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### ELECTRICAL ENGINEERING

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### ELECTRONICS & COMMUNICATION ENGINEERING

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Electrical Engineering
ABOUT THE BOOK
This text presents students with the basic theory and practice of system dynamics. It introduces the modeling of dynamic systems and response analysis of these systems, with an introduction to the analysis and design of control systems.

FEATURES
- Revised and expanded content throughout—Keeps students up-to-date with the latest information in the field.
- Expanded and earlier presentation of state-space modeling—Allows instructors to cover this topic earlier in the course as is commonly preferred and with the added teaching help of MATLAB for extensive use in solving computation problems in state-space format.
- Added chapter on modeling dynamic systems—Chapter 4.
- Discusses transfer-function approach to system modeling.
- Use of MATLAB throughout- Enables students to solve most of the computational problems in the book.
- Hundreds of examples and worked-out problems—With and without solutions—Gives students the opportunity to practice and apply learned concepts in each chapter.

CONTENTS
1. Introduction to System Dynamics
2. The Laplace Transform
3. Mechanical Systems
4. Transfer-Function Approach to Modeling Dynamic Systems
5. State-Space Approach to Modeling Dynamic Systems
6. Electrical Systems and Electromechanical Systems
7. Fluid Systems and Thermal Systems
8. Time-Domain Analyses of Dynamic Systems
9. Frequency-Domain Analyses of Dynamic Systems
10. Frequency-Domain Analyses and the Design of Control Systems
11. Time-Domain Analyses of Control Systems

Appendix A. Systems of Units
Appendix B. Conversion Tables
Appendix C. Vector-Matrix Algebra
Appendix D. Introduction to MATLAB

Also Available

Advanced Control Systems Design, 1/e
Bernard Friedland
ISBN: 9789332559561
368  © 2015

Introduction to Systems Dynamics, 1/e
Shearer
ISBN: 9789332578593
432  © 2016
ABOUT THE BOOK

Electrical Engineering Fundamentals focuses on the five principal zones within the discipline of electrical engineering. The author also develops new content that is more attuned to the needs of the students and uses new fundamental laws to clarify the concepts and ideas in a more structured manner.

The second edition of the book, Electrical Engineering Fundamentals is intended to be put in use where Del Toro’s other text, Principles of Electrical Engineering is being used. As a text, although it is primarily designed for students of electrical engineering, non-majors can subscribe to the text easily because of its accessible content. The student can use the Classical Method or the Laplace Transform Method to solve problems.

CONTENTS

1. The Fundamental Laws of Electrical Engineering
   Part One: Electric Circuit Theory
2. The Circuit Elements. Elementary Network Theory
3. Circuit Differential Equations
4. Forms and Solutions. Circuit Dynamics and Forced Responses
5. The Laplace-Transform Method of Finding Circuit Solutions
6. Sinusoidal Steady-State Response of Circuits
   Part Two: Electronics
7. Electron Control Devices
8. Semiconductor Types
9. Semiconductor Electronic Circuits
10. Special Topics and Applications
   Part Three: Digital Systems
12. Simplifying Logical Functions
13. Components of Digital Systems
14. Microprocessor Computer Systems
   Part Four: Electromechanical Energy Conversion
15. Magnetic Theory and Circuits
16. Transformers
17. Electromechanical Energy Conversion
18. The Three-Phase Induction Motor
19. Three-Phase Synchronous Machines
20. D-C Machines
21. Single-Phase Induction Motors
22. Stepper Motors
   Part Five: Feedback Control Systems
23. Principles of Automatic Control
24. Dynamic Behavior of Control Systems
Appendices

ABOUT THE AUTHOR

Vincent Del Toro was an Emeritus Professor of City College of New York and an Electrical Engineer. His other books include Electric Machines and Power Systems, Principles of Control Systems Engineering and Electric Power Systems. He graduated from CCNY and Brooklyn Polytechnic University before turning to his enriching career in education and academics. He was a well-known educator and had garnered Educator of the Year awards for his contributions in the field. He wrote 10 books along with the best-selling books Electrical Engineering Fundamentals and Principles of Electrical Engineering. He died at the age of 82 on July 5, 2006 in New Jersey.
ABOUT THE BOOK
Electrical Technology, Vol. 1 is a well-written textbook that will serve the needs of undergraduate students of engineering. The 1st volume of the book consists of 30 chapters and introduces the fundamentals of the subject through a discussion on system of units and fundamentals of electrons and gradually moves to advanced topics such as Complex Algebra, Fourier Series, Circuits and Networks, which helps engineering students understand the subject better and build a concrete foundation of their concepts.

FEATURES
- Presents a comprehensive coverage on the fundamentals of the subject, such as Dielectric Materials, Electrochemical Action, Inductors, and Hysteresis.
- Chapters focusing on magnetic materials, complex algebra, fourier series, first and second order systems
- Additional solved examples provided at the end of chapter for concrete understanding of topics
- Web Supplements includes animations, important formulae, periodic chart, key terminology, Diagrammatic Symbols etc.
- Excellent pedagogy
  - Learning Objectives
  - Chapter Summary
  - 900+ illustrations
  - 450+ solved questions
  - 450+ unsolved questions
  - 300+ MCQs with answers

CONTENTS
1. System of Units
2. Electrons in Action
3. Electric Circuits
4. Simple D.C. Circuits
5. Networks (D.C.)
6. Mesh Current and Node-Voltage Analysis
7. Electrochemical Action
8. Electromagnetism
9. Inductors and A.C. Transients
10. Hysteresis
11. Magnetic Materials
12. Electrostatics
13. Capacitors and D.C. Transients
14. Dielectric Materials
15. Field Theory
16. Single Phase Alternating Voltage and Current
17. Three-Phase Circuits and Systems
18. Complex Algebra
19. Work, Power and Energy
20. Power Factor Correction
21. LCR Circuits
22. Resonance
23. The Fourier Series
24. Networks (A.C.)
25. Delta Wye Transformations
26. Attenuators and Filters
27. Transmission Lines
28. First and Second Order Systems
29. Laplace Transforms
30. Coupled Circuits

ABOUT THE AUTHOR
S. P. Bali has been associated with the field of electronics for over 45 years. With over 20 years of teaching experience, he has been teaching new entrants in the field of electronics and taken diploma-level courses in the Military College of Electronics and Mechanical Engineering (MCEME), Secunderabad. He has contributed articles to magazines and has authored several books.
ABOUT THE BOOK

Electrical Technology, Vol. 2 is the second offering of the book on Electrical Technology and serve the need of undergraduate students of electrical and electronics engineering. The book is divided into two parts consisting of 24 chapters. Part on Electric Machines introduces AC and DC machines and Part on Electrical Measurements discusses various electrical instruments and measurements.

FEATURES

- Updated coverage of MATLAB and the Symbolic Toolbox for network analysis
- Explanation of how the Wheatstone bridge is used in strain measurements
- Discussion on Freescale Semiconductor HCS12/9S12 family as an example of microcontrollers
- Approximately 200 problems added, replacing some of the problems from the previous edition

CONTENTS

1. Introduction
2. Resistive Circuits
3. Inductance and Capacitance
4. Transients
5. Steady-State Sinusoidal Analysis
6. Frequency Response, Bode Plots, and Resonance
7. Logic Circuits
8. Computers and Microcontrollers
9. Computer-Based Instrumentation Systems
10. Diodes
11. Amplifiers: Specifications and External Characteristics
12. Field-Effect Transistors
13. Bipolar Junction Transistors
14. Operational Amplifiers
15. Magnetic Circuits and Transformers
16. DC Machines
17. AC Machines

ABOUT THE AUTHOR

Allan R. Hambley received his B.S. degree from Michigan Technological University, his M.S. degree from Illinois Institute of Technology, and his Ph.D. from Worcester Polytechnic Institute. He has worked in industry for Hazeltine Research Inc., Warwick Electronics, and Harris Government Systems. He is currently Professor of Electrical Engineering at Michigan Tech.

