Process, Modeling, Quality and Security, Managing Software Projects, and Advanced Topics. The book has been revised and restructured to improve pedagogical flow and emphasize new and important software engineering processes and practices.
- Four new chapters, emphasizing software security and the unique challenges of developing software for mobile applications, have been added to this edition. New problems and "Points to Ponder" have been added. Many new figures and examples are used.
- The Instructor's Guide for Software Engineering: A Practitioner's Approach presents suggestions for conducting various types of software engineering courses, recommendations for a variety of software projects to be conducted in conjunction with a course, solutions to selected problems, and a number of useful teaching aids.
- Available within McGraw-Hill Education's Connect, SmartBook2.0 makes study time as productive and efficient as possible. It identifies and closes knowledge gaps through a continually adapting reading experience that provides personalized learning resources at the precise moment of need. This ensures that every minute spent with SmartBook2.0 is returned to the student as the most value-added minute possible.

## CONTENTS

1. Software and Software Engineering

### Part 1: The Software Process

2. Process Models
3. Agility and Process
4. Recommended Process Model
5. Human Aspects of Software Engineering

### Part 2: Modeling

6. Principles That Guide Practice
7. Understanding Requirements
8. Requirements Modeling - A Recommended Approach
9. Design Concepts
10. Architectural Design - A Recommended Approach
11. Component-Level Design
12. User Experience Design

13. Design for Mobility
14. Pattern-Based Design

### Part 3: Quality and Security

15. Quality Concepts
16. Reviews - A Recommended Approach
17. Software Quality Assurance
18. Software Security Engineering
19. Software Testing - Component Level
20. Software Testing - Integration Level
21. Software Testing - Specialized Testing for Mobility
22. Software Configuration Management
23. Software Metrics and Analytics

### Part 4: Managing Software Projects

24. Project Management Concepts
25. Creating a Viable Software Plan
26. Risk Management
27. A Strategy for Software Support

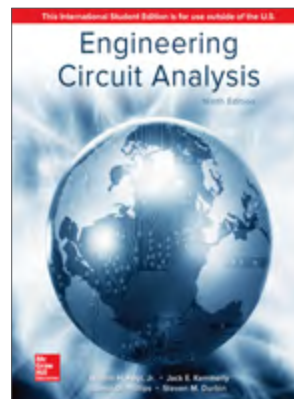
### Part 5: Advanced Topics

28. Software Process Improvement
29. Emerging Trends in Software Engineering
30. Concluding Comments

### Appendices:

- I. An Introduction to UML
- II. Data Science for Software Engineers

## Circuits



### Engineering Circuit Analysis

William H. Hayt, Jack Kemmerly, Jamie Phillips, Steven M. Durbin

Edition:9

2019©

896 Pages

Print: 9781260084887

Connect: 9781259989421

## OVERVIEW

The hallmark feature of this classic text is its focus on the student - it is written so that students may teach the science of circuit analysis to themselves. Terms are clearly defined when they are introduced, basic material appears toward the beginning of each chapter and is explained carefully and in detail, and numerical examples are used to introduce and suggest general results. Simple practice problems appear throughout each chapter, while more difficult problems appear at the end of chapters, following the order of presentation of text material. This introduction

and resulting repetition provide an important boost to the learning process. Hayt's rich pedagogy supports and encourages the student throughout by offering tips and warnings, using design to highlight key material, and providing lots of opportunities for hands-on learning. The thorough exposition of topics is delivered in an informal way that underscores the authors' conviction that circuit analysis can and should be fun.

## FEATURES

- Updated Connect with SmartBook uses end-of-chapter content from Engineering Circuit Analysis, 9e. Connect is a powerful, web-based assignment management system that makes creating and grading assignments easy for instructors and learning convenient for students. It saves time and makes learning for students accessible anytime, anywhere. With Connect, instructors can easily manage assignments, grading, progress, and students receive instant feedback from assignments and practice problems.
- Revised and often completely new Practical Applications. These sections have been added to the eighth edition, and the Practical Applications boxes connect material to real-world situations and tie in concepts of design and problem-solving.
- LTspice and MATLAB coverage throughout the book.
- Problem-solving techniques are introduced in Chapter One to prepare students for developing a methodical approach to circuit analysis. The step-by-step approach is used in each subsequent chapter, with a carefully selected example in each chapter re-starting the problem-solving methodology as a reminder to the students.
- Outstanding pedagogy, including "Dream High Tech Job" boxes which introduce students to interesting careers and people in the fields of graphics, CAD, and design and also "Design in Industry" boxes which cover some aspect of design as practiced in industry.

## CONTENTS

1. Introduction
2. Basic Components and Electric Circuits
3. Voltage and Current Laws
4. Basic Nodal and Mesh Analysis
5. Handy Circuit Analysis Techniques
6. The Operational Amplifier
7. Capacitors and Inductors
8. Basic RC and RL Circuits
9. The RLC Circuit
10. Sinusoidal Steady-State Analysis

11. AC Circuit Power Analysis
12. Polyphase Circuits
13. Magnetically Coupled Circuits
14. Circuit Analysis in the s-Domain
15. Frequency Response
16. Two-Port Networks
17. Fourier Circuit Analysis

## Appendices:

1. An Introduction to Network Topology
2. Solution of Simultaneous Equations
3. A Proof of Thevenin's Theorem
4. An LTspice Tutorial
5. Complex Numbers
6. A Brief MATLAB Tutorial
7. Additional Laplace Transform Theorems
8. The Complex Frequency Plane



## Fundamentals of Electric Circuits

Charles K Alexander,  
Matthew Sadiku

Edition:7

2021©

992 Pages

Print: 9781260570793

Connect: 9781260477641

## OVERVIEW

Fundamentals of Electric Circuits continues in the spirit of its successful previous editions with the objective of presenting circuit analysis in a manner that is clearer more interesting and easier to understand than other more traditional texts. A balance of theory worked and extended examples practice problems and real-world applications combined with over 580 new or changed homework problems complete this edition. Robust media offerings renders this text to be the most comprehensive and student-friendly approach to linear circuit analysis. The seventh edition retains the "Design a Problem" feature which helps students develop their design skills by having the student develop the question as well as the solution. There are over 100 "Design a Problem" exercises integrated into problem sets in the book.

## FEATURE

- 580+ new or revised end-of-chapter problems and practice problems provide students with plenty of practice, as well as reinforce key concepts.
- "Design a Problem" problems help students begin the understanding of the design process used by engineers.

- Matched Examples are followed by an assigned Practice Problem to aid in bringing theory into practice.

### CONTENTS

#### Part 1: DC Circuits

1. Basic Concepts
2. Basic Laws
3. Methods of Analysis
4. Circuit Theorems
5. Operational Amplifiers
6. Capacitors and Inductors
7. First-Order Circuits
8. Second-Order Circuits

#### Part 2: AC Circuits

9. Sinusoids and Phasors
10. Sinusoidal Steady-State Analysis
11. AC Power Analysis
12. Three-Phase Circuits
13. Magnetically Coupled Circuits
14. Frequency Response

#### Part 3: Advanced Circuit Analysis

15. Introduction to the Laplace Transform
16. Applications of the Laplace Transform
17. The Fourier Series
18. Fourier Transform
19. Two-Port Networks

TCP/IP protocol suite. It concludes with three chapters that explore multimedia, network management, and cryptography/network security. Technologies related to data communications and networking are among the fastest growing in our culture today, and there is no better guide to this rapidly expanding field than Data Communications and Networking.

### FEATURES

- The chapters in the text have been reorganized on the multi-layer TCP/IP protocol suite process.
- This book uses a bottom-up approach. Each layer in the TCP/IP protocol suite is built on the services provided by the layer below. We learn how bits are moving at the physical layer (first layer) before learning how some programs exchange messages at the application layer (fifth layer).

### CONTENTS

1. Introduction
2. Physical Layer
3. Data-Link Layer
4. Local Area Networks: LANs
5. Wide Area Networks: WANs
6. Connecting Devices and Virtual LANs
7. Network Layer: Data Transfer
8. Network Layer: Routing of Packets
9. Transport Layer
10. Application Layer
11. Multimedia
12. Network Management
13. Cryptography and Network Security

## ELECTRICAL ENGINEERING

### Computer Networks

**NEW**



### Data Communications and Networking with TCP/IP Protocol Suite

Behrouz A. Forouzan

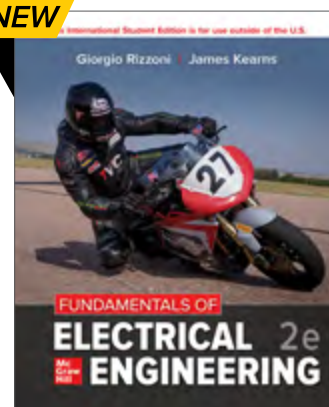
Edition: 6  
2022©  
864 Pages  
Mar 2021  
Print: 9781260597820

### OVERVIEW

Data Communications and Networking 6th edition teaches the principles of networking using TCP/IP protocol suite. It employs a bottom-up approach where each layer in the TCP/IP protocol suite is built on the services provided by the layer below. This edition has undergone a major restructuring to reduce the number of chapters and focus on the organization of

## Electrical Engineering Intro

**NEW**



### Fundamentals of Electrical Engineering

Giorgio Rizzoni, James Kearns

Edition: 2  
2022©  
832 Pages  
Mar 2021  
Print: 9781260597776  
Connect: 9781259914461

### OVERVIEW

Fundamentals of Electrical Engineering represents an effort to make the principles of electrical and computer engineering accessible to students in various engineering disciplines. The principal objective of

the book is to present the fundamentals of electrical electronic and electromechanical engineering to an audience of engineering majors enrolled in introductory and more advanced or specialized electrical engineering courses. A second objective is to present these fundamentals with a focus on important results and common yet effective analytical and computational tools to solve practical problems. Finally, a third objective of the book is to illustrate by way of concrete fully worked examples a number of relevant applications of electrical engineering. These examples are drawn from the authors' industrial research experience and from ideas contributed by practicing engineers and industrial partners.

### FEATURES

- Example problems have been placed at the end of each section within a chapter to help students be able to easily locate while preparing for exams.
- Over 300 new homework problems, for a total of 861 throughout the second edition.
- All the highlighted "Focus on Methodology" boxes found in the first edition were renamed "Focus on Problem Solving," and many of them were rewritten to clarify and add additional detail to the steps needed by students to successfully complete end-of-chapter homework problems.

### CONTENTS

1. Fundamentals of Electric Circuits
2. Resistive Network Analysis
3. AC Network Analysis
4. Transient Analysis
5. Frequency Response and System Concepts
6. AC Power
7. Operational Amplifiers
8. Semiconductors and Diodes
9. Bipolar Junction Transistors: Operation, Circuit Models, and Applications
10. Field-Effect Transistors: Operation, Circuit Models, and Applications
11. Digital Logic Circuits
12. Principles of Electromechanics
13. Introduction to Electric Machines



### Principles and Applications of Electrical Engineering

**Giorgio Rizzoni, James Kearns**

**Edition: 7  
2022©**

**992 Pages**

**Mar 2021**

**Print: 9781260598094**

**Connect: 9781260483741**

### OVERVIEW

Principles and Applications of Electrical Engineering provides an overview of the electrical engineering discipline specifically geared toward non-electrical engineering students. The hallmark feature of the text is its use of practical applications to illustrate important principles. The applications come from every field of engineering and feature exciting technologies. The principal objective of the book is to present the principles of electrical electronic and electromechanical engineering to an audience of engineering majors enrolled in introductory and more advanced or specialized electrical engineering courses. A second objective is to present these principles with a focus on important results and common yet effective analytical and computational tools to solve practical problems. Finally, a third objective of the book is to illustrate by way of concrete fully worked examples a number of relevant applications of electrical engineering. These examples are drawn from the authors' industrial research experience and from ideas contributed by practicing engineers and industrial partners.

### FEATURES

- The book is now divided into five major parts: I. Circuit Analysis II. Systems and Instrumentation III. Analog Electronics IV. Digital Electronics V. Electric Power and Machines
- A continued and enhanced emphasis on problem solving can be found in this edition. All the highlighted "Focus on Problem Solving" boxes have been reviewed and revised to clarify and add additional detail to the steps needed by students to successfully complete end-of-chapter homework problems.
- Additional unguided exercises are provided to test student understanding. Relevant and stimulating applications to practical measurement challenges are included in nearly every chapter.

## CONTENTS

1. Fundamentals of Electric Circuits
2. Equivalent Networks
3. AC Network Analysis
4. Transient Analysis
5. Frequency Response and System Concepts
6. Operational Amplifiers
7. Electronic Instrumentation and Measurements
8. Semiconductors and Diodes
9. Bipolar Junction Transistors: Operation, Circuit Models, and Applications
10. Field-Effect Transistors: Operation, Circuit Models, and Applications
11. Digital Logic Circuits
12. Digital Systems
13. Electric Power Systems
14. Principles of Electromechanics
15. Electric Machines
16. Special-Purpose Electric Machines (Online Chapter)
17. Power Electronics (Online Chapter)
18. Analog Communication Systems (Online Chapter)
19. Digital Communications (Online Chapter)

### Appendices:

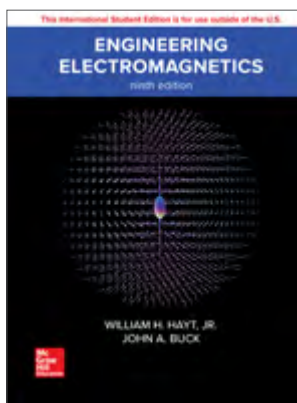
- A. Linear Algebra and Complex Numbers
- B. The Laplace Transform
- C. Fundamentals of Engineering (FE. Examination)
- D. ASCII Character Code

to aid the reader in grasping the difficult concepts. In addition, independent learning is facilitated by the presence of many examples and problems. Important updates and revisions have been included in this edition. One of the most significant is a new chapter on electromagnetic radiation and antennas. This chapter covers the basic principles of radiation, wire antennas, simple arrays, and transmit-receive systems.

## FEATURE

- **New Problems and Pedagogy.** New end-of-chapter problems are added throughout the text, and 130 problems are all new. A "thermometer" icon is included throughout the problem sets to help the instructor select the preferred level of difficulty of homework assignments. Practice problems are also updated and revised.
- **New Coverage--Antennas.** Chapter 14, Antennas, covers important changes in antennas brought upon by the rapid advances in wireless communications.
- **New Coverage -- Rectangular Waves.** The rectangular waveguides coverage has been expanded.
- **Careful Learning Approach.** The book is written to make it easy and possible for the student to learn independently. By applying a carefully graduated scale of difficulty within each chapter, providing numerical examples, a large number of drill problems with answers, and a graduated set of end-of-chapter problems, it is possible for the student to easily learn and absorb the material
- **Student and Instructor Materials.** Located on a companion website. Key components include: illustrations, animations, interactivities, and quizzes. These resources will be of great use to both student and instructor. COSMOS, an online solutions manual organizing system is also provided for the instructor.
- **Strong Attention to Fundamentals and Theory.** The strong attention to fundamentals and theory that have made this book a standard in electrical engineering are maintained and enhanced by the careful and enlightened work of John Buck of Georgia Institute of Technology.

## Electromagnetics



### Engineering Electromagnetics

William H. Hayt, John A. Buck

Edition: 9

2019©

608 Pages

Print: 9781260084566

## OVERVIEW

First published just over 50 years ago and now in its Ninth Edition, Bill Hayt and John Buck's Engineering Electromagnetics is a classic text that has been updated for electromagnetics education today. This widely-respected book stresses fundamental concepts and problem solving, and discusses the material in an understandable and readable way. Numerous illustrations and analogies are provided

## CONTENTS

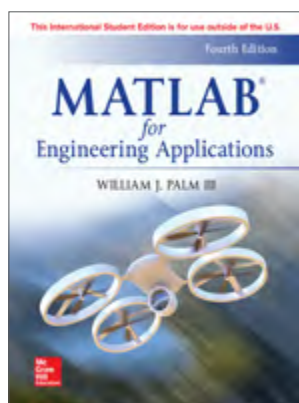
1. Vector Analysis
2. Coulomb's Law and Electric Field Intensity
3. Electric Flux Density, Gauss' Law, and Divergence
4. Energy and Potential
5. Conductors and Dielectrics
6. Capacitance
7. The Steady Magnetic Field

8. Magnetic Forces, Materials and Inductance
9. Time-Varying Fields and Maxwell's Equations
10. Transmission Lines
11. The Uniform Plane Wave
12. Plane Wave Reflection and Dispersion
13. Guided Waves
14. Electromagnetic Radiation and Antennas

#### Appendices:

- A. Vector Analysis
- B. Units
- C. Material Constants
- D. The Uniqueness Theorem
- E. Origins of the Complex Primitivity
- F. Answers to Odd-Numbered Problems

## MATLAB



### MATLAB for Engineering Applications

William J. Palm III

Edition: 4

2019©

608 Pages

Print: 9781260084719

#### OVERVIEW

MATLAB for Engineering Applications is a simple, concise book designed to be useful for beginners and to be kept as a reference. MATLAB is a globally available standard computational tool for engineers and scientists. The terminology, syntax, and the use of the programming language are well defined, and the organization of the material makes it easy to locate information and navigate through the textbook. The text covers all the major capabilities of MATLAB that are useful for beginning students. The text consists of 11 chapters. The first five chapters constitute a basic course in MATLAB. The remaining six chapters are independent of each other and cover more advanced applications of MATLAB, the Control Systems toolbox, Simulink, and the Symbolic Math toolbox.

#### FEATURES

This text incorporates the many suggestions made by reviewers and other users. More examples and homework problems have been added.

- In addition to updating material from the previous edition to include new features, new functions,

and changes in syntax and function names, the text incorporates the many suggestions made by reviewers and other users. More examples and homework problems have been added.

- Advanced programming, function discovery, and regression are now covered in two chapters to allow for flexible coverage.
- Numerous examples and homework problems drawn from all the fields of engineering.
- Students can use the text as a reference in later courses because it contains many tables that summarize the MATLAB commands.
- Expanded coverage of programming includes structured programming and logical variables.
- A full chapter covering Simulink
- Chapter 11 covers the MuPad Notebook Interface. This interface makes it easier to access functions with a symbol palette, with the equations displayed in typeset math. Graphics, animations, and descriptive text can be included to prepare a report.

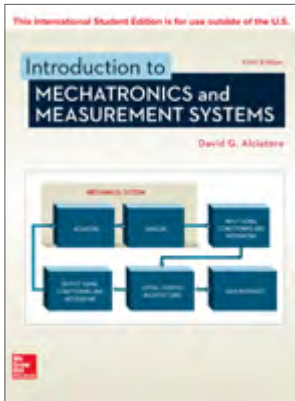
#### CONTENTS

1. An Overview of MATLAB
2. Numeric, Cell, and Structure Arrays
3. Functions
4. Programming with MATLAB
5. Advanced Plotting
6. Model Building and Regression
7. Statistics, Probability, and Interpolation
8. Linear Algebraic Equations
9. Numerical Methods for Calculus and Differential Equations
10. Simulink
11. Symbolic Processing with MATLAB

#### Appendices:

- A. Guide to Commands and Functions In This Text
- B. Animation and Sound in MATLAB
- C. Formatted Output in MATLAB
- D. References
- E. Some Project Suggestions Answers to Selected problems

## Mechatronics



### Introduction to Mechatronics and Measurement Systems

David G. Alciatore

Edition: 5  
2019©

608 Pages

Print: 9781260085198

Connect: 9781260049350

### OVERVIEW

Introduction to Mechatronics and Measurement Systems, Fifth Edition, provides comprehensive and accessible coverage of the field of mechatronics for mechanical, electrical and aerospace engineering majors. The author presents a concise review of electrical circuits, solid-state devices, digital circuits, and motors—all of which are fundamental to understanding mechatronic systems. Mechatronics design considerations are presented throughout the text, and in "Design Example" features.

The text's numerous illustrations, examples, class discussion items, and chapter questions & exercises provide an opportunity to understand and apply mechatronics concepts to actual problems encountered in engineering practice. This text has been tested over several years to ensure accuracy. Introduction to Mechatronics and Measurement Systems, Fifth Edition - is a multifaceted resource which is designed to serve as a text for modern instrumentation and measurements courses, hybrid electrical and mechanical engineering courses replacing traditional circuits and instrumentation courses, as well as for stand-alone mechatronics courses, or the first course in a mechatronics sequence. It can also work for hybrid courses, providing an opportunity to reduce the number of credit hours in a typical mechanical engineering curriculum.

Written by the academic award-winning author and mechanical engineering professor, Dr. David G. Alciatore. The author's webpage (linked to from OLC) has additional computer files and resources, including MATLAB examples, videos demonstrations, and lab exercises.

### FEATURE

- New and expanded mechatronics system flowchart used at the beginning of each chapter.
- Additional end-of-chapter questions throughout the book provide more homework and practice options for professors and students.
- MATLAB solutions added for all MathCAD analysis files provided in previous editions.
- The Laboratory Exercises Manual that supplements and supports this book is now available on-line for free and unlimited use by faculty and students. It is located, along with video demonstrations, on the Lab Book web page at: [mechatronics.colostate.edu/lab\\_book.html](http://mechatronics.colostate.edu/lab_book.html)
- Coverage of New Measurement Technologies including rapidly changing subjects like MEMS, cutting edge sensor technology, and micromachines.
- Design Examples are featured throughout the text to help students learn the material in context.
- Broad Coverage of Mechatronics. The text provides an overview of measurement systems, circuits, interfacing, sensors, actuators and design analysis and synthesis of mechatronic systems.

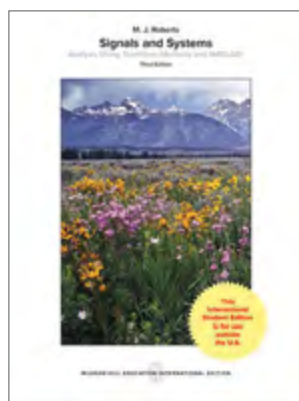
### CONTENTS

1. Introduction
2. Electric Circuits and Components
3. Semiconductor Electronics
4. System Response
5. Analog Signal Processing Using Operational Amplifiers
6. Digital Circuits
7. Microcontroller Programming and Interfacing
8. Data Acquisition
9. Sensors
10. Actuators
11. Mechatronic Systems—Control Architectures and Case Studies

### Appendices:

- A. Measurement Fundamentals
- B. Physical Principles
- C. Mechanics of Materials

## Signals and Systems



### Signals and Systems: Analysis Using Transform Methods and MATLAB

M.J. Roberts

Edition:3

2018©

Print:9781260083606

Connect:9781259989537

### OVERVIEW

This book has been extensively updated while retaining the emphasis on fundamental applications and theory. The text includes a wealth of exercises including drill exercises and more challenging conceptual problems.

### FEATURES

- This edition has 710 end-of-chapter exercises in 14 chapters.
- Available with this text is MHE's Online Learning Center containing a comprehensive appendix on the important MATLAB operations and functions used in signal and system analysis.

### CONTENTS

1. Introduction
2. Mathematical Description of Continuous-Time Signals
3. Discrete-Time Signal Description
4. Description of Systems
5. Time-Domain System Analysis
6. Continuous-Time Fourier Methods
7. Discrete-Time Fourier Methods
8. The Laplace Transform
9. The z Transform
10. Sampling and Signal Processing
11. Frequency Response Analysis
12. Laplace System Analysis
13. z-Transform System Analysis
14. Filter Analysis and Design

### Appendices:

1. Useful Mathematical Relations
2. Continuous-Time Fourier Series Pairs
3. Discrete Fourier Transform Pairs
4. Continuous-Time Fourier Transform Pairs
5. Discrete-Time Fourier Transform Pairs
6. Tables of Laplace Transform Pairs
7. z-Transform Pairs Bibliography Index

## Solid State/Electronic Materials



### Principles of Electronic Materials and Devices

Safa Kasap

Edition:4

2018©

Print:9781259253553

### OVERVIEW

This is one of the few books in the market that has a broad coverage of electronic materials that today's scientists and engineers need. The general treatment of the textbook and various proofs leverage at a semi quantitative level without going into detailed physics.

### FEATURE

- The 346 end-of-chapter problems are graded so that they start with easy concepts and eventually lead to more sophisticated concepts. Difficult problems are identified with an asterisk and many practical applications with diagrams have been included.
- 565 illustrations have been professionally prepared to reflect the concepts and aid the explanations in the text. Several photographs of practical devices and scientists and engineers are added to enhance the learning experience.
- Several chapters have additional topics to allow a more detailed treatment, usually including quantum mechanics or more mathematics.
- The principles are developed with the minimum of mathematics and with the emphasis on physical ideas. Quantum mechanics is part of the course but without its difficult mathematical formalism.

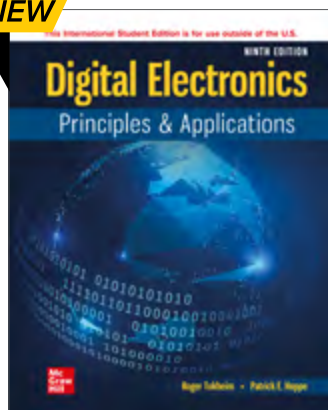
### CONTENTS

1. Elementary Materials Science Concepts
2. Electrical and Thermal Conduction in Solids
3. Elementary Quantum Physics
4. Modern Theory of Solids
5. Semiconductors
6. Semiconductor Devices
7. Dielectric Materials and Insulation
8. Magnetic Properties and Superconductivity
9. Optical Properties of Materials

## ELECTRICITY AND ELECTRONICS

### Digital Electronics

NEW



### Digital Electronics: Principles and Applications

Roger L. Tokheim, Patrick E. Hoppe

Edition: 9  
2022©  
592 Pages  
Mar 2021  
Print: 9781260597868

### OVERVIEW

Digital Electronics: Principles and Applications, 9th edition is an easy-to-read introductory text for students new to the field of digital electronics. Providing entry-level knowledge and skills for a wide range of occupations is the goal of this textbook and its ancillary materials. Concepts are connected to practical applications, and a systems approach is followed that reflects current practice in industry. This concise and practical text can be used in any program needing a quick and readable overview of digital principles.

### FEATURE

- Over one hundred Multisim simulation files have been developed to bring the examples within these chapters to life. These simulation files can be run within Multisim, to provide the students with a first-hand experience with the examples presented in the textbook. Multisim simulation files have also been developed for the laboratory experiments to provide an improved learning experience for the student.

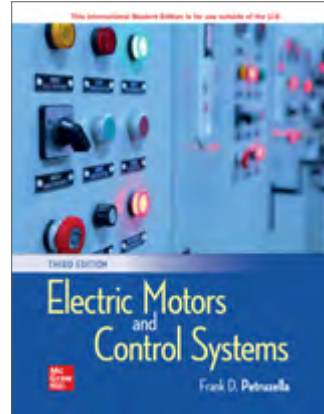
### CONTENTS

1. Digital Electronics
2. Numbers We Use in Digital Electronics
3. Logic Gates
4. Combining Logic Gates
5. IC Specifications and Simple Interfacing
6. Encoding, Decoding, and Seven-Segment Displays
7. Flip-Flops
8. Counters
9. Shift Registers
10. Arithmetic circuits
11. Memories
12. Simple Digital Systems

13. Computer Systems
14. Connecting with Analog Devices

### Appendices:

- A. Solder and the Soldering Process
- B. 2s Complement Conversions



### Electric Motors and Control Systems

Frank Petruzella

Edition:3  
2020©  
352 Pages  
Print: 9781260570144  
Connect:9781264240197

### OVERVIEW

Electric Motors and Control Systems provides an overview of electric motor operation selection installation and control and maintenance for a range of motor types and control systems. This edition presents the most up-to-date information which reflects the current needs of the industry and includes coverage of how motors operate in conjunction with their associated control circuitry. Both older and newer motor technologies are examined. Topics covered include motor types controls installing and maintaining conventional controllers electronic motor drives and programmable logic controllers. This broad-based approach taken makes this text viable for a variety of motors and control systems courses. Content is suitable for colleges technical institutions vocational/technical schools as well as apprenticeship and journeymen training. Electrical apprentices and journeymen will find this book to be invaluable as well as information on maintenance and troubleshooting techniques. Personnel involved in the motor maintenance and repair will find this book to be a useful reference text.

### FEATURES

- **Self-Contained Chapters:** Each chapter constitutes a complete and independent unit of study. All chapters are divided into parts designed to serve as individual lessons. Instructors can easily pick and choose chapters or parts of chapters that meet their particular curriculum needs.
- **How Circuits Operate:** When understanding the operation of a circuit is called for, a bulleted list is used to summarize its operation. The lists are used in place of paragraphs and are especially helpful

for explaining the sequenced steps of a motor control operation.

- **Troubleshooting Scenarios:** Troubleshooting is an important element of any motors and controls course. The chapter troubleshooting scenarios are designed to help students with the aid of the instructor to develop a systematic approach to troubleshooting.

## CONTENTS

### 1. Safety in the Workplace

- Part 1: Protecting against Electrical Shock
- Part 2: Grounding-Lockout-Codes

### 2. Understanding Electrical Drawings

- Part 1: Symbols-Abbreviations-Ladder Diagrams
- Part 2: Wiring-Single Line-Block Diagrams
- Part 3: Monitor Terminal Connections
- Part 4: Motor Nameplate and Terminology
- Part 5: Manual and Magnetic Motor Starters

### 3. Motor Transformers and Distribution Systems

- Part 1: Power Distribution Systems
- Part 2: Transformer Principles
- Part 3: Transformer Connections and Systems

### 4. Motor Control Devices

- Part 1: Manually Operated Switches
- Part 2: Mechanically Operated Switches
- Part 3: Sensors
- Part 4: Actuators

### 5. Electric Motors

- Part 1: Motor Principle
- Part 2: Direct Current Motors
- Part 3: Three-Phase Alternating Current
- Part 4: Single-Phase Alternating Current
- Part 5: Alternating Current Motor Drives
- Part 6: Motor Selection
- Part 7: Motor Installation
- Part 8: Motor Maintenance and Troubleshooting

### 6. Contractors and Motor Starters

- Part 1: Magnetic Contractor
- Part 2: Contractor Ratings, Enclosures, and Solid-State Types
- Part 3: Motor Starters

### 7. Relays

- Part 1: Electromechanical Control Relays
- Part 2: Solid-State Relays
- Part 3: Timing Relays
- Part 4: Latching Relays
- Part 5: Relay Control Logic

### 8. Motor Control Circuits

- Part 1: NEC Motor Installation Requirements
- Part 2: Motor Starting
- Part 3: Motor Reversing and Jogging
- Part 4: Motor Stopping
- Part 5: Motor Speed

### 9. Motor Control Electronics

- Part 1: Semiconductor Diodes
- Part 2: Transistors
- Part 3: Thyristors
- Part 4: Integrated Circuits (ICs)

### 10. Adjustable-Speed Drives and PLC Installations

- Part 1: AC Motor Drive Fundamentals
- Part 2: VFD Installation and Programming Parameters
- Part 3: DC Motors Drive Fundamentals
- Part 4: Programmable Logic Controllers (PLCs)

## Electronic Principles



### Electronic Principles

Albert Paul Malvino, David J. Bates, Patrick E. Hoppe

Edition: 9

2021©

1,120 Pages

Print: 9781260570564

Connect: 9781260447934

## OVERVIEW

Malvino's Electronic Principles offers students a definitive overview of electronic circuits and devices. Expert knowledge of electronic devices is presented in a stimulating clearly written conversational style. The new streamlined book design is full-color throughout with ample clear illustrations. Greater emphasis on modern integrated circuit (IC) technology and the revision of nearly one third of the previous edition's chapter problems and review questions refresh this text while retaining its proven approach. The content gives clear accessible coverage of basic electronics concepts in the first half of the book then applies these to the important electronic circuits and devices most widely used in today's industry. In addition to the text there is a wealth of supplementary material included for both student and instructor.

## FEATURES

- Malvino's Electronic Principles combines proven expertise in all aspects of electronics with a student-friendly, contemporary appearance. It is written in a conversational style at a technician level.
- The "Good to Know" feature offers practical information related to topics explained on that page of the text.

## CONTENTS

1. Introduction
2. Semiconductors
3. Diode Theory
4. Diode Circuits
5. Special-Purpose Diodes
6. Bipolar Junction Transistors
7. Transistor Fundamentals
8. Transistor Biasing
9. AC Models
10. Voltage Amplifiers
11. CC and CB Amplifiers
12. Power Amplifiers
13. JFETs
14. MOSFETs
15. Thyristors
16. Frequency Effects
17. Differential Amplifiers
18. Operational Amplifiers
19. Negative Feedback
20. Linear Op-Amp Circuits
21. Active Filters
22. Nonlinear Op-Amp Circuits
23. Oscillators
24. Regulated Power Supplies



### Electronics: Principles and Applications

Charles A. Schuler

Edition:9

2019©

624 Pages

Print:9781260084795

## OVERVIEW

The ninth edition of *Electronics: Principles and Applications* is based on the same philosophy of previous editions. It continues to be written so that a student needs no prior knowledge of electrical theory and principles and at a level that allows students with limited math and reading skills can gain a clear understanding and the entry-level knowledge and skills for a wide range of occupations within electricity and electronics.

## FEATURE

- NEW examples, self-test questions and Chapter review questions and problems in every chapter!
- NEW Experiments Manual designed specifically for this text contains a comprehensive text, wide

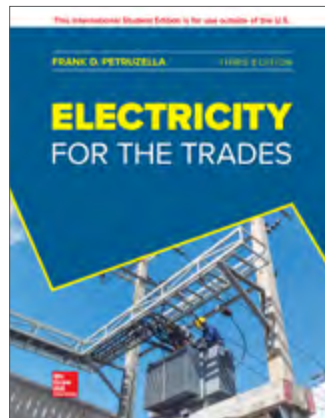
variety of lab exercises and experiments and additional problems for each chapter in the text.

- NEW coverage of renewable energy topics.
- Troubleshooting examples are included throughout as well as within its own chapter.
- Practical and applied information; devices, circuits and applications are typical of those used in all phases of electronics

## CONTENTS

1. Introduction
2. Semiconductors
3. Diodes
4. Power Supplies
5. Transistors
6. Introduction to Small-Signal Amplifiers
7. More About Small-Signal Amplifiers
8. Large-Signal Amplifiers
9. Operational Amplifiers
10. Troubleshooting
11. Oscillators
12. Communications
13. Integrated Circuits
14. Electronic Control Devices and Circuits
15. Regulated Power Supplies
16. Digital Signal Processing

### Introduction to Electricity/Electronics, DC/AC Circuits



### Electricity for the Trades

Frank D. Petruzella

Edition:3

2020©

256 Pages

Print:9781260547849

## OVERVIEW

Frank Petruzella's *Electricity for the Trades* sets a new standard for textbooks on electrical training. Frank Petruzella is a tradesman with more than 30 years of experience. This well-illustrated text provides an excellent foundation of electrical and electronic principles. This edition has been modified to prepare students for specialization in the electrical trades or one of the many related trades that require a special understanding of electrical fundamentals.

## FEATURE

- New to this edition is the Simulation Lab Manual that accompanies the text. Available through McGraw Hill Connect, it features more than 250 Multisim simulated lab exercises integrated into each chapter of the text.
- Each Multisim circuit file comes complete with on-screen detailed instructions for carrying out circuit simulation problems and exercises.
- All lab components have been preselected and with their required values requiring a minimum of setup. Students spend more time experimenting rather than selecting, dragging and assigning values to components.
- On-screen formulas and graphics from the text are designed to integrate the material covered in the text with the simulation assignment.
- For this edition, Multisim labs have been created to operate using National Instruments' NI Multisim Student Edition Version 12 or higher.