ISBN: 9789332514416

Electrical Engineering: Principles & Applications, 6/e

ABOUT THE BOOK

The revised edition of Electrical Engineering enhances the overall learning experience by using a wide variety of pedagogical features to present the applications of the theories in various fields. Important topics such as Circuit Analysis, Digital Systems, Electronics, and Electromechanics are thoroughly covered. The focus of the text is to stimulate student interest and increase awareness about the relevance of electrical engineering in their chosen professions.

FEATURES

- Updated coverage of MATLAB and the Symbolic Toolbox for network analysis
- Explanation of how the Wheatstone bridge is used in strain measurements

CONTENTS

1. Introduction
2. Resistive Circuits
3. Inductance and Capacitance
4. Transients
5. Steady-State Sinusoidal Analysis
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Allan R. Hambley received his B.S. degree from Michigan Technological University, his M.S. degree from Illinois Institute of Technology, and his Ph.D. from Worcester Polytechnic Institute. He has worked in industry for Hazeltine Research Inc., Warwick Electronics, and Harris Government Systems. He is currently Professor of Electrical Engineering at Michigan Tech.

ISBN: 9789332563308
FEATURES

- Brand new chapter on Electrical Energy Systems including a detailed examination of renewable energy sources
- Updated and extended coverage in key areas such as Op-Amps; Induction Motors; and Fibreoptics
- Even more exercises and examples added to enhance problem solving skills

CONTENTS

Section 1: Electrical Principles
1. International System of Measurement
2. Introduction to Electrical Systems
3. Simple DC Circuits
4. Network Theorems
5. Capacitance and Capacitors
6. Electromagnetism
7. Simple Magnetic Circuits
8. Inductance in a DC Circuit
9. Alternating Voltage and Current
10. Single-phase Series Circuits
11. Single-phase Parallel Networks
12. Power in AC Circuits
13. Complex Notation
14. Resonance in AC Circuits
15. Network Theorems Applied to AC Networks

Section 2: Electronic Engineering
16. Electronic Systems
17. Passive Filters
18. Amplifier Equivalent Networks
19. Semiconductor Materials
20. Rectifiers
21. Junction Transistor Amplifiers
22. FET Amplifiers
23. Further Semiconductor Amplifiers
24. Interfacing Digital and Analogue Systems
25. Digital Numbers
26. Digital Systems
27. Microprocessors and Programs
28. Control Systems
29. Signals
30. Data Transmission and Signals
31. Communications
32. Fibreoptics

Section 3: Power Engineering
33. Multiphase Systems
34. Transformers
35. Introduction to Machine Theory
36. AC Synchronous Machine Windings
37. Characteristics of AC Synchronous Machines
38. Induction Motors
39. Electrical Energy Systems
40. Power Systems
41. Direct-current Machines
42. Direct-current Motors
43. Control System Motors
44. Motor Selection and Efficiency
45. Power Electronics

Section 4: Measurements
46. Electronic Measuring Instruments
47. Analogue Measuring Instruments
ABOUT THE BOOK
Attuned to the needs of undergraduate students of engineering in their first year, Basic Electrical Engineering enables them to build a strong foundation in the subject. A large number of real-world examples illustrate the applications of complex theories. The book comprehensively covers all the areas taught in a one-semester course and serves as an ideal study material on the subject.

FEATURES
- Detailed coverage on AC Circuits and DC Circuits
- Separate chapters on Domestic Wiring and Illumination and Earthing and Electrical Safety
- Step-by-step problem-solving methodology to hone problem-solving skills
- Extended coverage on electric machines and measurements
- In-depth discussion on renewable sources of energy
- Coverage on specialized motors like hysteresis motor, stepper motor, linear induction motor and universal motor
- Excellent pedagogy
- 600+ Figures and Illustrations
- 500+ Solved Questions
- 450+ Unsolved Questions
- 200+ MCQs

CONTENTS
1. Concepts of Circuit Theory
2. DC Circuit Analysis and Network Theorems
3. Electrostatics and Capacitors
4. Batteries
5. Magnetic Circuits
6. AC Fundamentals
7. Single-phase AC Circuits
8. Three-phase AC Circuits
9. Measuring Instruments
10. Single-phase Transformers
11. DC Machines (Generators and Motors)
12. Three-Phase Induction Motors
13. Single-Phase Induction Motors
14. Three-Phase Synchronous Machines
15. Sources of Electrical Power . . . . . . . . . . . . . . Online
16. Introduction to Power System . . . . . . . . . . Online
17. Introduction to Earthing and Electrical Safety . . Online
18. Domestic Wiring & Illumination . . . . . . . . Online

ABOUT THE AUTHOR
SK Sahdev is a Associate Dean in Lovely Professional University
ABOUT THE BOOK
The second edition provides easy to comprehend learning material on the principles of basic electrical and electronics engineering. It offers an unparalleled exposure to the entire gamut of topics such as Electricity Fundamentals, Network Theory, Electromagnetism, Electrical Machines, Transformers, Measuring Instruments, Power Systems, Semiconductor Devices, Digital Electronics and Integrated Circuits. Extensive use of illustrations, examples and exercises in accordance with the progressive development of the concepts covered within the chapter make the reading more exciting.

The text extensively includes number of illustrations, examples and exercises in accordance with the progressive development of the concept covered within the chapter to make the reading more exciting.

FEATURES
- Extensively covers syllabus prescribed by all major technical universities
- Discussion on important topics such as electric safety and protection, digital instruments, common-emitter, common-base transistor configuration and characteristics.
- End-Chapter terminologies - List of important formulas, equations and points to remember.
- Step by Step tutorial Based approach
- Enhanced pedagogy
- 600+ review questions
- 250+ solved examples
- 330+ multiple-choice questions
- 740+ illustrations

CONTENTS
1. Basic Concepts, Laws, and Principles
2. DC Networks and Network Theorems
3. AC Fundamentals and Single-phase Circuits
4. Three-phase System
5. Electromagnetism and Magnetic Circuits
6. Transformers
7. DC Machines
8. Three-phase Induction Motors
9. Single-phase Motors
10. Synchronous Machines
11. Measurement and Measuring Instruments
12. Transducers
13. Power Systems
14. Semiconductor Devices
15. Rectifiers and Other Diode Circuits
16. Digital Electronics
17. Integrated Circuits
18. Communication Systems

ABOUT THE AUTHOR
S. K. Bhattacharya is presently working as the Professor and Advisor in Sri Sukhmani Institute of Engineering & Technology, Dera Bassi, near Chandigarh, Punjab. Earlier, he worked as the Director, National Institute of Technical Teachers Training and Research (NITTTR) Chandigarh, Punjab; Director, NITTTR Kolkata, West Bengal; Director, Hindustan Institute of Technology, Greater Noida, Uttar Pradesh; Director SUS college of Engineering & Technology, Mohali, Punjab; Principal, SUS Women Engineering College, Mohali, Punjab; and Professor Emeritus, Sharda University, Greater Noida, Uttar Pradesh.
ABOUT THE BOOK
The most widely acclaimed text in the field for more than three decades, Introductory Circuit Analysis provides introductory-level students with the most thorough, understandable presentation of circuit analysis available. Exceptionally clear explanations and descriptions, step-by-step examples, practical applications, and comprehensive coverage of essentials provide students with a solid, accessible foundation.