## CONTENTS

### Section 1. Fundamentals of Electricity

1. Safety
2. Atoms and Electricity
3. Sources and Characteristics of Electricity
4. Electrical Quantities and OHM's Law
5. Simple, Series, and Parallel Circuits
6. Measuring Voltage, Current, and Resistance
7. OHM's Law
8. Resistors
9. Electricity and Magnetism
10. Electric Power and Energy

### Section 2. Direct Current (DC) Circuits

11. Solving The DC Series Circuit
12. Solving The DC Parallel Circuit
13. Solving The DC Series-Parallel Circuit
14. Network Theorems

### Section 3. Alternating Current (AC) Circuits

15. Alternating Current Fundamentals
16. Inductance and Capacitance
17. Resistive, Inductive, Capacitive (RLC) Series Circuits
18. Resistive, Inductive, Capacitive (RLC) Parallel Circuits
19. Transformers

### Section 4. Electrical Installation and Maintenance

20. Circuit Conductors and Wire Sizes
21. Fuses and Circuit Breakers
22. Relays
23. Lighting Equipment
24. AC Motors
25. Electric Controls



## Grob's Basic Electronics

Mitchel E Schultz

Edition:13

2021©

1,312 Pages

Print:99781260571448

Connect:9781260445343

## OVERVIEW

Grob's Basic Electronics provides thorough comprehensive coverage of all of the important fundamentals of DC and AC circuit theory. It also covers the most common electronic devices and their applications. The book has an endless number of worked-out examples showing detailed step-by-step solutions. Also a multiple-choice self-test as well as an abundance of homework problems appear at the end of every chapter in the book. New to the 13th edition is a chapter on "Three-Phase AC Power Systems". Also additional real-world applications have been added to this edition. The book is written for the beginning student who has no previous knowledge about electricity and electronics. A basic knowledge of algebra and trigonometry is beneficial for those students using this book.

## FEATURE

- **New "Appendix G—Electrostatic Discharge (ESD)"** provides detailed coverage of the causes of ESD as well as its damaging effects. Most importantly, this appendix provides detailed information on how to prevent the build-up of ESD and in turn how to prevent ESD from damaging sensitive electronic components and assemblies.
- Heavy emphasis of real-world applications at the end of several chapters throughout the book. These real-world applications bring to life the concepts covered in a specific chapter.
- Laboratory Application Assignments are located at the end of every chapter. These hands-on exercises allow students to build and test circuits in a laboratory environment. Each lab application assignment reinforces one or more of the main topics covered in the chapter.
- MultiSIM activities continue to be a key component in this edition of Grob's Basic Electronics.

## CONTENTS

1. Electricity
2. Resistors
3. Ohm's Law
4. Series Circuits
5. Parallel Circuits
6. Series-Parallel Circuits
7. Voltage Dividers and Current Dividers
8. Analog and Digital Multimeters
9. Kirchhoff's Laws
10. Network Theorems
11. Conductors and Insulators
12. Batteries
13. Magnetism
14. Electromagnetism
15. Alternating Voltage and Current
16. Capacitance
17. Capacitive Reactance
18. Capacitive Circuits
19. Inductance
20. Inductive Reactance
21. Inductive Circuits
22. RC and L/R Time Constants
23. Alternating Current Circuits
24. Complex Numbers for AC Circuits
25. Resonance
26. Filters
27. Three-Phase AC Power Systems
28. Diodes and Diode Applications
29. Bipolar Junction Transistors
30. Transistor Amplifiers
31. Field Effect Transistors
32. Power Amplifiers
33. Thyristors
34. Operational Amplifiers

### Appendices:

- A. Electrical Symbols and Abbreviations
- B. Solder and the Soldering Process
- C. Listing of Preferred Resistance Values
- D. Component Schematic Symbols
- E. Using the Oscilloscope
- F. Introduction to Multisim
- G. Electrostatic Discharge (ESD)

## ENGINEERING GRAPHICS/ DRAWING & CAD Engineering Graphics and Drawing



### Fundamentals of Solid Modeling and Graphics Communication

Gary Robert Bertoline,  
Eric N Wiebe, William A Ross,  
Nathan W Hartman

Edition: 7  
2019©  
792 Pages  
Print: 9781260084801  
Connect: 9781259534386

## OVERVIEW

A thoroughly contemporary approach to teaching essential engineering graphics skills has made Fundamentals of Solid Modeling and Graphics Communication the leading textbook in introductory engineering graphics courses. The seventh edition continues to integrate design concepts and the use of 3D CAD modeling into its outstanding coverage of the basic visualization and sketching techniques that enable students to create and communicate graphic ideas effectively. The primary goal of this text is to help the engineering and technology student learn the techniques and standard practices of technical graphics, so that design ideas can be adequately communicated and produced. As in past editions, the authors have included many examples of how graphics communication pertains to "real-world" engineering design, including current industry practices and breakthroughs.

## FEATURE

- Connect and SmartBook are available for the first time with this edition.
- New and revised exercises and end-of-chapter problems also emphasize visualization, graphical and spatial problem solving through the use of interactive solid modeling, sketching and related documentation.
- 3-D solid modeling documentation and sketches. Solid modeling creation and editing techniques are presented with new learning activities, as well as discussions of standards and CAD data exchange. The 3-D solid modeling activities focus on the assembly, design, and function of products through the inclusion of new assembly modeling projects.
- Outstanding pedagogy, including "Dream High Tech Job" boxes which introduce students to

interesting careers and people in the fields of graphics, CAD, and design and also "Design in Industry" boxes which cover some aspect of design as practiced in industry.

- Step-by-step illustrated drawing technique examples clearly demonstrate how to create graphics and solve problems.
- Over 500 problems are included. Most end-of-chapter problems are parts or assemblies of modern devices and products.

## CONTENTS

1. The Design Process
2. Role of the 3D Model in the Product Lifecycle
3. Sketching and Basic Geometry Definition
4. Feature Based Modeling
5. Introduction to Assembly Modeling
6. Product Manufacturing Information (PMI)
7. Standard Parts
8. Data Management, Exchange, and Translation
9. Leveraging the 3D Model in the Product Lifecycle
10. Engineering Drawings from Parts and Assembly Models

## Appendices



### Introduction to Solid Modeling Using SolidWorks 2021

William E. Howard, Joseph Musto

Edition: 17  
2022©

448 Pages

Aug 2021

Print: 9781265242633

## OVERVIEW

This text presents a tutorial-based introduction to solid modeling and the SolidWorks software. Although the tutorials can be followed by anyone interested in learning the software, it is geared toward freshman engineering students or high school students interested in engineering. Accordingly, the examples and problems are based on the authors' experience with teaching engineering students.

This text primarily consists of chapter-long tutorials, which introduce both basic concepts in solid modeling (such as part modeling, drawing creation, and assembly modeling) and more advanced applications of solid modeling in engineering analysis and design (such as mechanism modeling, mold creation, sheet metal bending, and rapid prototyping). Each tutorial is

organized as "keystroke-level" instructions, designed to teach the use of the software.

## FEATURES

- Design Intent sidebars teach students to think about how the model will be used and/or modified as they are creating the solid model.
- The tutorial format of this text makes it easy to complete each tutorial in a single class session.
- Future Study sidebars show students examples of where the software will be used in more advanced engineering courses.

## CONTENTS

### Part 1: Learning SOLIDWORKS

1. Basic Part Modeling Techniques
2. Engineering Drawings
3. Additional Part Modeling Techniques
4. Advanced Part Modeling
5. Parametric Modeling Techniques
6. Creation of Assembly Models
7. Advanced Assembly Operations
8. Assembly Drawings

### Part 2: Applications of SOLIDWORKS

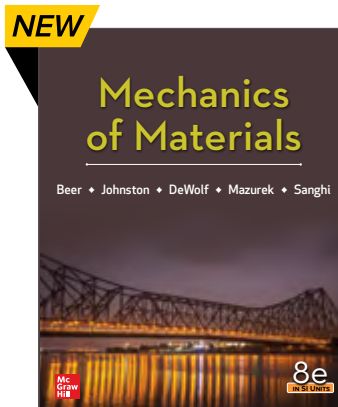
9. Generation of 2-D Layouts
10. Solution of Vector Problems
11. Analysis of Mechanisms
12. Design of Molds and Sheet Metal Parts
13. The Use of SOLIDWORKS to Accelerate the Product Development Cycle

## Appendices

- A: Recommended Settings
- B: The SOLIDWORKS Interface: Use and Customization

## ENGINEERING MECHANICS

### Strength of Materials / Mechanics of Materials



### Mechanics of Materials, SI Edition

Ferdinand Beer, E. Johnston, John DeWolf, David Mazurek

Edition: 8

2020©

896 Pages

July 2020

Print: 9789813158979

Connect: 9789390219445

## OVERVIEW

Mechanics of Materials provides a precise presentation of subjects illustrated with numerous

engineering examples that students both understand and relate to theory and application. The tried and true methodology for presenting material gives students the best opportunity to succeed in this course. From the detailed examples to the homework problems to the carefully developed solutions manual instructors and students can be confident the material is clearly explained and accurately represented.

### FEATURES

- Over 25% of the assigned problems from the previous edition have been replaced or revised.
- Photographic content has been modified to provide a more suitable conceptual context to the important principles discussed.
- This edition includes videos that show key mechanics of materials experiments being conducted.
- Connect has been updated to include a new ebook format that enables off-line reading, free-body diagram drawing problems and process-oriented problems have been added to the question bank and HTML5 Dynamic Interactivities will be in the online learning center.

### CONTENTS

1. Introduction-Concept of Stress
2. Stress and Strain-Axial Loading
3. Torsion
4. Pure Bending
5. Analysis and Design of Beams for Bending
6. Shearing Stresses in Beams and Thin-Walled Members
7. Transformations of Stress and Strain
8. Principal Stresses Under a Given Loading
9. Deflection of Beams
10. Columns
11. Energy Methods

### Appendices

- A: Principal Units Used in Mechanics
- B: Centroids and Moments of Areas
- C: Centroids and Moments of Inertia of Common Geometric Shapes
- D: Typical Properties of Selected Materials Used in Engineering
- E: Properties of Rolled-Steel Shapes
- F: Beam Deflections and Slopes
- G: Fundamentals of Engineering Examination

## GENERAL ENGINEERING B.E.S.T

**NEW**



### Introduction to Graphic Communication for Engineers (B.E.S.T. Series)

**Gary Robert Bertoline**

**Edition: 5**

**2022©**

**272 Pages**

**Mar 2021**

**Print: 9781264500154**

**Connect: 9781264553587**

### OVERVIEW

Introduction to Graphics Communications for Engineers 5th edition is a workbook that teaches the fundamentals of sketching and engineering graphics principles in addition to improving the visualization abilities of students. The primary goal of this text is to assist students in learning the techniques and standards of communicating graphically so that design ideas can be clearly communicated and produced. This introductory text is for students in technical drawing and engineering graphics courses at both two- and four-year schools.

### FEATURES

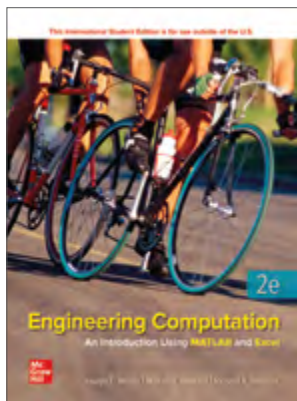
- A new section on the importance of graphics in the design process has been added. In-chapter Practice Problems give students the opportunity to apply their skills while working through each chapter.
- Student-Friendly Pedagogy includes a list of objectives at the beginning of chapters, step-by-step instructions on how to draw, and a wide assortment of problems that can be assigned to reinforce concepts.
- End-of-Chapter Sketching Problems reinforce what students are learning in the chapter.
- Design Problems provide students an opportunity to exercise the various stages of the design process. The problems provide an ideation stage, a decision-making stage, design creation stage, and the documentation stage. Each problem includes provisions for sketching, 3-D modeling, and documentation of the student's final solution to the problem.

### CONTENTS

1. Introduction to Graphics Communications
2. Sketching and Text

3. Section and Auxiliary Views
  4. Dimensioning and Tolerancing
  5. Reading and Constructing
  6. Design and 3-D Modeling Supplement Design Problems Additional Problems and Worksheets
- Appendix: Decimal and Millimeter Equivalents

## Computing/ Programming



### Engineering Computation: An Introduction Using MATLAB and Excel

Joseph Musto, William E. Howard, Richard R. Williams

Edition: 2  
2021©  
336 Pages  
Print: 9781260570717

## OVERVIEW

The strength of Engineering Computation is its combination of the two most important computational programs in the engineering marketplace today MATLAB® and Excel®. Engineering students will need to know how to use both programs to solve problems. The focus of this text is on the fundamentals of engineering computing: algorithm development selection of appropriate tools documentation of solutions and verification and interpretation of results.

## FEATURE

- Updated for the latest versions of MATLAB and Excel.
- New end of-chapter problems have been created which offer enhanced opportunities to practice techniques learned in the text.
- New tutorial involving symbolic computation in MATLAB has been developed which offers a new opportunity to learn new techniques.

## CONTENTS

### Part 1: Computational Tools

1. Computing Tools
2. Excel Fundamentals
3. MATLAB Fundamentals
4. MATLAB Programming
5. Plotting Data

### Part 2: Engineering Applications

6. Finding the Roots of Equations
7. Matrix Mathematics
8. Solving Simultaneous Equations

9. Numerical Integration
10. Optimization

## Engineering Design



### Engineering Design

George Dieter, Linda C. Schmidt

Edition: 6  
2021©  
912 Pages  
Print: 9781260575279  
Connect: 9781260442229

## OVERVIEW

Dieter's Engineering Design represents a major update of this classic textbook for senior design courses. As in previous editions Engineering Design provides a broader overview of topics than most design texts and contains much more prescriptive guidance on how to carry out design. Dieter focuses on material selection as well as how to implement the design process. Engineering Design provides the senior mechanical engineering students with a realistic understanding of the design process. It is written from the viewpoint that design is the central activity of the engineering profession and it is more concerned with developing attitudes and approaches than in presenting design techniques and tools.

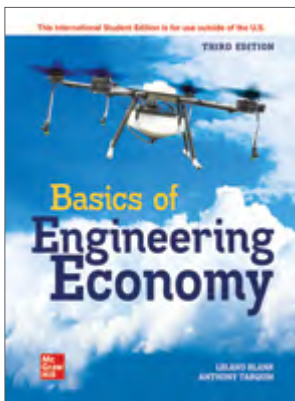
## FEATURE

- There has been a noteworthy reordering of chapters in the sixth edition so to align them more closely to the overall design process utilized by this text. While the size of the printed book has been reduced, the scope of the text remains the same, with a few new and valuable sections.
- A significant change in this edition has been to move theoretical and historical content online. This material is tangential to core information and may divert student attention from the application of the design process. Chapters 15-18 have been moved online.
- New Topics:
  - Information Literacy
  - Introduction to WordTree
  - Biomimicry Design Generation Methods

## CONTENTS

1. Engineering Design
2. Product Development Process
3. Problem Definition and Need Identification
4. Team Behavior and Tools
5. Gathering Information
6. Concept Generation
7. Decision Making and Concept Selection
8. Embodiment Design
9. Detail Design
10. Design for Sustainability and the Environment
11. Materials Selection
12. Design with Materials
13. Design for Manufacturing
14. Risk, Reliability, and Safety
15. Quality, Robust Design, and Optimization
16. Economic Decision Making
17. Cost Evaluation
18. Legal and Ethical Issues in Engineering Design (available online)

## Engineering Economy



### Basics of Engineering Economy

Leland T Blank, Anthony Tarquin

Edition: 3  
2021©  
512 Pages  
Print: 9781260571141  
Connect: 9781260487138

## OVERVIEW

The Basics of Engineering Economy is designed to assist students in understanding and using the fundamental concepts and methods of economic evaluation to materially enhance rational data-centered decision-making in all these dimensions. This text covers the basic techniques and applications of engineering economy for all disciplines in the engineering profession. The third edition concentrates on fundamental techniques and their applications the efficient use of spreadsheets and a rich coverage of personal financial situations in which engineering economy techniques can be applied easily and rapidly. The text presents the topics in condensed formats when compared to the larger text Engineering Economy.

## FEATURE

- Early introduction of popular topics: risk, inflation, purchasing power, and cost of capital. Instructors can cover these fundamentals much earlier in the syllabus, if desired. Expanded coverage on each subject is presented and cross-referenced in later chapters.
- Personal finance (PF) evaluation from credit cards, car loans, and mortgages to investment in stocks, bonds and other securities for savings and retirement planning is greatly emphasized. Students learn to use the tools and techniques in making their own financial decisions.
- Virtually all end-of-chapter problems are newly developed or rewritten. Of the nearly 900 EOC problems, approximately 90% are new or rewritten. However, most in-chapter examples have remained the same as second edition to require less rework of class materials by instructors.
- Algorithmic end-of-chapter problems in Connect. Two or more parameters are randomly varied with each viewing; auto grading via Blackboard or other classroom mgmt. system. This provides security and less compromises from cheating, copying, etc. of problems and solutions for quizzes, exams, homework, classroom exercises
- Expanded spreadsheet (ss) usage throughout with greatly enhanced after-tax ss coverage. SS examples are integrated with factor-based solution. After-tax template provides inclusion of loans (debt capital) and repayment, inflation, depreciation, etc.

## CONTENTS

1. Foundations of Engineering Economy
2. Factors: How Time and Interest Affect Money
3. Nominal and Effective Interest Rates
4. Present Worth Analysis
5. Annual Worth Analysis
6. Rate of Return Analysis
7. Benefit/Cost Analysis and Public Sector Projects
8. Breakeven, Payback, Sensitivity, and Risk Analysis
9. Replacement and Retention Decisions
10. Effects of Inflation
11. Cost Estimation and Allocation
12. Depreciation Methods
13. After-Tax Economic Analysis
14. Alternative Evaluation Including Noneconomic Attribute

## Appendices:

- A. Using Spreadsheets and Microsoft Excel
- B. Accounting Reports and Business Ratios
- C. Glossary of Terms and Symbols



## Engineering Economy

**Leland Blank, Anthony Tarquin**

**Edition:8**

**2018©**

**Print: 9781259253294**

### OVERVIEW

This latest update presents a crisp, bold new design using color highlighting and icons to focus on important concepts terms equations and decision guidelines. There are new features, new topics (such as ethics and staged decision making) and new online tools. No compromise on coverage examples or the well-accepted writing style of this popular text. Solved examples problems and case studies target many of the current engineering challenges in areas such as energy ethics the environment and the world's changing economics.