FEATURES
- Learning Objectives: Set up each chapter for the reader
- Calculator Coverage: Updated calculator coverage to the TI-89
- Section Rewrites: Many sections have been rewritten to be clearer, more practical, and succinct
- Revised Lab Manual w/a more consistent format
- Updated photos and illustrations

CONTENTS
1. Introduction
2. Voltage and Current
3. Resistance
4. Ohm's Law, Power, and Energy
5. Series dc Circuits
6. Parallel dc Circuits
7. Series-Parallel Circuits
8. Methods of Analysis and Selected Topics (dc)
9. Network Theorems
10. Capacitors
11. Inductors
12. Magnetic Circuits
13. Sinusoidal Alternating Waveforms
14. The Basic Elements and Phasors
15. Series and Parallel ac Circuits
16. Series-Parallel ac Networks
17. Methods of Analysis and Selected Topics (ac)
18. Network Theorems (ac)
19. Power (ac)
20. Resonance
21. Transformers
22. Polyphase Systems
23. Pulse Waveforms and the R-C Response
24. Nonsinusoidal Circuits

ABOUT THE AUTHOR
Robert Boylestad is a best selling author/teacher who writes a wide variety of textbooks

Appendix: Conversion Factors
Appendix: PSpice and Multisim
Appendix: Determinants
Appendix: Magnetic Parameter Conversions
Appendix: Maximum Power Transfer Conditions
Summary of Equations
Principles of Electric Circuits: Conventional Current Version, 9/e

Thomas L. Floyd

ABSTRACT

For DC/AC Circuits courses requiring a comprehensive, classroom tested text with an emphasis on troubleshooting and the practical application of DC/AC principles and concepts.

This text provides an exceptionally clear introduction to DC/AC circuits supported by superior exercises, examples, and illustrations and an emphasis on troubleshooting and applications. Throughout the text’s coverage, the use of mathematics is limited to only those concepts that are needed for understanding. Floyd’s acclaimed troubleshooting emphasis provides students with the problem solving experience they need to step out of the classroom and into a job!

FEATURES

- Hallmark Features:
  - Numerous worked examples and related problems throughout each chapter help illustrate and clarify basic concepts of specific procedures.
  - Real scenario “Applications”, many of which are new to this edition are emphasized with most chapters.
  - Complete and straightforward presentation of the basics of electrical components and circuits.

- Troubleshooting coverage
- Full four color format
- Two complete Lab Manuals
- Complete Instructor Resource package (Power Point files, Companion Website, Multisim CD w/circuit file examples, Prentice Hall Test Manager software, Instructors Resource Manual w/solutions to chapter problems, solutions to both lab manuals)

CONTENTS

1. Quantities and Units
2. Voltage, Current, and Resistance
3. Ohm’s Law
4. Energy and Power
5. Series Circuits
6. Parallel Circuits
7. Series-Parallel Circuit
8. Circuit Theorems and Conversions
9. Branch, Loop, and Node Analyses
10. Magnetism and Electromagnetism
11. Introduction to Alternating Current and Voltage
12. Capacitors
13. Inductors
14. RC Circuits
15. RL Circuits
16. RLC Circuits and Resonance
17. Passive filters
18. Circuit Theorems in AC Analysis
19. Time Response of Reactive Circuits
20. Three-Phase Systems in Power Applications
ABOUT THE BOOK
For a one-year beginning either sophomore or junior year of the undergraduate electrical or computer engineering curriculum. Written to provide an introduction to the basic concepts of modern circuit theory. This text is designed to motivate students to learn through learning objectives, review questions and discussions.

CONTENTS
1. Introduction
2. Resistors, Sources, and Simple Circuits
3. Resistance Networks
4. Capacitors and Inductors
5. First-Order Circuits
6. Second-Order and Higher-Order Circuits
7. Sinusoidal Steady-State Analysis-I
8. Sinusoidal Steady-State Analysis-II
9. The Laplace Transform-I
10. The Laplace Transform-II
11. Two-Port Network Parameters
12. The Fourier Series
   A. Matrices and Determinants
   B. Complex Numbers
   C. Use of Spice in Circuit Analysis

Answers to Review Questions
Answers to Selected Problems

ABOUT THE BOOK
The book gives an introduction to the field of communication circuit engineering and electrical network theory, from the standpoint of both currents and small fields. It provides a basic coverage of the theory of transmission of electric energy in lumped constant circuits, on distributed-constant lines, through wave-guides and into space. The book covers specific circuit material, which is essential to an understanding of modern electronic circuits and operations. It also attempts to tie together the circuit and field viewpoint through extensive use of transmission line analogy.

The use of exponential and the reflection factor, rather than the hyperbolic form emphasize practical concepts of energy transfer in fields so that the student has before him the expressions for the incident and the reflected waves.
ABOUT THE AUTHOR

John D. Ryder joined Iowa State College as Assistant Professor in Electrical Engineering. He rose to Professor in 1944, and in 1947 he assumed the Assistant Directorship of the Iowa Engineering Experiment Station. In September 1949, he was named Head of the Department of Electrical Engineering at the University of Illinois. He left this post in July 1954 to take up his present position as Dean of the College of Engineering at Michigan State University, East Lansing, Michigan.

ABOUT THE BOOK

Electric Circuits and Networks is designed to serve as a textbook for a two-semester undergraduate course on basic electric circuits and networks. The book builds on the subject from its basic principles. Spread over seventeen chapters, the book can be taught with varying degree of emphasis on its six subsections based on the course requirement. Written in a student-friendly manner, its narrative style places adequate stress on the principles that govern the behaviour of electric circuits and networks.

FEATURES

- Replete with clear illustrations, solved examples, review questions and end-of-chapter problems, the narrative style is ideal for students at the freshman and sophomore level.
- Basic concepts are explained in detail, placing emphasis on providing a qualitative understanding of various circuit theory concepts and their interrelations.
- Discussions of key topics are borne out with precision and mathematical rigor, adding value to the treatment.
- Linear time-invariant circuits are dealt with due focus, providing the students of linear systems analysis, and signals and systems with sound reference material.

CONTENTS

**Part I: Basic Concepts**
1. Circuit Variables and Circuit Elements
2. Basic Circuit Laws
3. Single Element Circuits

**Part II: Analysis of Memory less Circuits**
4. Nodal Analysis and Mesh Analysis of Memory less Circuits
5. Circuit Theorems
6. The Operational Amplifier as a Circuit Element

**Part III: Sinusoidal Steady-State in Dynamic Circuits**
7. Power and Energy in Periodic Waveforms
8. The Sinusoidal Steady-State Response
9. Sinusoidal Steady-State in Three-Phase Circuits

**Part IV: Time-Domain Analysis of Dynamic Circuits**
10. Simple RL Circuits in Time-Domain
11. RC and RLC Circuits in Time-Domain
12. Higher Order Circuits in Time-Domain

**Part V: Frequency-Domain Analysis of Dynamic Circuits**
13. Dynamic Circuits with Periodic Input - Analysis by Fourier Series
14. Dynamic Circuits With a Periodic Inputs - Analysis by Fourier
15. Analysis of Dynamic Circuits by Laplace Transforms

**Part VI: Introduction to Network Analysis**
16. Two-Port Networks and Passive Filters
17. Introduction to Networktopology
ABOUT THE BOOK
This book provides comprehensive coverage of the topics in the field of electric networks (or circuits) which are considered to be the foundation in electrical engineering, such as the Nyquist criterion, Tellegen's theorem, the Gauss elimination method, Thevenin's and Norton's theorems, the Routh Hurwitz criterion, and Fourier transforms. Problems and suggested digital computer exercises are provided at the end of each chapter. Solutions to ed problems are given in the appendix.

CONTENTS
1. Development of the Circuit Concept
2. Conventions for Describing Networks
3. Network Equations
4. First-order Differential Equations
5. Initial Conditions in Networks
6. The Laplace Transformation
7. Transforms of Other Signal Wave-forms
8. Impedance Functions and Network Theorems
9. Network Functions; Poles and Zeros
10. Two-Port Parameters
11. Sinusoidal Steady-State Analysis
12. Frequency Response Plots
13. Input Power, Power Transfer, and Insertion Loss
14. Fourier Series and Signal Spectra
15. Fourier Integral and Continuous Spectra

ABOUT THE AUTHOR
M. E. Van Valkenburg was a renowned electrical engineer in the United States, who had authored several textbooks in the respective field. Some of the books published by the author include Analog Filter Design, Introduction to Modern Network Synthesis, and Network Analysis: Solutions Manual. These books are extremely beneficial for students pursuing their degrees in the field of electrical engineering.

Also Available

Electronic Circuit Analysis
B. Visvesvara Rao
ISBN: 9788131754283
792 2011

Electric Circuit Analysis
K. S. Suresh Kumar
ISBN: 9788131791554
720 2013

Network Analysis and Synthesis
S. K. Bhattacharya
ISBN: 9789332542853
800 2015
ABOUT THE BOOK
Written to be equally useful for all engineering disciplines, this text is organized around the concept of control systems theory as it has been developed in the frequency and time domains. It provides coverage of classical control, employing root locus design, frequency and response design using Bode and Nyquist plots. It also covers modern control methods based on state variable models including pole placement design techniques with full-state feedback controllers and full-state observers. Many examples throughout give students ample opportunity to apply the theory to the design and analysis of control systems. Incorporates computer-aided design and analysis using MATLAB and LabVIEW MathScript.

FEATURES
- Clear exposition of the basic principles of control system design techniques - Using frequency and time-domain methods including robust control design and an introduction to digital control systems
- An integrated design and analysis approach to real-world engineering problems
- Coverage of computer-aided design and analysis using MATLAB® and LabVIEW MathScript - Appears throughout the text and in end-of-chapter examples and problems
- Coverage of several topics - Robust control systems and system sensitivity, state variable models, controllability and observability, computer control systems, internal model control, robust PID controllers, and computer-aided design and analysis
- The topic of design of real-world, complex control system is a major theme throughout the text - Places emphasis on design for real-world applications, which addresses interest in design by ABET and industry
- At least one design problem in each chapter - This addresses the interest in design of ABET and industry

CONTENTS
1. Introduction to Control Systems
2. Mathematical Models of Systems
3. State Variable Models
4. Feedback Control System Characteristics
5. The Performance of Feedback Control Systems
6. The Stability of Linear Feedback Systems
7. The Root Locus Method
8. Frequency Response Methods
9. Stability in the Frequency Domain
10. The Design of Feedback Control Systems
11. The Design of State Variable Feedback Systems
12. Robust Control Systems

ABOUT THE AUTHORS
Richard C. Dorf is a Professor of Electrical and Computer Engineering at the University of California, Davis. Known as an instructor who is highly concerned with the discipline of electrical engineering and its application to social and economic needs, Professor Dorf has written and edited several successful engineering textbooks and handbooks, including the best selling Engineering Handbook, second edition and the third edition of the Electrical Engineering Handbook.

Robert H. Bishop is the OPUS Dean of Engineering at Marquette University and is a Professor in the Department of Electrical and Computer Engineering. Prior to coming to Marquette University, he was a Professor of Aerospace Engineering and Engineering Mechanics at The University of Texas at Austin for 20 years where he held the Joe J. King Professorship and was a Distinguished Teaching Professor. Professor Bishop started his engineering career as a member of the technical staff at the MIT Charles Stark Draper Laboratory. He authors the well-known textbook for teaching graphical programming entitled Learning with LabVIEW and is also the editor-in-chief of the Mechatronics Handbook.
ABOUT THE BOOK
Using a "how to do it" approach with a strong emphasis on real-world design, this text provides comprehensive, single-source coverage of the full spectrum of control system design. Each of the text's 8 parts covers an area in control—ranging from signals and systems (Bode Diagrams, Root Locus, etc.), to SISO control (including PID and Fundamental Design Trade-Offs) and MIMO systems (including Constraints, MPC, Decoupling, etc.).

FEATURES
- Single-source coverage of the full spectrum of control—From simple classical ideas to sophisticated multivariable problems.
- A major emphasis on design issues not found in other books on the topic—Such as digital and hybrid control systems, PID control including classical tuning methods, integration of state space and transfer function approaches, including Kalman filter and linear quadratic regulator.
- Practical issues of real-world control system design are emphasized—The text covers the traditional topics, but goes well beyond introductory topics to consider implementations of PID control, Smith predictors, fundamental limitations in design arising from delays, right half plane zeros and right half plane poles, impact of actuator limitations (slew rate and amplitude constraints).

CONTENTS
I. The Elements
1. The Excitement of Control Engineering
2. Introduction to the Principles of Feedback
3. Modeling
4. Continuous-Time Signals and Systems
II. SISO Control Essentials
5. Analysis of SISO Control Loops
6. Classical PID Control
7. Synthesis of SISO Controllers
III. SISO Control Design
8. Fundamental Limitations in SISO Control
9. Frequency-Domain Design Limitations
10. Architectural Issues in SISO Control
11. Dealing with Constraints
IV. Digital Computer Control
12. Models for Sampled-Data Systems
13. Digital Control
14. Hybrid Control
V. Advanced Siso Control
15. SISO Controller Parameterizations
16. Control Design Based on Optimization
17. Linear State Space Models
18. Synthesis via State Space Methods
19. Introduction to Nonlinear Control
VI. MIMO Control Essentials
20. Analysis of MIMO Control Loops
21. Exploiting SISO Techniques in MIMO Control
VII. MIMO Control Design
22. Design via Optimal Control Techniques
23. Model Predictive Control
24. Fundamental Limitations in MIMO Control
VIII. Advanced Mimo Control
25. MIMO Controller Parameterizations
26. Decoupling
Appendix A: Notation, Symbols, and Acronyms
Appendix B: Smith-McMillan Forms
ABOUT THE AUTHOR
Graham Goodwin has over 30 years of experience in the area of control engineering covering research, education and industry. He is the author of seven books, 500 papers and holds four patents. He was the foundation Chairman of a spin-off company and is currently Director of a special research center dedicated to systems and control research.

Stefan Graebe's career spans both academic and industrial positions. He was previously research coordinator in the Centre for Industrial Control Science at the University of Newcastle. He is currently head of the Department of Optimization and Automation for the Schwechat refinery of OMV—Austria.

Mario Salgado received a Masters degree in Control from Imperial College and a Ph.D. from the University of Newcastle. He is currently an academic in the Department of Electronics at the Universidad Tecnica Frederico Santa Maria, Valparaiso—Chile. His interests include signal processing and control systems design.