### FEATURES

Expanded questions for either review or preparation for the Fundamentals of Engineering (FE) Exam.

### CONTENTS

#### Learning Stage 1 – The Fundamentals

1. Foundations of Engineering Economy
2. Factors: How Time and Interest Affect Money
3. Combining Factors and Spreadsheet Functions
4. Nominal and Effective Interest Rates

#### Learning Stage 2 – Basic Analysis Tools

5. Present Worth Analysis
6. Annual Worth Analysis
7. Rate of Return Analysis: One Project
8. Rate of Return Analysis: Multiple Alternatives
9. Benefit/Cost Analysis and Public Sector Economics

#### Learning Stage 2 – Epilogue: Selecting the Basic Analysis Tool

#### Learning Stage 3 – Making Decisions

10. Project Financing and Non-economic Attributes
11. Replacement and Retention Decisions
12. Independent Projects With Budget Limitation
13. Breakeven and Payback Analysis

#### Learning Stage 4 – Rounding Out the Study

14. Effects of Inflation

15. Cost Estimation and Indirect Cost Allocation
16. Depreciation Methods
17. After-Tax Economic Analysis
18. Sensitivity Analysis and Staged Decisions
19. More on Variation and Decision Making under Risk

### Appendices:

- A. Using Spreadsheets and Microsoft Excel
- B. Basics of Accounting Reports and Business Ratios
- C. Code of Ethics for Engineers
- D. Alternate Methods for Equivalence Calculations
- E. Glossary of Concepts and Terms

## Engineering Graphics and Drawing

**NEW**



### Introduction to Solid Modeling Using SolidWorks 2021

**William E. Howard, Joseph Musto**

**Edition:17**

**2022©**

**448 Pages**

**Aug 2021**

**Print: 9781265242633**

### OVERVIEW

This text presents a tutorial-based introduction to solid modeling and the SolidWorks software. Although the tutorials can be followed by anyone interested in learning the software, it is geared toward freshman engineering students or high school students interested in engineering. Accordingly, the examples and problems are based on the authors' experience with teaching engineering students.

This text primarily consists of chapter-long tutorials, which introduce both basic concepts in solid modeling (such as part modeling, drawing creation, and assembly modeling) and more advanced applications of solid modeling in engineering analysis and design (such as mechanism modeling, mold creation, sheet metal bending, and rapid prototyping). Each tutorial is organized as "keystroke-level" instructions, designed to teach the use of the software.

### FEATURE

- Design Intent sidebars teach students to think about how the model will be used and/or modified as they are creating the solid model.

- The tutorial format of this text makes it easy to complete each tutorial in a single class session.
- Future Study sidebars show students examples of where the software will be used in more advanced engineering courses.

### CONTENTS

#### Part 1: Learning SOLIDWORKS

1. Basic Part Modeling Techniques
2. Engineering Drawings
3. Additional Part Modeling Techniques
4. Advanced Part Modeling
5. Parametric Modeling Techniques
6. Creation of Assembly Models
7. Advanced Assembly Operations
8. Assembly Drawings

#### Part 2: Applications of SOLIDWORKS

9. Generation of 2-D Layouts
10. Solution of Vector Problems
11. Analysis of Mechanisms
12. Design of Molds and Sheet Metal Parts
13. The Use of SOLIDWORKS to Accelerate the Product Development Cycle

#### Appendices:

- A. Recommended Settings
- B. The SOLIDWORKS Interface: Use and Customization

their careers and their lives. The text features a unique approach highlighted by an engaging writing style that explains difficult concepts clearly and the use of contemporary real-world data sets to help motivate students and show direct connections to industry and research. While focusing on practical applications of statistics the text makes extensive use of examples to motivate fundamental concepts and to develop intuition.

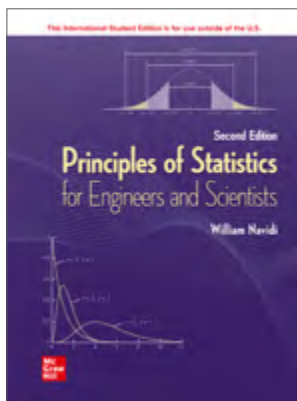
### FEATURES

- Outstanding Examples & Exercises provides a precise presentation of the subject illustrated with numerous engineering examples the students both understand and relate to theory and application. Teaching is easier when the problems are understandable and make sense to students!
- Flexible presentation of probability addresses the needs of different courses. Allowing for a mathematically rigorous approach, the major results are derived from axioms, with proofs given for most of them. Each result is illustrated with an example or two to promote intuitive understanding.
- Contemporary, real world data sets, are one of the defining features of this text. With a fresh approach to the subject, the author uses contemporary data sets to help motivate students and show direct connection to industry and research.

### CONTENTS

1. Sampling and Descriptive Statistics
2. Summarizing Bivariate Data
3. Probability
4. Commonly Used Distributions
5. Point and Interval Estimation for a Single Sample
6. Hypothesis Tests for a Single Sample
7. Inferences for Two Samples
8. Inference in Linear Models
9. Factorial Experiments
10. Statistical Quality Control

## Engineering Statistics



### Principles of Statistics for Engineers and Scientists

William Navidi

Edition:2

2021©

624 Pages

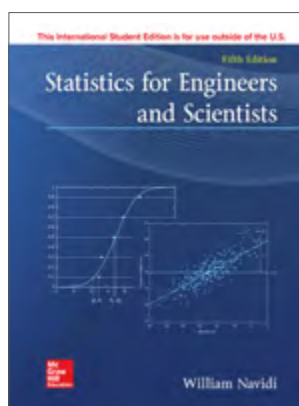
Apr 2020

Print: 9781260570731

Connect: 9781260442199

### OVERVIEW

Principles of Statistics for Engineers and Scientists offers the same crystal clear presentation of applied statistics as Bill Navidi's Statistics for Engineers and Scientists text in a manner especially designed for the needs of a one-semester course that is focused on applications. By presenting ideas in the context of real-world data sets and with plentiful examples of computer output the book is great for motivating students to understand the importance of statistics in



## Statistics for Engineers and Scientists

William Navidi

Edition: 5

2020©

352 Pages

Print: 9781260547887

Connect: 9781260430967

### OVERVIEW

Statistics for Engineers and Scientists stands out for its crystal clear presentation of applied statistics. The book takes a practical approach to methods of statistical modeling and data analysis that are most often used in scientific work. This edition features a unique approach highlighted by an engaging writing style that explains difficult concepts clearly along with the use of contemporary real-world data sets to help motivate students and show direct connections to industry and research. While focusing on practical applications of statistics the text makes extensive use of examples to motivate fundamental concepts and to develop intuition.

### FEATURES

- A large number of new exercises have been included, many of which involve real data from recently published sources.
- Flexible presentation of probability addresses the needs of different courses. Allowing for a mathematically rigorous approach, the major results are derived from axioms, with proofs given for most of them. Each result is illustrated with an example or two to promote intuitive understanding.
- Contemporary, real-world data sets are one of the defining features of this text. With a fresh approach to the subject, the author uses contemporary data sets to help motivate students and show direct connection to industry and research.

### CONTENTS

1. Sampling and Descriptive Statistics
2. Probability
3. Propagation of Error
4. Commonly Used Distributions
5. Confidence Intervals
6. Hypothesis Testing
7. Correlation and Simple Linear Regression
8. Multiple Regression

9. Factorial Experiments
10. Statistical Quality Control

### Appendices:

- A. Tables
- B. Partial Derivatives
- C. Suggestions for Further Reading

Answers to Odd-Numbered Exercises

## Entrepreneurship



## Technology Ventures: From Idea to Enterprise

Thomas H. Byers, Richard C. Dorf, Andrew Nelson

Edition: 5

2019©

592 Pages

Print: 9781260085082

Connect: 9781260048551

### OVERVIEW

For business, engineering, science, and professional students who demand a comprehensive guide to high-growth entrepreneurship, Technology Ventures is the leading resource for analyzing opportunities and building new enterprises. Drawing on the latest academic research and practitioner insights, Technology Ventures integrates clear theoretical frameworks with action-oriented examples and exercises. Its broad perspective on "technology," including clean tech, information technology, and the life sciences - ensures wide-ranging appeal to anyone with an interest in high-potential ventures. Entrepreneurship is playing a vital role in finding solutions to the huge challenges facing civilization, including health, communications, security, infrastructure, education, energy and the environment. Coverage on customer engagement, the customer development process, and the latest insights on business model design, have been expanded. Special attention has been paid to university technology commercialization, open source innovation, and opportunities in mobile, digital health, 3D printing, and energy tech. The organization of key topics such as: intellectual property, the new venture organizations, and marketing and sales, has been enhanced. Also available with this edition are additional web-based resources, including syllabi and presentations, additional cases and business plans, and hundreds of videos of entrepreneurs and leaders.

## FEATURES

- A set of 20 fundamental principles are developed and defined throughout the book. Each chapter opens with a key question and outlines its content and objectives.
- Examples of cutting-edge technologies illustrate concepts in a shaded-box format. Exercises are offered at the end of each chapter to test comprehension of the concepts.
- A special exercise called the “venture challenge” guides readers through a chapter-by-chapter formation of a new enterprise. At the end of each chapter's narrative, a successful enterprise is profiled in a special "spotlight" section.
- Methods and tools for the development of a business plan are gathered into one chapter, which includes an annotated table of contents. Appendix A includes a sample business plan, as well.
- Eight comprehensive cases are included in Appendix B. Additional cases from Harvard and ECCH are recommended on the textbooks websites.
- A collection of suggested videos from world-class entrepreneurs, investors, and teachers is listed at the end of each chapter and provided on the textbooks websites.

## CONTENTS

### Part 1: Venture Opportunity and Strategy

1. Venture Opportunity and Strategy
2. Opportunities
3. Vision and the Business Model
4. Competitive Strategy
5. Innovation Strategies

### Part 2: Concept Development and Venture Formation

6. Concept Development and Venture Formation
7. Risk and Return
8. Creativity and Product Development
9. Marketing and Sales
10. Types of Ventures

### Part 3: Intellectual Property, Organizations, and Operations

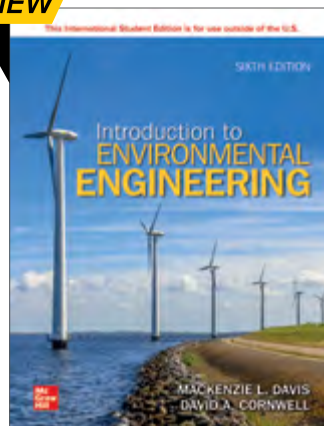
11. Intellectual Property
12. The New Enterprise Organization
13. Acquiring and Organizing Resources
14. Management of Operations
15. Acquisitions and Global Expansion

### Part 4: Financing and Leading the Enterprise

16. Financing and Leading the Enterprise
17. The Financial Plan
18. Sources of Capital
19. Deal Presentations and Negotiations
20. Leading Ventures to Success

## Environmental Engineering

**NEW**



### Introduction to Environmental Engineering

**Mackenzie L. Davis,  
Susan J. Masten**

**Edition: 6**

**2022©**

**1,056 Pages**

**April 2021**

**Print: 9781260598025**

**Connect: 9781264567874**

## OVERVIEW

Introduction to Environmental Engineering 6th edition contains the fundamental science and engineering principles needed for introductory courses and used as the basis for more advanced courses in environmental engineering. Updated with latest EPA regulations Davis and Cornwell apply the concepts of sustainability and materials and energy balance as a means of understanding and solving environmental engineering issues. With over 720 end-of-chapter problems as well as provocative discussion questions and a helpful list of review items found at the end of each chapter the text is both a comprehensible and comprehensive tool for any environmental engineering course. Standards and Laws are the most current and up-to-date for an environmental engineering text.

## CONTENTS

1. Introduction
2. Materials and Energy Balances
3. Risk Assessment
4. Water Resources Engineering
5. Water Chemistry
6. Water Treatment
7. Water Pollution
8. Wastewater Treatment
9. Air Pollution
10. Noise Pollution
11. Solid Waste Management
12. Hazardous Waste Management
13. Sustainability and Green Engineering
14. Ionizing Radiation

### Appendices:

- A. Properties of Air, Water, and Selected Chemicals
- B. Noise Computation Tables and Nomographs
- C. U.S. Customary System Units Conversion Factors



## Principles of Environmental Engineering & Science

Mackenzie L. Davis,  
Susan J. Masten

Edition: 4  
2020©  
864 Pages  
Print: 9781260548020

### OVERVIEW

Principles of Environmental Engineering is intended for a course in introductory environmental engineering for sophomore- or junior-level students. This text provides a background in fundamental science and engineering principles of environmental engineering for students who may or may not become environmental engineers. Principles places more emphasis on scientific principles ethics and safety and focuses less on engineering design. The text exposes students to a broad range of environmental topics—including risk management water quality and treatment air pollution hazardous waste solid waste and ionizing radiation as well as discussion of relevant regulations and practices. The book also uses mass and energy balance as a tool for understanding environmental processes and solving environmental engineering problems.

### FEATURE

- The fourth edition has been thoroughly revised and updated. FE-formatted problems have been added to the appropriate chapters.
- New case studies have been added to many of the chapters.

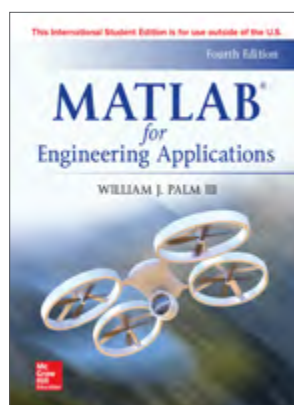
### CONTENTS

1. Introduction
2. Chemistry
3. Biology
4. Materials and Energy Balances
5. Ecosystems
6. Risk Perception, Assessment and Management
7. Hydrology
8. Sustainability
9. Water Quality Management
10. Water Treatment
11. Wastewater Treatment
12. Air Pollution
13. Solid Waste Engineering
14. Hazardous Waste Management
15. Noise Pollution
16. Ionizing Radiation

### Appendices:

- A. Properties of Air, Water, and Selected Chemicals
- B. List of Elements with their Symbols and Atomic Masses
- C. Periodic Table of Chemical Elements
- D. Useful Unit Conversion and Prefixes
- E. Greek Alphabet

## Foundations of Engineering



## MATLAB for Engineering Applications

William J. Palm III

Edition: 4  
2019©  
608 Pages  
Print: 9781260084719

### OVERVIEW

MATLAB for Engineering Applications is a simple, concise book designed to be useful for beginners and to be kept as a reference. MATLAB is a globally available standard computational tool for engineers and scientists. The terminology, syntax, and the use of the programming language are well defined, and the organization of the material makes it easy to locate information and navigate through the textbook. The text covers all the major capabilities of MATLAB that are useful for beginning students. The text consists of 11 chapters. The first five chapters constitute a basic course in MATLAB. The remaining six chapters are independent of each other and cover more advanced applications of MATLAB, the Control Systems toolbox, Simulink, and the Symbolic Math toolbox.

### FEATURES

- This text incorporates the many suggestions made by reviewers and other users. More examples and homework problems have been added.
- Advanced programming, function discovery, and regression are now covered in two chapters to allow for flexible coverage.
- Numerous examples and homework problems drawn from all the fields of engineering.
- Students can use the text as a reference in later courses because it contains many tables that summarize the MATLAB commands.

- Expanded coverage of programming includes structured programming and logical variables.
- A full chapter covering Simulink
- The text is written and uses mathematics appropriate for the freshman level.
- Chapter 11 covers the MuPad Notebook Interface. This interface makes it easier to access functions with a symbol palette, with the equations displayed in typeset math. Graphics, animations, and descriptive text can be included to prepare a report.

## CONTENTS

1. An Overview of MATLAB
2. Numeric, Cell, and Structure Arrays
3. Functions
4. Programming with MATLAB
5. Advanced Plotting
6. Model Building and Regression
7. Statistics, Probability, and Interpolation
8. Linear Algebraic Equations
9. Numerical Methods for Calculus and Differential Equations
10. Simulink
11. Symbolic Processing with MATLAB

## Appendices:

- A. Guide to Commands and Functions In This Text
- B. Animation and Sound in MATLAB
- C. Formatted Output in MATLAB
- D. References
- E. Some Project Suggestions Answers to Selected problems

skills needed to solve open-ended problems in SI and customary units while presenting solutions in a logical manner. Students are introduced to subject areas common to engineering disciplines that require the application of fundamental engineering concepts. Importantly, it provides students a realistic opportunity to learn to apply engineering principles to the solution of engineering problems. Furthermore, the author's approach keeps students on task toward an engineering career by showing how the materials apply to the student's school life and career.

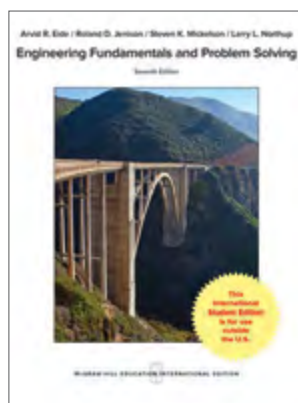
## FEATURES

- This edition draws on past experiences the authors have encountered with the first six editions and incorporates many excellent suggestions from faculty and students using the text.
- It includes a serious discussion on workplace competencies, key actions, and self-assessment to help prepare students for the workplace and develop learning portfolios. Students are encouraged to think about what will happen once they graduate and join the workforce.
- Several chapters have been reorganized and subdivided to increase the focus on fundamentals of the subject matter and allow instructors to tailor the material to their specific course objectives. Engineering design is reintroduced as its own chapter, and engineering economy, statistics, mechanics, and energy are also given separate chapters.