FEATURES
- Chapter 8 first discusses PID control in general and then presents two-degrees-of-freedom control systems — Presents a computational (MATLAB) method to determine system parameters so the system will have the desired transient characteristics.
- An improved chapter on the design of control systems in state space (Chapter 10) — This chapter treats pole placement and observer design and includes quadratic optimal control. MATLAB is extensively used in the design problems using pole placement and observer design.
- An in-depth treatment of topics emphasizes both the basic concepts and the design aspects of control systems.
- An accessible presentation that avoids highly mathematical arguments. The author introduces mathematical proofs only when they contribute to an understanding of the material.
- Over 150 chapter-end worked problems and 180 unsolved problems clarify students' understanding of the material at strategic points throughout the text.
- An introduction to the two-degrees-of-freedom control system and introduction to robust control. Presents a MATLAB approach to the design of high performance control systems.
- A comprehensive coverage of root-locus analyses not found in other texts.
- Detailed coverage of frequency response of control systems.

CONTENTS
1. Introduction to Control Systems
2. Mathematical Modeling of Control Systems
3. Mathematical Modeling of Mechanical Systems and Electrical Systems
5. Transient and Steady-State Response Analyses
6. Control Systems Analysis and design by the Root-Locus Method
7. Control Systems Analysis and Design by the Frequency Response Method
8. PID Controllers and Modified PID Controllers
9. Control Systems Analysis in State Space
10. Control Systems Design of in State Space
ABOUT THE AUTHOR
Katsuhiko Ogata is a prolific writer and professor Emeritus at the Department of Mechanical Engineering of the University of Minnesota. Ogata did his B.S. and M.S. in mechanical engineering from the University of Tokyo and the University of Illinois respectively. In 1956, he did his Doctorate in 1956 in Engineering Science from the University of California at Berkeley. His research areas are discrete-time control systems and optimal control of complex plants.

ABOUT THE BOOK
Katsuhiko Ogata's *Discrete-Time Control Systems* presents a revised edition of the book that offers an ample treatment of discrete-time control systems. Designed for specific courses on the subject, for both undergraduate and postgraduate students, this book offers a gradual development of the subject. It emphasizes the fundamental concepts and avoids complex mathematical arguments. Ogata kept the text lucid and clear to make it easy-to-understand for the readers. It includes in-depth explanation of state observer design, quadratic optimal control, and pole placement. The book elucidates the treatment of the pole-placement design with minimum-order observer with the help of two main approaches. These are the state-space approach and the polynomial equations approach.

FEATURES
- Includes detailed discussion of the theoretical background for designing control systems
- It highlights the importance of MATLAB for studying discrete-time control systems
- Use MATLAB optimally to get numerical solutions.
- Additional chapter on the polynomial equations approach to the control systems design.
- Offers numerous solved problems and instructive examples throughout.

CONTENTS
1. Introduction to Discrete-Time Control Systems.
2. The z Transform.
3. z-Plane Analysis of Discrete-Time Control Systems.
5. State-Space Analysis.
6. Pole Placement and Observer Design.

Appendixes
A. Vector-Matrix Analysis.
B. z Transform Theory.
C. Pole Placement Design with Vector Control.

ABOUT THE AUTHOR
Katsuhiko Ogata is a prolific writer and professor Emeritus at the Department of Mechanical Engineering of the University of Minnesota. Ogata did his B.S. and M.S. in mechanical engineering from the University of Tokyo and the University of Illinois respectively. In 1956, he did his Doctorate in 1956 in Engineering Science from the University of California at Berkeley. His research areas are discrete-time control systems and optimal control of complex plants.
ABOUT THE BOOK
Control Systems Engineering caters to the requirements of an interdisciplinary course on Control Systems at the undergraduate level. Featuring a balanced coverage of time response and frequency response analyses, the book provides an in-depth review of key topics such as components, modelling techniques and reduction techniques, well-augmented by clear illustrations.

FEATURES
- Detailed study of Control Systems Modelling
- Flowchart-based approach for problem solving
- Examples with step-by-step procedure for Time Domain Analysis including Routh-Hurwitz Criterion and Root Locus Techniques, and Frequency Domain Analysis using Bode plot, Polar plot, Nyquist plot, Constant M & N circles and Nichol's chart
- Exclusive chapters on Physiological Control Systems and State-Space Analysis
- Clear examples to demonstrate the use of MATLAB programs
- Over 250 examples and exercise problems and 40 MATLAB programs

CONTENTS
1. Control System Modeling
2. Physical System And Components
3. Block Diagram Reduction Techniques
4. Signal Flow Graph
5. Time Response Analysis
6. Stability And Routh-Hurwitz Criterion
7. Root Locus Techniques
8. Frequency Response Analysis
9. Polar Plot And Nyquist Plot
10. Constant M & N Circles And Nichol's Chart
11. Design Of Compensators Using Polar Plot And Bode Plot
12. State Space Analysis
13. Introduction To Digital Control System
14. MATLAB Programs

ABOUT THE AUTHOR
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Also Available

Control Systems Engineering, 3/e
S. K. Bhattacharya
ISBN: 9788131791653
774 © 2013

Modern Control Theory, 3/e
William L. Brogan
ISBN: 9788131761670
672 © 2011

Control Systems: Theory and Applications, 2/e
Smarajit Ghosh
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Control Systems Technology
Johnson | Malki
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Basic Control Systems Engineering, 1/e
Paul H. Lewis
ISBN: 9789332559585
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Feedback Control Systems 5/e
Phillips | Parr
ISBN: 9789332507609
784 © 2013
ABOUT THE BOOK
This fully revised edition of the book is systematically organized as per the logical flow of the topics included in electrical machines courses in universities across India. It is written as a text-cum-guide so that the underlying principles can be readily understood, and is useful to both the novice as well as advanced readers. Emphasis has been laid on physical understanding and pedagogical aspects of the subject. In addition to conventional machines, the book’s extensive coverage also includes rigorous treatment of transformers (current, potential and welding transformers), special machines, AC/DC servomotors, linear induction motors, permanent magnet DC motors and application of thyristors in rotating machines.

FEATURES
- Exhaustive coverage on rotating machines including AC, DC and Special Machines
- Construction, Winding and Operation of various machines discussed in detail
- Excellent coverage on Transformers: Instrument & welding Transformers, 3 - winding Transformers, Single and 3 - phase transformers
- Rigorous discussion on Synchronous Generators and Motors in separate chapters
- New topic discussing latest developments in Motor Control using Solid State Devices
- A dedicated section, ‘Significant Points’ for revision and recapitulation of important concepts and points at the end of each chapter
- Multiple Choice Questions at the end of each chapter for quick revision of the concepts

CONTENTS
15. Transformers
16. Three-Phase Transformers
17. Basic Concepts of Rotating Machines
18. DC Generators
19. DC Motors
20. Synchronous Generators
21. Synchronous Motors
22. Polyphase Induction Motors
23. Single phase Motors and Special Machines

Appendix A: Basic Definition, Hysteresis and Eddy Current Losses
Appendix B: Reluctance Motor
Appendix C: MMF of Distributed Winding
Appendix D: Torques in AC and DC Machine
Appendix E: Separation of No-load Losses of an Induction Motor
Appendix F: Separation of Losses of an Induction Motor
Appendix G: Tertiary Windings
Appendix H: Solid State Control of Drives

ABOUT THE AUTHOR
Smarajit Ghosh is Professor, Department of Electrical and Instrumentation Engineering, Thapar University, Patiala, Punjab. He has contributed several research papers in international and national journals. His areas of research are Load Flow Study, Application of Fuzzy Logic, Artificial Neural Networks and Differential Evolution in Electric Power Distribution Systems. He is the recipient of Bharat Jyoti Award. He had also served BITS, Pilani and Sikkim Manipal University as an Assistant Professor and Professor respectively.
ABOUT THE BOOK
The text is conceived as a textbook for the undergraduate courses on Electrical machine design. It covers both traditional and modern concepts in the design of machines, including the design of special machines such as switched reluctance motor, permanent magnet synchronous machine, brushless DC machines and synchronous reluctance machines. It also includes a large number of solved examples and exercise problems in increasing order of difficulty.

CONTENTS
1. Basic Design Considerations of Electrical Machines
2. Design of Magnetic circuits
3. Design of Transformer
4. Design of Three phase Induction Motor
5. Design of Single phase induction motor
6. Design of synchronous machine
7. Design of DC machine
8. Computer Aided Design and Analysis of Electric motors

FEATURES
■ Over 200 MCQ's and 300 end of chapter exercises and review questions
■ Flow chart based approach for problem solving in all chapters
■ Detailed coverage of Design of special machines
■ Illustrative Design Problems with MATLAB codes
■ FE simulations to be provided with the text

ABOUT THE AUTHOR
Dr. V. Rajini is Professor, Department of EEE, SSN College of Engineering, Chennai.

V.S. Nagarajan is Assistant Professor, Department of EEE, SSN College of Engineering, Chennai
ABOUT THE BOOK
This best-selling text employs a theoretical, practical, multidisciplinary approach to provide introductory students with a broad understanding of modern electric power. The scope of the book reflects the rapid changes that have occurred in power technology over the past few years—allowing the entrance of power electronics into every facet of industrial drives, and expanding the field to open more career opportunities.

FEATURES
- NEW—Doubly-fed induction machine properties and behavior—For use as a wind turbine generator to produce electricity.
- NEW—Pulse-width modulation (PWM) modifications.
- NEW—Direct Torque Control (DTC) coverage.
- NEW—Wind power and the use of turbines.
- NEW—The HVDC Light™ method of transmitting electric power.

CONTENTS
Part I: FUNDAMENTALS.
1. Units.
2. Fundamentals of Electricity, Magnetism and Circuits.
Part II: ELECTRICAL MACHINES AND TRANSFORMERS.
4. Direct-Current Generators.
5. Direct-Current Motors.
6. Efficiency and Heating of Electrical Machines.
7. Active, Reactive, and Apparent Power.
8. Three-Phase Circuits.
9. The Ideal Transformer.
10. Practical Transformers.
11. Special Transformers.
12. Three-Phase Transformers.
13. Three-Phase Induction Motors.
14. Selection and Application of Three-Phase Induction Machines.
16. Synchronous Generators.
17. Synchronous Motors.
19. Stepper Motors.
Part III: ELECTRICAL AND ELECTRONIC DRIVES.
22. Electronic Control of Direct-Current Motors.
23. Electronic Control of Alternating Current Motors.
Part IV: ELECTRIC UTILITY POWER SYSTEMS.
27. The Cost of Electricity.
30. Harmonics.
Appendix A: Conversion Charts.
Appendix B: Properties of Insulating Materials.
Appendix C: Properties of Conductors and Insulators.
Appendix D: Properties of Round Copper Conductors.
Answers to Problems.
Answers to Industrial Application Problems.
Also Available

**Electric Machines: Theory, Operating Applications, and Controls, 2/e**
- Hubert
- ISBN: 9788131708026
- 624 pages © 2006

**Electric Machinery & Transformers, 2/e**
- Irving Kosow
- ISBN: 9788131711279
- 616 pages © 2007

**Electric Machines and Power Systems, 1/e**
- Vincent Del Toro
- ISBN: 9789332571815
- 728 pages © 2016
ABOUT THE BOOK
The book develops a systematic approach to motor drives. While the emphasis is on practice extensive modeling, simulation and analysis is developed to assist readers in their understanding of the subject matter from fundamental principles. Also, each motor drive is illustrated with an industrial application in detail at the end of chapters to enable readers to relate theory to practice.

FEATURES
- Prior knowledge of electrical machines, power converters and linear control systems—Required for optimum text usage.
- System level analysis, design and integration of the motor drives addressed.
- Modeling and analysis of electrical machines and drive systems—Derived from first principles, while control algorithms are developed and their implementations with simulation results given whenever appropriate.
- Chapters include Discussion Questions and Exercise Problems, along with detailed introductions.

CONTENTS
1. Introduction.
2. Modeling of DC Machines.
3. Phase Controlled DC Motor Drives.
4. Chopper Controlled DC Motor Drives.
5. Polypahse Induction Machines.
6. Phase Controlled Induction Motor Drives.
7. Frequency Controlled Induction Motor Drives.
8. Vector Controlled Induction Motor-Drives.
9. Permanent Magnet Synchronous and Brushless DC Motor Drives.

ABOUT THE BOOK
A list of general references is given at the beginning of this book, whereas references to specialized topics can be at the end of each chapter. A set of problems has been given at the end of each chapter. In a number of cases, these problems are intended to supplement the text.

CONTENTS
1. Atoms and Aggregates of Atoms
2. Dielectric Properties of Insulators in Static Fields
3. Behavior of Dielectrics in Alternating Fields
4. Magnetic Properties of Materials
5. The Conductivity of Metals
6. The Mechanism of Conduction in Semiconductors
7. Junction Rectifiers and Transistors

ABOUT THE AUTHOR
Adrianus J. Dekker, Professor, Department of Electrical Engineering, Institute of Technology, University of Minnesota

ABOUT THE BOOK
With energy sustainability at the forefront of public discussion worldwide, there is a vital requirement to foster an understanding of safe alternative sources of energy such as solar and wind power. Tailored to the requirements of undergraduate students of engineering, Non-conventional Energy Resources provides a comprehensive coverage of the basic principles, working and utilization of all key renewable power sources—solar, wind, hydel, biomass, hyower and fuel cells. The book also consists of several solved and unsolved questions for thorough practice and revision.

FEATURES
- Extensive coverage on:
  - Energy Management and Conservation
  - Fuel Cells
  - Solar and Thermal Cells
  - Exclusive chapter on Solid Wastes and Agricultural Refuse
- Provides the latest statistics from the energy sector in India
- Excellent Pedagogy:
  - More than 60 solved questions
  - More than 300 unsolved questions
  - More than 200 multiple-choice questions

CONTENTS
1. NCER-An Overview
2. Energy from the Sun
3. Solar Thermal Energy Collectors
4. Solar Cells
5. Hydrogen Energy
6. Wind Energy
7. Geothermal Energy
8. Solid Waste and Agricultural Refuse
9. Biomass Energy
10. Biogas Energy
11. Tidal Energy
12. Sea Wave Energy
13. Ocean Thermal Energy Conversion
14. Fuel Cell
15. Magnetohydrodynamic(MHD) Power Generation
16. Thermoelectric converters
17. Thermionic converters
18. Concept of Energy conservation and Energy Management
19. Energy Conservation and Management in different Energy Activity Sector
   Appendix: MCQs chapter-wise
   Appendix: MCQs on Energy Systems
   Appendix: Terms and Definition

ABOUT THE AUTHOR
Nonlinear Systems, 3/e

Hassan K. Khalil

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ABOUT THE BOOK
The text is written to build the level of mathematical sophistication from chapter to chapter. It has been reorganized into four parts: Basic analysis, Analysis of feedback systems, Advanced analysis, and Nonlinear feedback control.

FEATURES
- Updated to include subjects which have proven useful in nonlinear control design in recent years
- Over 170 new exercises.