## CONTENTS

1. The Engineering Profession
2. Education for Engineering
3. Introduction to Engineering Design
4. Engineering Solutions
5. Representation of Technical Information
6. Engineering Measurements and Estimations
7. Dimensions, Units, and Conversions
8. Introduction to Engineering Economics
9. Economics: Decision Making
10. Statistics
11. Inferential Statistics and Decision Making
12. Mechanics: Statics
13. Mechanics: Strength of Materials
14. Material Balance
15. Energy Sources and Alternatives
16. Fundamental Energy Principles
17. Electrical Theory

## Introduction/ Problem Solving



### Engineering Fundamentals and Problem Solving

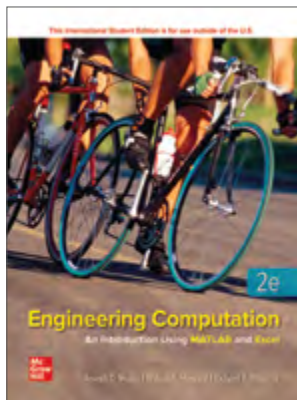
Arvid Eide, Roland Jenison,  
Larry Northup,  
Steven Mickelson

Edition:7  
2018©  
Print:9781260083293  
Connect:9781259877841

## OVERVIEW

This book presents a complete introduction into the engineering field and remains the most comprehensive textbook for an introductory engineering course. It will help students develop the

## MATLAB



### Engineering Computation: An Introduction Using MATLAB and Excel

Joseph Musto, William E. Howard, Richard R. Williams

Edition: 2  
2021©  
336 Pages  
Print: 9781260570717

#### OVERVIEW

The strength of Engineering Computation is its combination of the two most important computational programs in the engineering marketplace today MATLAB® and Excel®. Engineering students will need to know how to use both programs to solve problems. The focus of this text is on the fundamentals of engineering computing: algorithm development selection of appropriate tools documentation of solutions and verification and interpretation of results.

#### FEATURES

- Updated for the latest versions of MATLAB and Excel.
- New end of-chapter problems have been created which offer enhanced opportunities to practice techniques learned in the text.
- New tutorial involving symbolic computation in MATLAB has been developed which offers a new opportunity to learn new techniques.

#### CONTENTS

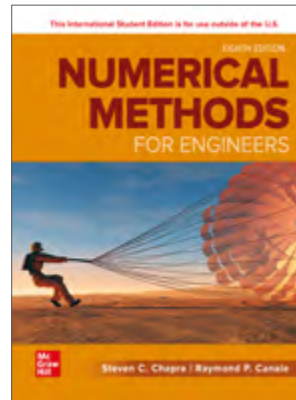
##### Part 1: Computational Tools

1. Computing Tools
2. Excel Fundamentals
3. MATLAB Fundamentals
4. MATLAB Programming
5. Plotting Data

##### Part 2: Engineering Applications

6. Finding the Roots of Equations
7. Matrix Mathematics
8. Solving Simultaneous Equations
9. Numerical Integration
10. Optimization

## Numerical Methods



### Numerical Methods for Engineers

Steven C. Chapra, Raymond P Canale

Edition: 8  
2021©  
992 Pages  
Print: 9781260571387  
Connect: 9781260484533

#### OVERVIEW

The eighth edition of Chapra and Canale's Numerical Methods for Engineers retains the instructional techniques that have made the text so successful. The book covers the standard numerical methods employed by both students and practicing engineers. Although relevant theory is covered, the primary emphasis is on how the methods are applied for engineering problem solving. Each part of the book includes a chapter devoted to case studies from the major engineering disciplines. Numerous new or revised end-of chapter problems and case studies are drawn from actual engineering practice. This edition also includes several new topics including a new formulation for cubic splines, Monte Carlo integration, and supplementary material on hyperbolic partial differential equations.

#### FEATURES

- Monte Carlo integration, increasingly used in engineering and science, has been added.
- New, improved formulation for cubic splines that is easier to understand than previous version & compatible with MATLAB algorithm.
- Included in this edition are several new and revised problems.
- Supplementary material on hyperbolic partial differential equations (PDEs) has been added. Together with existing material on Elliptic & Parabolic PDEs, this makes the part of the book on PDEs more complete

#### CONTENTS

##### Part 1. Modeling, Computers, and Error Analysis

1. Mathematical Modeling and Engineering Problem Solving
2. Programming and Software
3. Approximations and Round-Off Errors
4. Truncation Errors and the Taylor Series

## Part 2. Roots of Equations

5. Bracketing Methods
6. Open Methods
7. Roots of Polynomials
8. Case Studies: Roots of Equations

## Part 3. Linear Algebraic Equations

9. Gauss Elimination
10. LU Decomposition and Matrix Inversion
11. Special Matrices and Gauss-Seidel
12. Case Studies: Linear Algebraic Equations

## Part 4. Optimization

13. One-Dimensional Unconstrained Optimization
14. Multidimensional Unconstrained Optimization
15. Constrained Optimization
16. Case Studies: Optimization

## Part 5. Curve Fitting

17. Least-Squares Regression
18. Interpolation
19. Fourier Approximation
20. Case Studies: Curve Fitting

## Part 6. Numerical Differentiation and Integration

21. Newton-Cotes Integration Formulas
22. Integration of Equations
23. Numerical Differentiation
24. Case Studies: Numerical Integration and Differentiation

## Part 7. Ordinary Differential Equations

25. Runge-Kutta Methods
26. Stiffness and Multistep Methods
27. Boundary-Value and Eigenvalue Problems
28. Case Studies: Ordinary Differential Equations

## Part 8. Partial Differential Equations

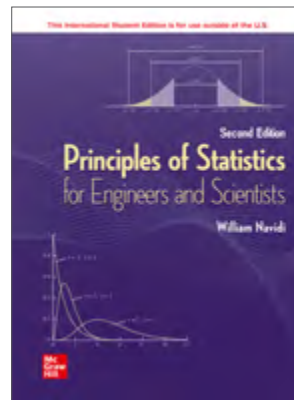
29. Finite Difference: Elliptic Equations
30. Finite Difference: Parabolic Equations
31. Finite-Element Method
32. Case Studies: Partial Differential Equations

## Appendices:

- A. The Fourier Series
- B. Getting Started with Matlab
- C. Getting Started with Mathcad

## INDUSTRIAL ENGINEERING

### Engineering Statistics



## Principles of Statistics for Engineers and Scientists

William Navidi

Edition: 2

2021©

624 Pages

Print: 9781260570731

Connect: 9781260442199

## OVERVIEW

Principles of Statistics for Engineers and Scientists offers the same crystal clear presentation of applied statistics as Bill Navidi's Statistics for Engineers and Scientists text in a manner especially designed for the needs of a one-semester course that is focused on applications. By presenting ideas in the context of real-world data sets and with plentiful examples of computer output the book is great for motivating students to understand the importance of statistics in their careers and their lives. The text features a unique approach highlighted by an engaging writing style that explains difficult concepts clearly and the use of contemporary real world data sets to help motivate students and show direct connections to industry and research. While focusing on practical applications of statistics the text makes extensive use of examples to motivate fundamental concepts and to develop intuition.

## FEATURES

- Outstanding Examples & Exercises provides a precise presentation of the subject illustrated with numerous engineering examples the students both understand and relate to theory and application. Teaching is easier when the problems are understandable and make sense to students!
- Flexible presentation of probability addresses the needs of different courses. Allowing for a mathematically rigorous approach, the major results are derived from axioms, with proofs given for most of them. Each result is illustrated with an example or two to promote intuitive understanding.
- Contemporary, real world data sets, are one of the defining features of this text. With a fresh approach to the subject, the author uses contemporary data sets to help motivate students and show direct connection to industry and research.

## CONTENTS

1. Sampling and Descriptive Statistics
2. Summarizing Bivariate Data
3. Probability
4. Commonly Used Distributions
5. Point and Interval Estimation for a Single Sample
6. Hypothesis Tests for a Single Sample
7. Inferences for Two Samples
8. Inference in Linear Models
9. Factorial Experiments
10. Statistical Quality Control

## Entrepreneurship



### Technology Ventures: From Idea to Enterprise

Thomas H. Byers, Richard C. Dorf, Andrew Nelson

Edition: 5

2019©

592 Pages

Print: 9781260085082

Connect: 9781260048551

## OVERVIEW

For business, engineering, science, and professional students who demand a comprehensive guide to high-growth entrepreneurship, Technology Ventures is the leading resource for analyzing opportunities and building new enterprises. Drawing on the latest academic research and practitioner insights, Technology Ventures integrates clear theoretical frameworks with action-oriented examples and exercises. Its broad perspective on "technology," including clean tech, information technology, and the life sciences - ensures wide-ranging appeal to anyone with an interest in high-potential ventures. Entrepreneurship is playing a vital role in finding solutions to the huge challenges facing civilization, including health, communications, security, infrastructure, education, energy and the environment. Coverage on customer engagement, the customer development process, and the latest insights on business model design, have been expanded. Special attention has been paid to university technology commercialization, open source innovation, and opportunities in mobile, digital health, 3D printing, and energy tech. The organization of key topics such as: intellectual property, the new venture organizations, and marketing and sales, has been enhanced. Also

available with this edition are additional web-based resources, including syllabi and presentations, additional cases and business plans, and hundreds of videos of entrepreneurs and leaders.

## FEATURE

- A set of 20 fundamental principles are developed and defined throughout the book. Each chapter opens with a key question and outlines its content and objectives.
- Examples of cutting-edge technologies illustrate concepts in a shaded-box format. Exercises are offered at the end of each chapter to test comprehension of the concepts.
- A special exercise called the "venture challenge" guides readers through a chapter-by-chapter formation of a new enterprise. At the end of each chapter's narrative, a successful enterprise is profiled in a special "spotlight" section.
- Methods and tools for the development of a business plan are gathered into one chapter, which includes an annotated table of contents. Appendix A includes a sample business plan, as well.
- Eight comprehensive cases are included in Appendix B. Additional cases from Harvard and ECCH are recommended on the textbooks websites.
- A collection of suggested videos from world-class entrepreneurs, investors, and teachers is listed at the end of each chapter and provided on the textbooks websites.

## CONTENTS

### Part 1: Venture Opportunity and Strategy

1. Venture Opportunity and Strategy
2. Opportunities
3. Vision and the Business Model
4. Competitive Strategy
5. Innovation Strategies

### Part 2: Concept Development and Venture Formation

6. Concept Development and Venture Formation
7. Risk and Return
8. Creativity and Product Development
9. Marketing and Sales
10. Types of Ventures

### Part 3: Intellectual Property, Organizations, and Operations

11. Intellectual Property
12. The New Enterprise Organization
13. Acquiring and Organizing Resources
14. Management of Operations
15. Acquisitions and Global Expansion

### Part 4: Financing and Leading the Enterprise

16. Financing and Leading the Enterprise

17. The Financial Plan
18. Sources of Capital
19. Deal Presentations and Negotiations
20. Leading Ventures to Success

## Operations Research



**Introduction to  
Operations Research**  
**Frederick S. Hillier, Gerald J.  
Lieberman**  
**Edition: 11**  
**2021©**  
**992 Pages**  
**Apr 2020**  
**Print: 9781260575873**

### OVERVIEW

For over four decades Introduction to Operations Research by Frederick Hillier has been the classic text on operations research. While building on the classic strengths of the text the author continues to find new ways to make the text current and relevant to students. One way is by incorporating a wealth of state-of-the-art user-friendly software and more coverage of business applications than ever before. The hallmark features of this edition include new section and chapters updated problems clear and comprehensive coverage of fundamentals an extensive set of interesting problems and cases and state-of-the-practice operations research software used in conjunction with examples from the text.

### FEATURES

- Four new sections describe analytics as a key new complement to operations research. The benefit is a new understanding of this revolutionary change in the field. These new sections are right up front in Sections 1.3, 2.2, 2.3, and 2.4.
  - A new section provides an elementary introduction to the theory of simulation optimization. The benefit is a new understanding of what is now one of the most widely used techniques of operations research. The new section is Section 20.5.
  - A new section describes how decision analysis now is being widely extended to multiple criteria decision analysis. The benefit is a new understanding of how multiple criteria can be considered in operations research studies. The new section (Multiple Criteria Decision Analysis, Including Goal Programming) is Section 16.7.
- Significant reorganization and streamlining, including moving more technical material to the supplements on the website. The benefit is providing a better focus on the important material.
  - Substantial more updating, including two additional completely new sections, many smaller updates, and a considerable number of new up-to-date application vignettes and selected references (while deleting outdated ones). The benefit is providing a completely up-to-date introduction to operations research, including key recent developments. The two additional completely new sections are Sections 17.11 and 19.4.

### CONTENTS

1. Introduction
2. Overview of the Operations Research Modeling Approach
3. Introduction to Linear Programming
4. Solving Linear Programming Problems: The Simplex Method
5. The Theory of the Simplex Method
6. Duality Theory
7. Linear Programming under Uncertainty
8. Other Algorithms for Linear Programming
9. The Transportation and Assignment Problems
10. Network Optimization Models
11. Dynamics Programming
12. Integer Programming
13. Nonlinear Programming
14. Metaheuristics
15. Game Theory
16. Decision Analysis
17. Queuing ANALYSIS
18. Inventory Analysis
19. Markov Decision Processes
20. Simulation

### Appendices:

1. Documentation for the OR Courseware
2. Convexity
3. Classical Optimization Methods
4. Matrices and Matrix Operations
5. Table for a Normal Distribution

## MANUFACTURING AND CONSTRUCTION TECHNOLOGY

### CNC Technology



### Technology of Machine Tools

Steve F. Krar, Arthur R. Gill,  
Peter Smid

Edition: 8  
2020©  
768 Pages  
Print: 9781260565782

### OVERVIEW

Technology of Machine Tools provides state-of-the-art training for using machine tools in manufacturing technology including up-to-date coverage of computer numerical control (CNC). It includes an overview of machine trades and career opportunities followed by theory and application. The text is structured to provide coverage of tools and measurement machining tools and procedures drilling and milling machines computer-aided machining and metallurgy. There is expanded coverage of computer-related technologies including computer numerical control (CNC) and computer-aided design and manufacturing (CAD/CAM).

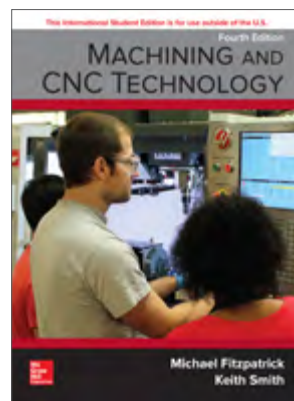
### FEATURES

- In addition to updating the text to reflect changes in the modern business and manufacturing world today—such as Industry 4.0, nanotechnology, and IDI—an entirely new section on additive manufacturing (Section 17) as a revolutionary way to produce complex parts has been added.
- **Unit 90: Nanotechnology:** Nanotechnology deals with dimensions that are less than 100 nanometers, manipulating and controlling materials at the atomic and molecular level. Nanomanufacturing is a term used to refer to manufacturing at the nanoscale.
- **Unit 93: Additive Manufacturing Technologies:** Additive manufacturing creates parts and prototypes by fusing layers of material to build the part layer by layer from STL data, which describe only the surface geometry of a three-dimensional object.
- **Unit 95: Industry 4.0:** The combination of IoT, IIoT, cybersecurity, machine-to-machine connectivity and the continuing implementation of lean manufacturing (elimination of waste) will be the basis for Industry 4.0.

### CONTENTS

1. Introduction to Machine Tools
2. Machine Trade Opportunities
3. Safety
4. Job Planning
5. Measurement
6. Layout Tools and Procedures
7. Hand Tools and Bench Work
8. Metal-Cutting Technology
9. Metal-Cutting Saws
10. Drilling Machines
11. The Lathe
12. Milling Machines
13. Grinding
14. Metallurgy
15. Cellular Manufacturing
16. Computer-Age Machining
17. Advanced Manufacturing Technology

## Machining



### Machining and CNC Technology

Michael Fitzpatrick

Edition: 4  
2019©  
864 Pages  
Print: 9781260092608  
Connect: 9781260047882

### OVERVIEW

Machining and CNC Technology, Fourth Edition, by Michael Fitzpatrick, will provide the latest approach to machine tool technology available. Students will learn basic modern integrated manufacturing, CNC systems, CAD/CAM and advanced technologies, and how to safely set up and run both CNC and manually operated machines. This is a how-to-do-it text.

### FEATURES

- This edition contains “Xcursions.” These are QR Codes that students can scan using their mobile devices. The codes will link to various websites and videos that show off amazing processes and extra-happenings in manufacturing! Think of this feature as an “out-of-class” experience – a virtual field trip – for your students.
- Terms Toolbox Game. Terms really matter in a trade, but learning them can be boring. In this

edition, students use their mobile devices to scan QR Codes and flash test their vocabulary online!

- **Made Right Here.** Each chapter opens with a photograph and an article about an inspiring company that manufactures amazing products. MRH articles are more than entertaining; they are good career planning tools.
- Images from Mastercam and Sandvik show us the new Dynamic Toolpath thinking. We're learning amazing new ways to mill metal. A home learning version of the latest Mastercam version will be provided with every textbook.