CONTENTS
1. Introduction
2. Second-Order Systems
3. Fundamental Properties
4. Lyapunov Stability
5. Input-Output Stability
6. Passivity
7. Frequency-Domain Analysis of Feedback Systems
8. Advanced Stability Analysis
9. Stability of Perturbed Systems
10. Perturbation Theory and Averaging
11. Singular Perturbations
12. Feedback Control
13. Feedback Linearization
14. Nonlinear Design Tools

ABOUT THE AUTHOR
Hassan K. Khalil, Michigan State University, East Lansing

Modern Power Electronics and AC Drives

Bimal K. Bose

744 | © 2015

ABOUT THE BOOK
A clear understanding of power electronics and AC drives is critical in a wide range of modern systems, from household appliances to automated factories. Modern Power Electronics and AC Drives covers every aspect of the topic, including crucial innovations such as artificial intelligence, advanced estimation and sensorless control. It is an advanced, authoritative, and practical guide for state-of-the-art power electronics and AC drive technology.

FEATURES
- Modern power semiconductor devices, converter circuits, and electrical machines
- High-performance control of induction and synchronous motor drives
- Energy saving control
- Estimation, identification and sensorless control of drives
- Artificial intelligence techniques such as expert system, fuzzy logic and neural network applied to power electronics and drives
- Use of MATLAB-based toolboxes in simulation and design
CONTENTS
1. Power Semiconductor Devices
2. AC Machines for Drives
3. Diodes and Phase-Controlled Converters
4. Cycloconverters
5. Voltage-Fed Converters
6. Current-Fed Converters
7. Induction Motor Slip-Power Recovery Drives
8. Control and Estimation of Induction Motor Drives
9. Control and Estimation of Synchronous Motor Drives
10. Expert System Principles and Applications
11. Fuzzy Logic Principles and Applications
12. Neural Network Principles and Applications

ABOUT THE AUTHOR
Bimal K. Bose is recognized worldwide as an authority and pioneer in the field of power electronics and drive technology. He has over 40 years of professional experience in R&D, design, and teaching. A seven-time IEEE Award winner, he holds 21 U.S. patents. He is currently at the University of Tennessee, where he holds the Condra Chair of Excellence in Power Electronics.

ABOUT THE BOOK
This book on Power Electronics is one of the most reputed and revered texts for more than three decades. Exemplary writing style, precise descriptions and supreme attention to detail in the quality of the schematics makes this text one of the most sought after and inspiring books on Power Electronics. This new edition beautifully upgrades the earlier work, with substantial updates to detail, without compromising on the style, content, or technical quality.

FEATURES
- Features bottom-up approach rather than top-down approach - that is, after covering the devices, the converter specifications are introduced before covering the conversion techniques
- Coverage of the development of silicon-carbide (SiC) devices and averaging models of dc-dc converters
- Expanded state-of-the-art Space Vector Modulation technique
- Addition of a new chapter on Introduction to Renewable Energy, and covers the state-of-the-art techniques

CONTENTS
Chapter 1 Introduction
PART I Power Diodes and Rectifiers
Chapter 2 Power Diodes and Switched RLC Circuits
Chapter 3 Diode Rectifiers
PART II Power Transistors and DC-DC Converters
Chapter 4 Power Transistors
Chapter 5 DC-DC Converters
PART III Inverters
Chapter 6 DC-AC Converters
Chapter 7 Resonant Pulse Inverters
Chapter 8 Multilevel Inverters

PART IV Thyristors and Thyristorized Converters
Chapter 9 Thyristors
Chapter 10 Controlled Rectifiers
Chapter 11 AC Voltage Controllers

PART V Power Electronics Applications and Protections
Chapter 12 Flexible AC Transmission Systems
Chapter 13 Power Supplies
Chapter 14 Dc Drives
Chapter 15 Ac Drives

Chapter 16 Introduction to Renewable Energy
Chapter 17 Protections of Devices and Circuits
Appendix A Three-Phase Circuits
Appendix B Magnetic Circuits
Appendix C Switching Functions of Converters
Appendix D Dc Transient Analysis
Appendix E Fourier Analysis
Appendix F Reference Frame Transformation

ISBN: 9789332584587
ABOUT THE BOOK

Power System Analysis is a comprehensive text designed for an undergraduate course in electrical engineering. Written in a simple and easy-to-understand manner, the book introduces the reader to power system network matrices and power system steady-state stability analysis.

FEATURES

- In-depth coverage of
- Symmetrical fault analysis and unbalanced fault analysis
- Exclusive chapters on power flow studies
- Precise explanation supported by suitable examples
- The book is replete with objective questions and review questions

CONTENTS

1. Introduction
2. Power System Network
3. Matrices-1
4. Power System Network
5. Matrices-2
6. Power Flow Studies-1
7. Power Flow Studies-2
8. Short Circuit Analysis 1 (Symmetrical Fault Analysis)
9. Short Circuit Analysis 2 (Unbalanced Fault Analysis)
10. Power System Steady-State stability Analysis
11. Transient Stability

ABOUT THE AUTHOR

N.V. Ramana is Professor and Head, Department of Electrical and Electronics Engineering, JNTU College of Engineering, Jagityal, Karimnagar (D), Andhra Pradesh
Power System Operation & Control

N.V. Ramana

172 | © 2010

ABOUT THE BOOK

Power System Operation and Control is a comprehensive text designed for an undergraduate course in electrical engineering. Written in a simple and easy-to-understand manner, the book introduces the reader to economic operation of power system and reactive power control.

FEATURES

- In-depth coverage of single area and two-area load frequency control
- Exclusive chapter modelling of turbine, generators and automatic controllers
- Precise explanation supported by suitable examples
- The book is replete with objective questions and review questions

CONTENTS

1. Economic Operation of Power System
2. Economic Operation of Power System
3. Hydro Thermal scheduling
4. Modelling of Turbine, Generators and Automatic Controllers
5. Single area Load Frequency control
6. Two-Area Load Frequency control
7. Load frequency controllers
8. Reactive Power control

ABOUT THE AUTHOR

N.V. Ramana is Professor and Head, Department of Electrical and Electronics Engineering, JNTU College of Engineering, Jagityal, Karimnagar (D), Andhra Pradesh

Electric Power Transmission and Distribution

S. Sivanagaraju | S. Satyanarayana

632 | © 2008

ABOUT THE BOOK

Electric Power Transmission and Distribution is a comprehensive text, designed for undergraduate courses in power systems and transmission and distribution. A part of the electrical engineering curriculum, this book is designed to meet the requirements of students taking elementary courses in electric power transmission and distribution. Written in a simple, easy-to-understand manner, this book introduces the reader to electrical, mechanical and economic aspects of the design and construction of electric power transmission and distribution systems.

FEATURES

- A comprehensive chapter on voltage control
- In-depth coverage on transmission-line parameters, performance of short, medium and long transmission lines
- Exclusive chapters on substations and economical design of power- and distribution systems
- Precise explanations, supported by examples
- Photographs that enable students to visualize the components of transmission systems
- Solved problems using MATLAB
- ‘Chapter at a Glance’ at the end of every chapter to strengthen the learning process
CONTENTS
1. Introduction
2. Transmission Line Parameters
3. Performance of Short and Medium Transmission Lines
4. Performance of Long Transmission Lines
5. Power System Transients
6. Corona
7. Mechanical Design of Transmission Line
8. Overhead Line Insulators
9. Underground Cables
10. Power Factor Improvement
11. Voltage Control
12. Economical Design of Power System
13. Substations
14. Distribution Systems
15. EHV and HVDC Transmission Systems
16. Flexible AC Transmission Systems

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S. Satyanarayana is Professor and Head, Department of Electrical Engineering, St. Ann's College of Engineering, Andhra Pradesh.