### CONTENTS

#### Part 1: Introduction to Manufacturing

1. Professionalism in Manufacturing
2. Math Skills Self-Review
3. Reading Technical Drawings
4. Introduction to Geometrics
5. Before and After Machining
6. The Science and Skill of Measuring - Five Basic Tools
7. Single-Purpose Measuring Tools, Gages, and Surface Roughness

#### Part 2: Introduction to Machining MACHINING

8. Cutting Tool Geometry
9. Drilling and Operations and Machines
10. Turning Operations
11. Mills and Milling Operations
12. Precision Grinding Operations and Machines
13. Screw Thread Technology
14. Metallurgy for Machinists - Heat Treating and Measuring Hardness
15. Job Planning

#### Part 3: Introduction to CNC Machining

16. Coordinates, Axes, and Motion
17. CNC Systems
18. CNC Controls
19. Operating a CNC Machine
20. Program Planning
21. Level-One Programming
22. Level-Two Programming
23. Setting Up a CNC Machine to Run
24. Design for CNC Manufacturing - Solid Modeling

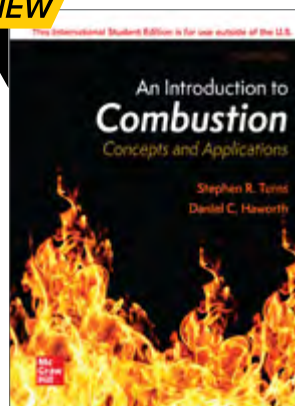
#### Part 4: Advanced and Advancing Technology

25. CAM Mill Programming for CNC Machinists
26. Tool Life, Productivity, and Advancing Technology
27. Statistical Process Control (SPC)
28. Computer Coordinate Measuring

## MECHANICAL ENGINEERING

### Combustion Engines

**NEW**



### An Introduction to Combustion: Concepts and Applications

Stephen R. Turns

Edition: 4

2021©

768 Pages

Print: 9781260575521

### OVERVIEW

Introduction to Combustion is the leading combustion textbook for undergraduate and graduate students because of its easy-to-understand analyses of basic combustion concepts and its introduction of a wide variety of practical applications that motivate or relate to the various theoretical concepts. This is a text that is useful for junior/senior undergraduates or graduate students in mechanical engineering and practicing engineers. The fourth edition updates and adds topics related to protection of the environment climate change and energy use.

### FEATURES

Straightforward Approach to Combustion Concepts features simple, and easy-to-understand analyses as well as a wide variety of practical applications that illustrate combustion principles.

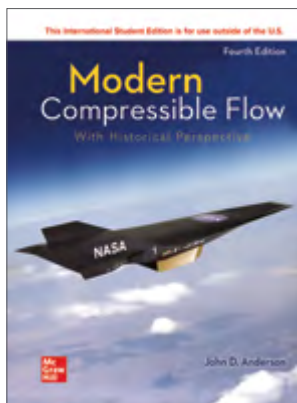
### CONTENTS

1. Introduction
2. Combustion and Thermochemistry
3. Introduction to Mass Transfer
4. Chemical Kinetics
5. Some Important Chemical Mechanisms
6. Coupling Chemical and Thermal Analyses of Reacting Systems
7. Simplified Conservation Equations for Reacting Flows
8. Laminar Premixed Flames
9. Laminar Diffusion Flames
10. Droplet Evaporation and Burning
11. Introduction to Turbulent Flows
12. Turbulent Premixed Flames
13. Turbulent Non-premixed Flames
14. Burning of Solids
15. Emissions
16. Detonations
17. Fuels

**Appendices:**

- A. Selected Thermodynamic Properties of Gases Comprising C-H-O-N System
- B. Fuel Properties
- C. Selected Properties of Air, Nitrogen, and Oxygen
- D. Binary Diffusion Coefficients and Methodology for their Estimation
- E. Generalized Newton's Method for the Solution of Nonlinear Equations
- F. Computer Codes for Equilibrium Products of Hydrocarbon-Air Combustion

## Compressible Flow/Gas Dynamics



### Modern Compressible Flow: With Historical Perspectives

**John D. Anderson**

**Edition: 4**  
**2021©**  
**800 Pages**  
**Apr 2020**  
**Print: 9781260570823**

**OVERVIEW**

The response to the first three editions of Modern Compressible Flow: With Historical Perspective from students' faculty and practicing professionals has been overwhelmingly favorable. Therefore this new edition preserves much of this successful content while adding important new components. It preserves the author's informal writing style that talks to the reader that gains the readers' interest and makes the study of compressible flow an enjoyable experience. Moreover it blends the classical nature of the subject with modern aspects of computational fluid dynamics (CFD) and high temperature gas dynamics so important to modern applications of compressible flow. In short this book is a unique teaching and learning experience.

**FEATURE**

- End-of-chapter problems have been added to those few chapters that originally had no problems listed.
- At the end of every chapter, and just before the list of problems, a "Suggestions" section has been added. The purpose of these suggestions is to help the reader better understand each end-of-chapter problem and to get started on a right path for the solution of each problem.

- Chapter 15 on Hypersonic Flow has been expanded to recognize the greatly increased interest and current activity in the hypersonic flight regime.

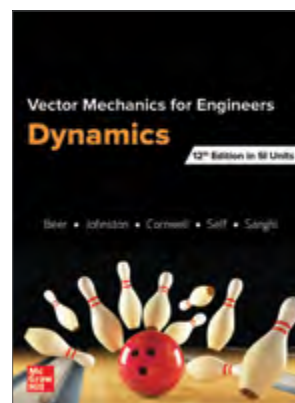
**CONTENTS**

1. Compressible Flow - Some History and Introductory Thoughts
2. Integral Forms of the Conservation Equations for Inviscid Flows
3. One-Dimensional Flow
4. Oblique Shock and Expansion Waves
5. Quasi-One-Dimensional Flow
6. Differential Conservation Equations for Inviscid Flows
7. Unsteady Wave Motion
8. General Conservation Equations Revisited: Velocity Potential Equation
9. Linearized Flow
10. Conical Flow
11. Numerical Techniques for Steady Supersonic Flow
12. The Time-Marching Technique: With Application to Supersonic Blunt Bodies and Nozzles
13. Three-Dimensional Flow
14. Transonic Flow
15. Hypersonic Flow
16. Properties of High-Temperature Gases
17. High-Temperature Flows: Basic Examples

**Appendices:**

- B. An Illustration and Exercise of Computational Fluid Dynamics
- C. Oblique Shock Properties:  $\gamma = 1.4$

## Dynamics



### Vector Mechanics for Engineers: Dynamics (SI Edition)

**Ferdinand P. Beer, Jr., E. Russell Johnston, Phillip J. Cornwell, Brian Self**

**Edition: 12**  
**2019©**  
**928 Pages**  
**Print: 9789813157866**  
**Connect: 9789353166670**

**OVERVIEW**

A primary objective in a first course in mechanics is to help develop a student's ability first to analyze problems in a simple and logical manner, and then to apply basic principles to their solutions. A strong

conceptual understanding of these basic mechanics principles is essential for successfully solving mechanics problems. This edition of Vector Mechanics for Engineers will help instructors achieve these goals. Continuing in the spirit of its successful previous editions, this edition provides conceptually accurate and thorough coverage together with a significant refreshment of the exercise sets and online delivery of homework problems to your students. The 12th edition has new case studies and enhancements in the text and in Connect. The hallmark of the Beer-Johnston series has been the problem sets. This edition is no different. Over 650 of the homework problems in the text are new or revised. One of the characteristics of the approach used in this book is that mechanics of particles is clearly separated from the mechanics of rigid bodies. This approach makes it possible to consider simple practical applications at an early stage and to postpone the introduction of the more difficult concepts. Additionally, Connect has over 100 Free-Body Diagram Tool Problems and Process-Oriented Problems.

### FEATURES

- 100% of the free-body diagram problems have been added to Connect.
- Stand-alone Process-Oriented Problems are now included in Connect.
- Each chapter now features a case study. Connect contains videos based on each case-study to demonstrate more applications to students. Questions in Connect will relate back to the video.
- Thoroughly Refreshed Problem Set in the Twelfth Edition. Approximately 20% of the problems are updated from the previous edition.
- Concept Questions are multiple choice problems that require few, if any, calculations are included. Students are encouraged to solve these problems using the principles and techniques discussed in the text and to use these principles to help develop their intuition.
- Computer and Design Problems are offered at the end of each chapter. While the problems are generic they are designed to be easily solved using popular computational programs like Matlab® and Mathcad®. The computer problems focus on symbolic manipulation and plotting rather than programming.
- A Careful, Step-By-Step Presentation is followed in each lesson of each chapter, and every chapter starts with a real-life example and an outline previewing the chapter objectives and lessons. Each lesson is accompanied by sample problems and Solving Problems On Your Own boxes that

prepare students for the problem sets. Each chapter finishes with a brief Review Problem set and an assortment of computer and design problems.

- Well-Respected Sample Problems are a signature Beer and Johnston text feature that allow students to see important key problem types and with the solution laid out on a single page, organized to provide a potent model for student problem solving. Sample Problems serve the dual purpose of amplifying the text and demonstrating the type of neat and orderly work that students should cultivate in their own solutions.

### CONTENTS

11. Kinematics of Particles
12. Kinetics of Particles: Newton's Second Law
13. Kinetics of Particles: Energy and Momentum Methods
14. Systems of Particles
15. Kinematics of Rigid Bodies
16. Plane Motion of Rigid Bodies: Forces and Accelerations
17. Plane Motion of Rigid Bodies: Energy and Momentum Methods
18. Kinetics of Rigid Bodies in Three Dimensions
19. Mechanical Vibrations

### Appendix Fundamentals of Engineering Examination

## Engineering Design



### Engineering Design

George Dieter, Linda C. Schmidt

Edition: 6  
2021©

912 Pages  
Print: 9781260575279  
Connect: 9781260442229

### OVERVIEW

Dieter's Engineering Design represents a major update of this classic textbook for senior design courses. As in previous editions Engineering Design provides a broader overview of topics than most design texts and contains much more prescriptive guidance on how to carry out design. Dieter focuses on material selection as well as how to implement

the design process. Engineering Design provides the senior mechanical engineering students with a realistic understanding of the design process. It is written from the viewpoint that design is the central activity of the engineering profession and it is more concerned with developing attitudes and approaches than in presenting design techniques and tools.

## FEATURES

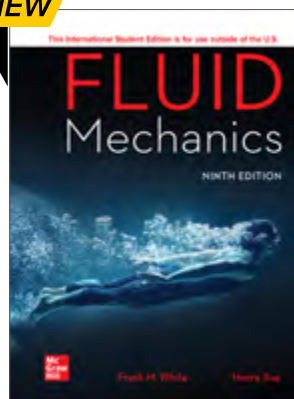
- There has been a noteworthy reordering of chapters in the sixth edition so to align them more closely to the overall design process utilized by this text. While the size of the printed book has been reduced, the scope of the text remains the same, with a few new and valuable sections.
- A significant change in this edition has been to move theoretical and historical content online. This material is tangential to core information and may divert student attention from the application of the design process. Chapters 15-18 have been moved online.
- New Topics:
  - Information Literacy
  - Introduction to WordTree
  - Biomimicry Design Generation Methods

## CONTENTS

1. Engineering Design
2. Product Development Process
3. Problem Definition and Need Identification
4. Team Behavior and Tools
5. Gathering Information
6. Concept Generation
7. Decision Making and Concept Selection
8. Embodiment Design
9. Detail Design
10. Design for Sustainability and the Environment
11. Materials Selection
12. Design with Materials
13. Design for Manufacturing
14. Risk, Reliability, and Safety
15. Quality, Robust Design, and Optimization
16. Economic Decision Making
17. Cost Evaluation
18. Legal and Ethical Issues in Engineering Design (available online)

## Fluid Mechanics (Introduction)

**NEW**



### Fluid Mechanics

**Frank White**

**Edition: 9**

**2021©**

**880 Pages**

**Mar 2021**

**Print: 9781260575545**

**Connect: 9781260446531**

## OVERVIEW

Fluid Mechanics is the study of fluids as an important branch of engineering mechanics. Almost everything on this planet either is a fluid or moves within or near a fluid. The essence of the subject of fluid flow is a judicious compromise between theory and experiment. This textbook not only makes a great deal of theoretical treatment available, but also provides experimental results as a natural and easy complement to the theory. The principles considered in the book are fundamental and have been well established. However, in presenting this important subject, we have drawn on our own ideas and experience. Throughout the revisions, the informal and student-oriented writing style has been retained and further enhanced, and if it succeeds, has the flavor of an interactive lecture by the authors.

## FEATURES

- Merged topics on the choice of variable and scaling parameter with the Pi theorem in Chapter 5 to make it easier for students to follow the arguments.
- Classified applications for the linear momentum equation in Chapter 3 to help students to relate the equation with the applicable engineering problems.
- Concepts and definitions in Chapter 1 have been centralized to help them stand out in the text.
- Provided new data for worldwide wind power capacity in Chapter 11 to reflect the advancement in the application of fluid mechanics.

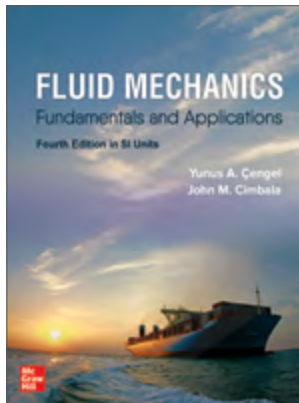
## CONTENTS

1. Introduction
2. Pressure Distribution in a Fluid
3. Integral Relations for a Control Volume
4. Differential Relations for Fluid Flow
5. Dimensional Analysis and Similarity

6. Viscous Flow in Ducts
7. Flow Past Immersed Bodies
8. Potential Flow and Computational Fluid Dynamics
9. Compressible Flow
10. Open-Channel Flow
11. Turbomachinery

### Appendices:

- A. Physical Properties of Fluids
- B. Compressible Flow Tables
- C. Conversion Factors
- D. Equations of Motion in Cylindrical Coordinates
- E. Estimating Uncertainty in Experimental Data



**Fluid Mechanics:  
Fundamentals and  
Applications (SI Edition)**  
Yunus Cengel, John Cimbala  
Edition: 4  
2018©  
Print: 9789813157880  
Connect: 9789353167295

### OVERVIEW

This book communicates directly with tomorrow's engineers in a simple yet precise manner while covering the basic principles and equations of fluid mechanics in the context of numerous and diverse real-world engineering examples. The text helps students develop an intuitive understanding of fluid mechanics by emphasizing the physics using figures, numerous photographs, and visual aids to reinforce the physics. The highly visual approach enhances the learning of fluid mechanics by students. This text distinguishes itself from others by the way the material is presented – in a progressive order from simple to more difficult, building each chapter upon foundations laid down in previous chapters. In this way, even the traditionally challenging aspects of fluid mechanics can be learned effectively.

### FEATURES

- New subsections "Uniform versus Non-Uniform Flow" and "Equation Solvers" have been added to Chapter 1.
- Two new sections, "Flying Birds and Insects" by guest author Azar Eslam Panah of Penn State Berkley and "CFD Methods for Two-Phase Flows" by guest author Alex Rattner of Penn State have been added to Chapter 11 and Chapter 15.
- In Chapter 8, we now highlight the explicit Churchill equation as an alternative to the implicit

Colebrook equation.

- Two new Application Spotlights, "Smelling Food; the Human Airway" by Rui Ni of Penn State and "Multicolor Particle Shadow Velocimetry/Accelerometry" by Michael McPhail and Michael Krane of Penn State have been added to Chapter 4 and Chapter 8.

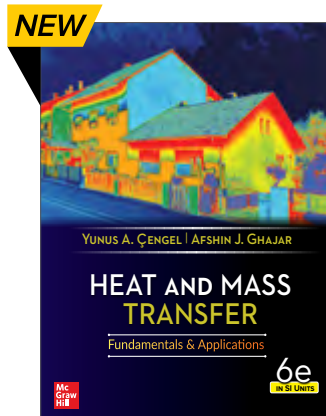
### CONTENTS

1. Introduction and Basic Concepts
2. Properties of Fluids
3. Pressure and Fluid Statics
4. Fluid Kinematics
5. Bernoulli and Energy Equations
6. Momentum Analysis of Flow Systems
7. Dimensional Analysis and Modeling
8. Internal Flow
9. Differential Analysis of Fluid Flow
10. Approximate Solutions of the Navier-Stokes Equation
11. External Flow: Drag and Lift
12. Compressible Flow
13. Open-Channel Flow
14. Turbomachinery
15. Introduction to Computational Fluid Dynamics

### Appendices:

1. Property Tables and Charts

## Heat Transfer (Introduction)



**Heat and Mass Transfer:  
Fundamentals and  
Applications (SI Edition)**

Yunus Cengel, Afshin Ghajar

Edition: 6  
2020©  
1,056 Pages  
May 2020  
Print: 9789813158962  
Connect: 9789390185306

### OVERVIEW

With complete coverage of the basic principles of heat transfer and a broad range of applications in a flexible format, Heat and Mass Transfer: Fundamentals and Applications, by Yunus Cengel and Afshin Ghajar provides the perfect blend of fundamentals and applications. The text provides a highly intuitive and practical understanding of the material by emphasizing the physics and the underlying physical phenomena involved. This text covers the standard topics of

heat transfer with an emphasis on physics and real-world every day applications, while de-emphasizing mathematical aspects. This approach is designed to take advantage of students' intuition, making the learning process easier and more engaging.

### FEATURES

- Added 20 new example problems and over 600 new and modified end-of-chapter problems.
- Addition of five new sections or subsections to this edition of the text.
- In Chapter 4 the graphical representation of the one-dimensional transient conduction solutions (Heisler charts) have been eliminated and the emphasis has been placed on the solution with more accurate approximate or exact analytical expressions.
- New section in Chapter 1 on Engineering Codes and Standards (C&S). Throughout the text, as appropriate, example problems and end-of-chapter problems related to engineering codes and standards have been presented to introduce this concept to tomorrow's engineers.

### CONTENTS

1. Introduction and Basic Concepts
  2. Heat Conduction Equation
  3. Steady Heat Conduction
  4. Transient Heat Conduction
  5. Numerical Methods in Heat Conduction
  6. Fundamentals of Convection
  7. External Forced Convection
  8. Internal Forced Convection
  9. Natural Convection
  10. Boiling and Condensation
  11. Heat Exchangers
  12. Fundamentals of Thermal Radiation
  13. Radiation Heat Transfer
  14. Mass Transfer
  15. Cooling of Electronic Equipment (Online Chapter)
  16. Heating and Cooling of Buildings (Online Chapter)
  17. Refrigeration and Freezing of Foods (Online Chapter)
- Appendix - Property Tables and Charts

### Introduction of Materials Science



### Foundations of Materials Science and Engineering

**William Smith, Javad Hashemi**

**Edition: 6**  
**2019©**  
**1,104 Pages**  
**Print: 9781260092035**  
**Connect: 9781260049084**

### OVERVIEW

To prepare materials engineers and scientists of the future Foundations of Materials Science and Engineering Sixth Edition is designed to present diverse topics in the field with appropriate breadth and depth. The strength of the book is in its balanced presentation of concepts in science of materials (basic knowledge) and engineering of materials (applied knowledge). The basic and applied concepts are integrated through concise textual explanations relevant and stimulating imagery detailed sample problems electronic supplements and homework problems. This textbook is therefore suitable for both an introductory course in materials at the sophomore level and a more advanced (junior/senior level) second course in materials science and engineering. The extensive media package available with the text provides tutorials and animations as well as image files case studies FE Exam review questions and a solutions manual and lecture PowerPoint files for instructors.

### FEATURES

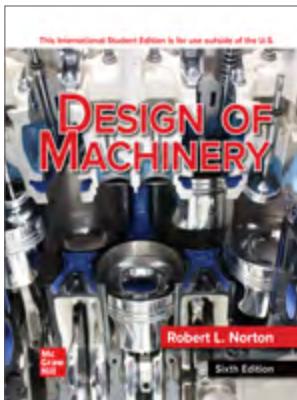
- A concise, readable style is used throughout; readers are given understandable explanations without the excessive detail other textbooks routinely include.
- Every chapter has approximately 150 problems. Therefore, a mix of related key-topic questions are in Connect.
- Over 1200 end-of-chapter problems. For most chapters, new problems (mostly in the synthesis and evaluation category) have been developed.
- In Chapter 13, the sign convention in reporting the half-cell potentials has been made consistent with IUPAC conventions.
- The concept of glass transition temperature has been expanded upon in the discussion of polymers in Chapter 10.

- The mechanical property discussion in Chapter 6 has been expanded to include modulus of resilience and toughness.
- The classification of composite materials in Chapter 12 has been expanded and improved

## CONTENTS

1. Introduction to Materials Science and Engineering
2. Atomic Structure and Bonding
3. Crystal and Amorphous Structures in Materials
4. Solidification, Crystalline Imperfections
5. Thermally Activated Processes and Diffusion in Solids
6. Mechanical Properties of Metals I
7. Mechanical Properties of Metals II
8. Phase Diagrams
9. Engineering Alloys
10. Polymeric Materials
11. Ceramics
12. Composite Materials
13. Corrosion
14. Electrical Properties of Materials
15. Optical Properties and Superconductive Materials
16. Magnetic Properties
17. Biological and Biomaterials

## Kinematics/Dynamics of Machines



### Design of Machinery

Robert Norton

Edition:6

2020©

896 Pages

Print: 9781260590845

Connect: 9781260431278

## OVERVIEW

Robert L. Norton's sixth edition of DESIGN OF MACHINERY continues the tradition of this best-selling book through its balanced coverage of analysis and design and outstanding use of realistic engineering examples. Through its reader-friendly style of writing clear exposition of complex topics and emphasis on synthesis and design the text succeeds in conveying the art of design as well as the use of modern tools needed for analysis of the kinematics and dynamics of machinery. Topics are explained verbally and visually often through the use of software to enhance student understanding.

## FEATURES

- Over 50 new problem assignments have been added. The problem figures are included as downloadable PDF files so that students can easily print hard copies on which to work the solutions.
- The Working Model program is needed to run the Working Model files included with this text. The supplier, Design Simulation Technologies, offers student licenses for one-semester or one-year periods at moderate cost. These are available at <http://www.design-simulation.com/Purchase/studentproducts.php>.
- The author-written programs that come with the book have been completely rewritten to improve their interface and usability, and they are now compatible with the latest operating systems and computers. Professors who adopt the book for a course and students using the print book may register to download the latest student versions of these programs from: <http://www.designofmachinery.com>.
- In addition to the printed version of the text, digital e-book versions are also available. These have hotlinks to all the videos and to the downloadable content provided. There are 188 videos.
- The extensive DVD content that was introduced in the Fifth Edition is now downloadable from a website.

## CONTENTS

### Part 1: Kinematics of Mechanisms

1. Introduction
2. Kinematics Fundamentals
3. Graphical Linkage Synthesis
4. Position Analysis
5. Analytical Linkage Synthesis
6. Velocity Analysis
7. Acceleration Analysis
8. Cam Design
9. Gear Trains

### Part 2: Dynamics of Machinery

10. Dynamics Fundamentals
11. Dynamic Force Analysis
12. Balancing
13. Engine Dynamics
14. Multi Cylinder Engines
15. Cam Dynamics
16. Cam-and Servo-Driven Mechanisms

### Appendices:

- A. Computer Programs
- B. Material Properties
- C. Geometric Properties
- D. Spring Data
- E. Coupler Curve Atlases

- F. Answers to Selected Problems
- G. Equations for Under-or Overbalanced Multi-cylinder Engines

## Machine Design



### Design of Machinery

Robert Norton

Edition:6  
2020©  
896 Pages  
Print: 9781260590845  
Connect: 9781260431278

### OVERVIEW

Robert L. Norton's sixth edition of DESIGN OF MACHINERY continues the tradition of this best-selling book through its balanced coverage of analysis and design and outstanding use of realistic engineering examples. Through its reader-friendly style of writing clear exposition of complex topics and emphasis on synthesis and design the text succeeds in conveying the art of design as well as the use of modern tools needed for analysis of the kinematics and dynamics of machinery. Topics are explained verbally and visually often through the use of software to enhance student understanding.

### FEATURES

- Over 50 new problem assignments have been added. The problem figures are included as downloadable PDF files so that students can easily print hard copies on which to work the solutions.
- The Working Model program is needed to run the Working Model files included with this text. The supplier, Design Simulation Technologies, offers student licenses for one-semester or one-year periods at moderate cost. These are available at <http://www.design-simulation.com/Purchase/studentproducts.php>.
- The author-written programs that come with the book have been completely rewritten to improve their interface and usability, and they are now compatible with the latest operating systems and computers. Professors who adopt the book for a course and students using the print book may register to download the latest student

versions of these programs from: <http://www.designofmachinery.com>.

- In addition to the printed version of the text, digital e-book versions are also available. These have hotlinks to all the videos and to the downloadable content provided. There are 188 videos.
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- F. Answers to Selected Problems
- G. Equations for Under-or Overbalanced Multi-cylinder Engines



### Engineering Design

George Dieter, Linda C. Schmidt

Edition:6  
2021©  
912 Pages  
Print: 9781260575279  
Connect: 9781260442229

### OVERVIEW

Dieter's Engineering Design represents a major update of this classic textbook for senior design courses. As

in previous editions Engineering Design provides a broader overview of topics than most design texts and contains much more prescriptive guidance on how to carry out design. Dieter focuses on material selection as well as how to implement the design process. Engineering Design provides the senior mechanical engineering students with a realistic understanding of the design process. It is written from the viewpoint that design is the central activity of the engineering profession and it is more concerned with developing attitudes and approaches than in presenting design techniques and tools.

## FEATURES

- There has been a noteworthy reordering of chapters in the sixth edition so to align them more closely to the overall design process utilized by this text. While the size of the printed book has been reduced, the scope of the text remains the same, with a few new and valuable sections.
- A significant change in this edition has been to move theoretical and historical content online. This material is tangential to core information and may divert student attention from the application of the design process. Chapters 15-18 have been moved online.
- New Topics:
  - Information Literacy
  - Introduction to WordTree
  - Biomimicry Design Generation Methods

## CONTENTS

1. Engineering Design
2. Product Development Process
3. Problem Definition and Need Identification
4. Team Behavior and Tools
5. Gathering Information
6. Concept Generation
7. Decision Making and Concept Selection
8. Embodiment Design
9. Detail Design
10. Design for Sustainability and the Environment
11. Materials Selection
12. Design with Materials
13. Design for Manufacturing
14. Risk, Reliability, and Safety
15. Quality, Robust Design, and Optimization
16. Economic Decision Making
17. Cost Evaluation
18. Legal and Ethical Issues in Engineering Design (available online)



## Shigley's Mechanical Engineering Design

**Richard Budynas, Keith Nisbett**

**Edition: 11**  
**2020©**  
**1,120 Pages**  
**Jan 2019**  
**Print: 9781260569995**  
**Connect: 9781260407617**

## OVERVIEW

Shigley's Mechanical Engineering Design is intended for students beginning the study of mechanical engineering design. Students will find that the text inherently directs them into familiarity with both the basics of design decisions and the standards of industrial components. It combines the straightforward focus on fundamentals that instructors have come to expect, with a modern emphasis on design and new applications. This edition maintains the well-designed approach that has made this book the standard in machine design for nearly 50 years.

## FEATURES

- Connect now includes a new ebook format enabling off-line reading, annotating and highlighting.
- Approximately 100 new end-of-chapter problems are implemented. These are focused on providing more variety in the fundamental problems for first-time exposure to the topics.

## CONTENTS

### Part 1: Basics

1. Introduction to Mechanical Engineering Design
2. Materials
3. Load and Stress Analysis
4. Deflection and Stiffness

### Part 2: Failure Prevention

5. Failures Resulting from Static Loading
6. Fatigue Failure Resulting from Variable Loading

### Part 3: Design of Mechanical Elements

7. Shafts and Shaft Components
8. Screws, Fasteners, and the Design of Nonpermanent Joints
9. Welding, Bonding, and the Design of Permanent Joints
10. Mechanical Springs
11. Rolling-Contact Bearings
12. Lubrication and Journal Bearings

13. Gears - General
14. Spur and Helical Gears
15. Bevel and Worm Gears
16. Clutches, Brakes, Couplings and Flywheels
17. Flexible Mechanical Elements
18. Power Transmission Case Study

#### Part 4: Special Topics

19. Finite-Element Analysis
20. Geometric Dimensioning and Tolerancing

#### Appendices:

- A. Useful Tables
- B. Answers to Selected Problems

**NEW**



#### Shigley's Mechanical Engineering Design (SI Edition)

Richard Budynas, Keith Nisbett

Edition: 11  
2020©

1,120 Pages

Aug 2020

Print: 9789813158986

Connect: 9789390219650

#### OVERVIEW

Shigley's Mechanical Engineering Design is intended for students beginning the study of mechanical engineering design. Students will find that the text inherently directs them into familiarity with both the basics of design decisions and the standards of industrial components. It combines the straightforward focus on fundamentals that instructors have come to expect, with a modern emphasis on design and new applications. This edition maintains the well-designed approach that has made this book the standard in machine design for nearly 50 years.

#### FEATURES

- Approximately 100 new end-of-chapter problems are implemented. These are focused on providing more variety in the fundamental problems for first-time exposure to the topics.
- Authoritative coverage of the design considerations for major machine elements like gears, brakes, and clutches is included.
- Outstanding Examples & Exercises provides a precise presentation of the subject illustrated with numerous engineering examples that students both understand and relate to theory and application. Teaching is easier when the problems are understandable and make sense to students!
- Available within McGraw Hill Education's Connect, SmartBook2.0 makes study time as productive

and efficient as possible when students are asked to read the textbook.

#### CONTENTS

##### Part 1: Basics

1. Introduction to Mechanical Engineering Design
2. Materials
3. Load and Stress Analysis
4. Deflection and Stiffness

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11. Rolling-Contact Bearings
12. Lubrication and Journal Bearings
13. Gears - General
14. Spur and Helical Gears
15. Bevel and Worm Gears
16. Clutches, Brakes, Couplings and Flywheels
17. Flexible Mechanical Elements
18. Power Transmission Case Study

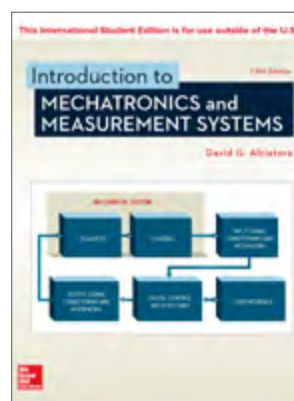
##### Part 4: Special Topics

19. Finite-Element Analysis
20. Geometric Dimensioning and Tolerancing

#### Appendices:

- A. Useful Tables
- B. Answers to Selected Problems

#### Measurements/ Experimentation/ Instrumentation



#### Introduction to Mechatronics and Measurement Systems

David G. Alciatore

Edition: 5  
2019©

608 Pages

Print: 9781260085198

Connect: 9781260049350

## OVERVIEW

Introduction to Mechatronics and Measurement Systems, Fifth Edition, provides comprehensive and accessible coverage of the field of mechatronics for mechanical, electrical and aerospace engineering majors. The author presents a concise review of electrical circuits, solid-state devices, digital circuits, and motors—all of which are fundamental to understanding mechatronic systems. Mechatronics design considerations are presented throughout the text, and in "Design Example" features. The text's numerous illustrations, examples, class discussion items, and chapter questions & exercises provide an opportunity to understand and apply mechatronics concepts to actual problems encountered in engineering practice. This text has been tested over several years to ensure accuracy. Introduction to Mechatronics and Measurement Systems, Fifth Edition - is a multifaceted resource which is designed to serve as a text for modern instrumentation and measurements courses, hybrid electrical and mechanical engineering courses replacing traditional circuits and instrumentation courses, as well as for stand-alone mechatronics courses, or the first course in a mechatronics sequence. It can also work for hybrid courses, providing an opportunity to reduce the number of credit hours in a typical mechanical engineering curriculum. Written by the academic award-winning author and mechanical engineering professor, Dr. David G. Alciatore. The author's webpage (linked to from OLC) has additional computer files and resources, including MATLAB examples, videos demonstrations, and lab exercises.

## FEATURES

- New and expanded mechatronics system flowchart used at the beginning of each chapter.
- Additional end-of-chapter questions throughout the book provide more homework and practice options for professors and students.
- MATLAB solutions added for all MathCAD analysis files provided in previous editions
- The Laboratory Exercises Manual that supplements and supports this book is now available on-line for free and unlimited use by faculty and students. It is located, along with video demonstrations, on the Lab Book web page at: [mechatronics.colostate.edu/lab\\_book.html](http://mechatronics.colostate.edu/lab_book.html)
- Coverage of New Measurement Technologies including rapidly changing subjects like MEMS, cutting edge sensor technology, and micromachines.
- Design Examples are featured throughout the text to help students learn the material in context.

- Broad Coverage of Mechatronics. The text provides an overview of measurement systems, circuits, interfacing, sensors, actuators and design analysis and synthesis of mechatronic systems.

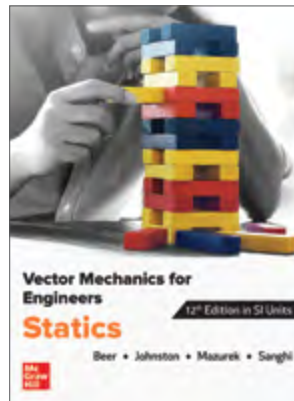
## CONTENTS

1. Introduction
2. Electric Circuits and Components
3. Semiconductor Electronics
4. System Response
5. Analog Signal Processing Using
6. Digital Circuits
7. Microcontroller Programming and Interfacing
8. Data Acquisition
9. Sensors
10. Actuators
11. Mechatronic Systems—Control Architectures and Case Studies

## Appendices:

- A: Measurement Fundamentals
- B: Physical Principles
- C: Mechanics of Materials

## Statics



### Vector Mechanics for Engineers: Statics (SI Edition)

Ferdinand P. Beer, Jr., E. Russell Johnston, David Mazurek

Edition: 12  
2019©  
656 Pages  
Print: 9789813157859  
Connect: 9789353166618

## OVERVIEW

A primary objective in a first course in mechanics is to help develop a student's ability first to analyze problems in a simple and logical manner, and then to apply basic principles to their solutions. A strong conceptual understanding of these basic mechanics principles is essential for successfully solving mechanics problems. This edition of Vector Mechanics for Engineers will help instructors achieve these goals.

Continuing in the spirit of its successful previous editions, this edition provides conceptually accurate and thorough coverage together with a significant refreshment of the exercise sets and online delivery of homework problems to your students. The 12th edition

has new case studies and enhancements in the text and in Connect.

The hallmark of the Beer-Johnston series has been the problem sets and this edition is no different. Over 650 of the homework problems in the text are new or revised. One of the characteristics of the approach used in this book is that mechanics of particles is clearly separated from the mechanics of rigid bodies. This approach makes it possible to consider simple practical applications at an early stage and to postpone the introduction of the more difficult concepts. Additionally, Connect has over 100 Free-Body Diagram Tool Problems and Process-Oriented Problems.

## FEATURES

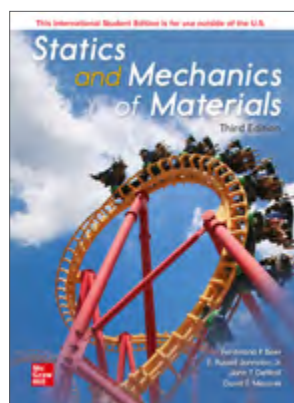
- 100% of the free-body diagram problems have been added to Connect.
- Stand-alone Process-Oriented Problems are now included in Connect.
- Each chapter now features a case study. Connect contains videos based on each case-study to demonstrate more applications to students. Questions in Connect will relate back to the video.
- Thoroughly Refreshed Problem Set in the Twelfth Edition. Approximately 20% of the problems are updated from the previous edition.
- Concept Questions are multiple choice problems that require few, if any, calculations are included. Students are encouraged to solve these problems using the principles and techniques discussed in the text and to use these principles to help develop their intuition.
- Computer and Design Problems are offered at the end of each chapter. While the problems are generic they are designed to be easily solved using popular computational programs like Matlab® and Mathcad®. The computer problems focus on symbolic manipulation and plotting rather than programming.
- A Careful, Step-By-Step Presentation is followed in each lesson of each chapter, and every chapter starts with a real-life example and an outline previewing the chapter objectives and lessons. Each lesson is accompanied by sample problems and Solving Problems On Your Own boxes that prepare students for the problem sets. Each chapter finishes with a brief Review Problem set and an assortment of computer and design problems.
- Well-Respected Sample Problems are a signature Beer and Johnston text feature that allow students to see important key problem types and with

the solution laid out on a single page, organized to provide a potent model for student problem solving. Sample Problems serve the dual purpose of amplifying the text and demonstrating the type of neat and orderly work that students should cultivate in their own solutions.

## CONTENTS

1. Introduction
  2. Statics of Particles
  3. Rigid Bodies: Equivalent Systems of Forces
  4. Equilibrium of Rigid Bodies
  5. Distributed Forces: Centroids and Centers of Gravity
  6. Analysis of Structures
  7. Internal Forces and Moments
  8. Friction
  9. Distributed Forces: Moments of Inertia
  10. Method of Virtual Work
- Fundamentals of Engineering Examination

## Statics and Strength of Materials



### Statics and Mechanics of Materials

**Ferdinand P. Beer, Jr., E.  
Russell Johnston, John T.  
DeWolf, David Mazurek**

**Edition: 3  
2021©  
864 Pages  
Print: 9781260570984  
Connect: 9781260446395**

## OVERVIEW

The approach of the Beer and Johnston series has been appreciated by hundreds of thousands of students over decades of engineering education. Maintaining the proven methodology and pedagogy of the Beer and Johnston series Statics and Mechanics of Materials combines the theory and application behind these two subjects into one cohesive text focusing on teaching students to analyze problems in a simple and logical manner and then to use fundamental and well-understood principles in the solution. The addition of Case Studies based on real-world engineering problems provides students with an immediate application of the theory. A wealth of problems Beer and Johnston's hallmark sample problems and valuable review and summary sections at the end of each chapter highlight the key pedagogy of the text.

## FEATURES

- Case Studies have been introduced to provide students with real-world engineering problems.
- Over 20% of the problems are new to this edition.
- The language has been continuously revised to make the book easier to read and more student-friendly, and photographs have been updated.
- The book combines Statics and Mechanics of Materials to supply students with what they will need in subsequent engineering courses.
- The focus is on solving engineering problems by using fundamental and well-understood principles.

## CONTENTS

1. Introduction
2. Statics of Particles
3. Rigid Bodies: Equivalent Systems of Forces
4. Equilibrium of Rigid Bodies
5. Distributed Forces: Centroids and Centers of Gravity
6. Analysis of Structures
7. Distributed Forces: Moments of Inertia
8. Concept of Stress
9. Stress and Strain-Axial Loading
10. Torsion
11. Pure Bending
12. Analysis and Design of Beams for Bending
13. Shearing Stresses in Beams and Thin-Walled Members
14. Transformations of Stress
15. Deflection of Beams
16. Columns

and relate to theory and application. The tried and true methodology for presenting material gives students the best opportunity to succeed in this course. From the detailed examples to the homework problems to the carefully developed solutions manual instructors and students can be confident the material is clearly explained and accurately represented.

## FEATURES

- Over 25% of the assigned problems from the previous edition have been replaced or revised.
- Photographic content has been modified to provide a more suitable conceptual context to the important principles discussed.
- This edition includes videos that show key mechanics of materials experiments being conducted.
- Connect has been updated to include a new ebook format that enables off-line reading, free-body diagram drawing problems and process-oriented problems have been added to the question bank and HTML5 Dynamic Interactivities will be in the online learning center.

## CONTENTS

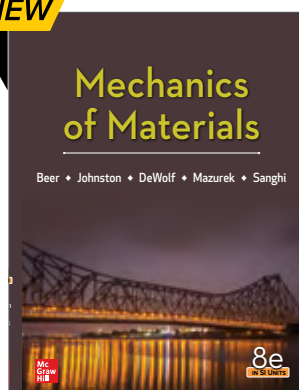
1. Introduction-Concept of Stress
2. Stress and Strain-Axial Loading
3. Torsion
4. Pure Bending
5. Analysis and Design of Beams for Bending
6. Shearing Stresses in Beams and Thin-Walled Members
7. Transformations of Stress and Strain
8. Principal Stresses Under a Given Loading
9. Deflection of Beams
10. Columns
11. Energy Methods

## Appendices:

- A. Principal Units Used in Mechanics
- B. Centroids and Moments of Areas
- C. Centroids and Moments of Inertia of Common Geometric Shapes
- D. Typical Properties of Selected Materials Used in Engineering
- E. Properties of Rolled-Steel Shapes
- F. Beam Deflections and Slopes
- G. Fundamentals of Engineering Examination

## Strength of Materials/ Mechanics of Materials

**NEW**



### Mechanics of Materials (SI Edition)

Ferdinand Beer, E. Russell Johnston, Jr., John DeWolf, David Mazurek

**Edition: 8**  
**2020©**  
**896 Pages**  
**Jul 2020**  
**Print: 9789813158979**  
**Connect: 9789390219445**

## OVERVIEW

Mechanics of Materials provides a precise presentation of subjects illustrated with numerous engineering examples that students both understand

## Thermal Fluid Sciences

**NEW****Fundamentals of Thermal-Fluid Sciences**

**Yunus A. Cengel, John M. Cimbala, Afshin J. Ghajar.**

**Edition: 6**  
**2022©**  
**976 Pages**  
**Mar 2021**  
**Print: 9781260597585**  
**Connect: 9781264131327**

**OVERVIEW**

Fundamentals of Thermal-Fluid Sciences 6th edition is an abbreviated version of standard thermodynamics, fluid mechanics and heat transfer texts, covering topics that the majority of engineering students will need in their professional lives. The text is well-suited for curriculums that have a common introductory course or a two-course sequence on thermal-fluid sciences. The book addresses tomorrow's engineers in a simple, yet precise manner and it leads students toward a clear understanding and firm grasp of the basic principles of thermal-fluid sciences. Special effort has been made to appeal to readers' natural curiosity and to help students explore the various facets of the exciting subject area of thermal-fluid sciences.

**FEATURES**

- The explicit Churchill equation has been added as an alternative to the implicit Colebrook equation in Chapter 14.
- New color photos have been added to the Fluid Mechanics chapters to help students appreciate the real-world relevance of Fluid Mechanics concepts.
- The graphical representation of the one-dimensional transient heat conduction solutions (Heisler charts) have been eliminated, and the emphasis has been placed on the solutions with more accurate approximate or exact analytical expressions. More accurate analytical solutions are sufficient and more useful.
- A large number of the end-of-chapter problems in the text have been modified and many problems were replaced by new ones. Also, several of the solved example problems have been replaced. New and modified problems allow instructors more flexibility and choice in solving problems in class, assigning homework problems, and preparing exam/quiz questions.

**CONTENTS**

1. Introduction and Overview
  2. Basic Concepts of Thermodynamics
  3. Energy, Energy Transfer, and General Energy Analysis
  4. Properties of Pure Substances
  5. Energy Analysis of Closed Systems
  6. Mass and Energy Analysis of Control Volumes
  7. The Second Law of Thermodynamics
  8. Entropy
  9. Power and Refrigeration Cycles
  10. Introduction and Properties of Fluids
  11. Fluid Statics
  12. Bernoulli and Energy Equations
  13. Momentum Analysis of Flow Systems
  14. Internal Flow
  15. External Flow: Drag and Lift
  16. Mechanisms of Heat Transfer
  17. Steady Heat Conduction
  18. Transient Heat Conduction
  19. Forced Convection
  20. Natural Convection
  21. Radiation Heat Transfer
  22. Heat Exchangers
- Appendix: - Property Tables and Charts

**Fundamentals of Thermal Fluid Sciences (SI Edition)**

**Yunus Cengel, Robert Turner, John Cimbala**

**Edition: 5**  
**2017©**  
**Print: 9789813310094**  
**Connect: 9781526812582**

**OVERVIEW**

The objective of this text is to cover the basic principles of thermodynamics fluid mechanics and heat transfer. Diverse real-world engineering examples are presented to give students a feel for how thermal-fluid sciences are applied in engineering practice. By emphasizing the physics and physical arguments, students are able to develop intuitive understanding of thermal-fluid sciences. This edition contains sufficient material to give instructors flexibility and to accommodate their preferences on the right blend of thermodynamics fluid mechanics and heat transfer for their students. By careful selection of topics an instructor can spend one-third one-half or two-thirds of the course on thermodynamics and the rest on

selected topics of fluid mechanics and heat transfer.

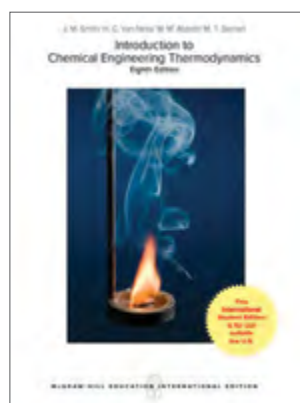
## FEATURES

- Available with this edition is MHE's Online Learning Center that features numerous instructor resources including solutions to the problems, an image library, and new lecture PowerPoints for each chapter.
- There is a test bank for each chapter that allows instructors to assign online homework and quizzes – this online homework is gradable and can be edited by instructors.

## CONTENTS

1. Introduction and overview
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3. Energy, Energy Transfer, and General Energy Analysis
4. Properties of Pure Substances
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20. Natural Convection
21. Radiation Heat Transfer
22. Heat Exchangers

## Thermodynamics (Introduction)



### Introduction to Chemical Engineering Thermodynamics

J.M. Smith, Hendrick Van Ness, Michael Abbott, Mark Swihart

Edition: 8

2018©

Print: 9781259921896

Connect: 9781259878145

## OVERVIEW

This book presents a comprehensive coverage of the subject of thermodynamics from a chemical engineering viewpoint. It provides a thorough exposition of the principles of thermodynamics and details their application to chemical processes. The content is structured to alternate between the development of thermodynamic principles and the correlation and use of thermodynamic properties, as well as between theory and applications. The chapters are written in a clear, logically organized manner and contain an abundance of realistic problems, examples and illustrations to help students understand complex concepts. New ideas, terms and symbols constantly challenge the readers to think and encourage them to apply this fundamental body of knowledge to the solution of practical problems.

## FEATURES

- New and updated examples throughout the text that are relevant to student interests and experience. In particular, many more examples are shown in contexts outside of the traditional petrochemical industry.
- Each chapter begins with an "Introduction Summary" outlining what will be covered and ends with a "Synopsis" that lists what students should be able to do after completing their study of that chapter, including the end-of-chapter problems.

## CONTENTS

1. Introduction
2. The First Law and Other Basic Concepts
3. Volumetric Properties of Pure Fluids
4. Heat Effects
5. The Second Law of Thermodynamics
6. Thermodynamic Properties of Fluids
7. Applications of Thermodynamics to Flow Processes
8. Production of Power from Heat
9. Refrigeration and Liquefaction
10. The Framework of Solution Thermodynamics
11. Mixing Processes
12. Vapor/Liquid Equilibrium: Introduction
13. Thermodynamic Formulations for VLE
14. Chemical-Reaction Equilibrium
15. Topics in Phase Equilibrium
16. Thermodynamic Analysis of Processes



### Thermodynamics: An Engineering Approach (SI Edition)

Yunus A. Cengel,  
Michael A. Boles

Edition: 9

2019©

1,008 Pages

Print: 9789813157873

Connect: 9789353167370

## OVERVIEW

The subject of thermodynamics deals with energy and has long been an essential part of engineering curricula all over the world. Its broad application area ranges from microscopic organisms to common household appliances, transportation vehicles, power generation systems, and even philosophy. This introductory book contains sufficient material for two sequential courses in thermodynamics, and students are assumed to have an adequate background in calculus and physics. A conscious effort is made to emphasize the basic principles of thermodynamics while also providing students with a perspective of how computational tools are used in engineering practice. The traditional classical, or macroscopic, approach is used throughout the text, with microscopic arguments serving in a supporting role as appropriate. This approach is more in line with students' intuition and makes learning the subject matter much easier.

## FEATURES

- A large number of the end-of-chapter problems in the text have been modified and many problems were replaced by new ones. Also, several of the solved example problems have been replaced.
- Video Resources have been added. Using the student response data from the 8th edition SmartBook, 2D/3D animation videos have been added to the ebook to help clarify challenging concepts. In addition to these conceptual video resources and , worked example problem videos are included in the ebook to help students apply their conceptual understanding to problem solving.
- Extensive Use of Artwork. This edition features an enhanced art program done in four colors to provide more realism and pedagogical understanding. Further, a large number of figures have been upgraded to become three-

dimensional and thus more real-life. Figures attract attention and stimulate curiosity and interest. Most of the figures in this text are intended to serve as a means of emphasizing some key concepts that would otherwise go unnoticed; some serve as page summaries.

- Over 1,000 engaging illustrations provides a motivating visual program for the text.
- This edition includes over 500 new problems. A significant number of the existing problems have also been modified.
- Renewable energy is covered in a new chapter available online, and up-to-date examples of solar, wind, geothermal, and other types of energy are covered with their thermodynamics underpinnings.
- A distinctive feature of this book is its emphasis on the physical aspects of the subject matter in addition to mathematical representations and manipulations. Cengel uses ordinary day-to-day experiences that build up to a mathematical problem.

## CONTENTS

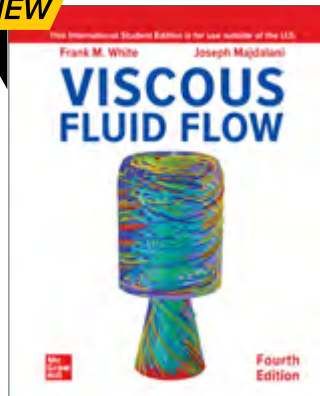
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2. Energy, Energy Transfer, and General Energy Analysis
3. Properties of Pure Substances
4. Energy Analysis of Closed Systems
5. Mass and Energy Analysis of Control Volumes
6. The Second Law of Thermodynamics
7. Entropy
8. Exergy
9. Gas Power Cycles
10. Vapor and Combined Power Cycles
11. Refrigeration Cycles
12. Thermodynamic Property Relations
13. Gas Mixtures
14. Gas-Vapor Mixtures and Air-Conditioning
15. Chemical Reactions
16. Chemical and Phase Equilibrium
17. Compressible Flow

### Appendices:

1. Property Tables and Charts

## Viscous Flow/ Boundary Layer Theory

NEW



## Viscous Fluid Flow

Frank White

Edition: 4

2022©

544 Pages

Mar 2021

Print: 9781260597806

Connect: 9781264428106

## OVERVIEW

Since 1974 this book has been known for its academic rigor and effectiveness at serving as a convenient “one-stop shop” for those interested in expanding their knowledge of the rich and evolving field of fluid mechanics. The fourth edition contains important updates and over 200 new references while maintaining the tradition of fulfilling the role of a senior or first-year graduate textbook on viscous motion with a well-balanced mix of engineering applications.

## FEATURES

- Readers are introduced to several supplementary techniques including the Bragg–Hawthorne approach, a simplified momentum-integral formulation, and new Blasius solutions.
- Chapter 4 has been substantially improved. We have explained the 1921 Pohlhausen paradox and provided new analytical velocity profiles that are considerably more precise, including a closed-form solution to the Blasius equation.
- We have added seven more appendices for a total assortment of nine. At the end of the book: (A) vector identities; (B) reduced forms of the incompressible Navier–Stokes equations; (C) transport properties; (D) Einstein’s indicial notation; (E) energy loss evaluation; (F) Bragg–Hawthorne’s equations in spherical polar coordinates; (G) equations of motion; (H) Buckingham Pi procedure with 88 dimensionless parameters; and (I) useful trigonometric identities.
- 128 new problems have been added to the original set of 255. Many of the new problems are realistic and either self-guided or leading to prescribed answers.
- Over 50% of Chapter 5 is new and extends the 1D hydrodynamic stability approach to the biglobal framework so readers can tackle more complex configurations using the fast growing biglobal

approach.

- Readers will find a wealth of material, fluid mechanics videos, supplementary handouts, PowerPoint slides for lectures, sample exams, biographical information on key contributors, password-protected solutions to exercise problems, and the ability to provide feedback in the instructor’s manual and the student resource website.
- This text provides detailed procedures to solve a wide range of viscous and thermal flow problems, so readers are better prepared to tackle real-world problems and to better interpret simulation results.

## CONTENTS

1. Preliminary Concepts
2. Fundamental Equations of Compressible Viscous Flow
3. Solutions of the Newtonian Viscous-Flow Equations
4. Laminar Boundary Layers
5. The Stability of Laminar Flows
6. Incompressible Turbulent Mean Flow
7. Compressible Boundary Layer Flow

## Appendices

- A. Transport Properties of Various Newtonian Fluids
- B. Equations of Motion of Incompressible Newtonian Fluids in Cylindrical and Spherical Coordinates
- C. A Runge-Kutta Subroutine for N Simultaneous Differential Equations

## Others



## Automotive Mechanics

Ed May, Les Simpson

Edition:10

2018©

1,112 Pages

Print: 9781760421502

Connect: 9781760421533

## OVERVIEW

The milestone 10th edition of Automotive Mechanics marks an impressive 47 years of service for this market-leading resource. Widely used across Australia and throughout Asia the text introduces students

to the service diagnosis and repair of passenger and light commercial vehicles. A major overhaul has fine-tuned Automotive Mechanics making it easier to navigate and aligning the content more closely to the AUR Automotive Retail Service and Repair Training Package. The content ensures full coverage of the latest vehicle computer systems and diagnostic techniques.

## CONTENTS

### Part 1: Introduction to Motor Vehicles

1. Motor vehicle components
2. Workshop safety
3. Workshop practices
4. Tools and their uses
5. Measuring and checking
6. Friction and bearings
7. Seals, gaskets and sealants
8. Fuels, fluids and lubricants
9. Service and maintenance

### Part 2: Running Gear

10. Tyres, wheels and balance
11. Brakes
12. Suspension systems
13. Steering systems
14. Wheel alignment

### Part 3: Engines and Engine Systems

15. Engine fundamentals
16. Engine construction
17. General engine service
18. Cylinder head repair and overhaul procedures
19. Cylinder-block repair and overhaul
20. Cooling systems and servicing
21. Engine-lubricating systems
22. Intake, forced induction and exhaust systems and servicing

### Part 4: Transmissions and Drives

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28. Automatic transmissions: mechanical
29. Automatic transmissions: hydraulics and controls
30. Automatic transmission service

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34. Diagnosis: petrol engines and other vehicle systems

### Part 6: Diesel Engines

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36. Diesel fuel systems
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