ABOUT THE BOOK
Generation and Utilization of Electrical Energy is a comprehensive text designed for undergraduate courses in electrical engineering. The text introduces the reader to the generation of electrical energy and then goes on to explain how this energy can be effectively utilized for various applications like welding, electric traction, illumination, and electrolysis. The detailed explanations of practical applications make this an ideal reference book both inside and outside the classroom.

FEATURES
- Elucidates the need for energy conservation methods, power factor improvement, various tariff methods, and power quality
- It also deals with the concept of distributed generation and deregulation
- Exclusive chapter on refrigeration and air-conditioning with applications supported by practical examples
- The book is replete with objective questions, short questions and answers, exercise problems, and review questions to fulfill the reader's requirements

CONTENTS
1. Conventional Power Generation
2. Non-Conventional Power Generation
3. Conservation
4. Electric Heating
5. Electric Welding
6. Fundamentals of Illumination
7. Various Illumination methods
8. Electric Drives
9. Electric Traction I
10. Electric Traction II
11. Electrolysis
12. Refrigeration and Air-conditioning

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Power System Operation and Control

S. Sivanagaraju | G. Sreenivasan

612 | © 2009

ABOUT THE BOOK
Power System Operation and Control is a comprehensive text designed for undergraduate and postgraduate courses in electrical engineering. This book aims to meet the requirements of electrical engineering students of universities all over India. This text is written in a simple and easy-to-understand manner and is valuable both as a textbook as well as a reference book for engineering students and practicing engineers.

FEATURES
- In-depth coverage of economical load dispatch problems and load frequency control of power systems
- Exclusive chapters on reactive-power compensation with modern control techniques
- A comprehensive chapter on voltage control
- In-depth coverage of modelling of LFC components
- Precise explanations supported by various examples
- A large number of examples such as multiple-choice questions, short questions and answers, review questions, and practice problems

CONTENTS
1. Economic Aspects
2. Economic Load Dispatch-I
3. Economic Load Dispatch-II
4. Optimal Unit Commitment
5. Optimal Power-Flow Problem—Solution Technique
6. Hydro-Thermal Scheduling
7. Load Frequency Control-I
8. Load Frequency Control-II
9. Reactive Power Compensation
10. Voltage Control
11. Modeling of Prime Movers and Generators
12. Modeling of Speed Governing and Excitation Systems
13. Power System Security and State Estimation

ABOUT THE AUTHORS
S. Sivanagaraju, Department of Electrical and Electronics Engineering, University College of Engineering, JNTU Kakinada, Andhra Pradesh
G. Sreenivasan, Department of Electrical and Electronics Engineering, INTELL Engineering College, Andhra Pradesh

Power System Analysis: A Dynamic Perspective

K N Shubhanga

808 | © 2018

FEATURES
- Detailed coverage of synchronous machine modelling with extensive simulation results and plots
- Elaborate coverage of power system stability analysis with modeling equations
- Over 150 solved examples and exercises

CONTENTS
1. Introduction
2. Power Systems Fundamentals-A review
3. Park Transformation
4. Synchronous Machine Modelling Using Primitive Parameters
5. Synchronous Machine Modelling Using Standard Parameters
6. Numerical Integration Methods-A review
7. Numerical Iterative Methods -A review
8. Fault Analysis of Power Systems
9. Subsynchronous Resonance in Power Systems
10. SSR Analysis of the IEEE First Benchmark System
11. Generator Controllers
12. Power Systems Angle stability
13. Modal Analysis of Power Systems with Interconnected Generators
14. Transient Stability Analysis of Power Systems with Interconnected Generators
15. Dynamic Modelling of Some Electrical Machines and their Power-flow Analysis
16. Appendix

ABOUT THE AUTHOR
Shubhanga is Associate Professor, Department of Electrical Engineering, National Institute of Technology Karnataka (NITK), Srinivasnagar, Karnataka.
ABOUT THE BOOK
The text is conceived as a textbook for the undergraduate course on Power transmission and distribution. The book includes theoretical explanation, accurate description & systematic presentation of each & every concept with emphasis on complete understanding of the subject matter by every reader. It also includes actual models of various renowned manufacturers for each product along with vivid illustrations, guidelines and best engineering practices followed in the industry. This will be of immense use to the students, teachers, consultants and industry professionals.

FEATURES
- Step-by-step methodology provided for solved examples
- Over 250 illustrations and photographs

CONTENTS
Section I Analysis of Power Systems
1. Electrical Power Systems & Their Faults
2. Representation of Power Systems
3. Symmetrical Faults
4. Symmetrical Components
5. Unsymmetrical Faults

Section II Transmission & Distribution Lines
6. Transmission & Distribution Lines Parameters
7. Basics of Power Lines
8. Design & Construction of Power Lines
10. HVDC Transmission Systems

Section III Transformers
11. Basic Concepts of Transformers
12. Design & Construction of Power Transformers
13. Power Transformer Connections
14. Power Transformer Testing
15. Control, Operation & Monitoring of Power Transformers

Section IV T&D Equipments & Materials (Except Switchgear)
16. Power Capacitors
17. Power Reactors
18. Insulators, Fittings & Hardwares
19. Station Auxiliaries & Services
20. Cables, Accessories & Their Installation

Section V Substations
22. Distribution Substations
23. Transmission & Switching Substations
24. HVDC Substations
25. Large Electrical Installations
26. Steel Structures, Civil Works & Security
27. Earthing & Neutral Grounding

Section VIII Establishing & Operating T&D Systems
29. Insulation Co-ordination of T&D System
30. Installation & Commissioning of T&D Systems
31. Operation & Maintenance of T&D Systems
32. Interconnected Power Systems

ABOUT THE AUTHOR
Arun Ingole; Retired as Vice President from SIEMENS Ltd.
Also Available

**Power Systems Analysis, 2/e**
- Arthur R. Bergen
- ISBN: 9788177588194
- 632 pages  © 2006

**Foundations of Electric Power**
- J. R. Cogdell
- ISBN: 9788131764039
- 372 pages  © 2011

**Electrical Power Distribution and Transmission**
- L. M. Faulkenberry
- ISBN: 9788131707098
- 582 pages  © 2006

**Introduction to PSpice Using OrCAD for Circuits and Electronics 3/e (with CD)**
- M. H. Rashid
- ISBN: 9789332555174
- 480 pages  © 2015
Electronics & Communication Engineering
ABOUT THE BOOK

The book is written for the first course on Antennas and Wave Propagation. The book begins with an Introduction that discusses the fundamental concepts, notations, representation and principles that govern the field of antennas. A separate chapter on Mathematical Preliminaries is discussed followed by chapters on every aspect of antennas from Maxwell's equations to antenna array analysis, antenna array synthesis, antenna measurements and wave propagation.

FEATURES

ISBN: 9788131701843
Antennas and Wave Propagation
G. S. N. Raju
512 |
2006

Web Supplements
Best Seller
ABOUT THE BOOK
The book is written for the first course on Antennas and Wave Propagation. The book begins with an Introduction that discusses the fundamental concepts, notations, representation and principles that govern the field of antennas. A separate chapter on Mathematical Preliminaries is discussed followed by chapters on every aspect of antennas from Maxwell's equations to antenna array analysis, antenna array synthesis, antenna measurements and wave propagation.

FEATURES
- Concepts, analysis, design and measurements — all four aspects given equal emphasis
- Balanced presentation of theory and applications
- Unique Introduction that discuss the fundamental concepts, notations, representation and principles that govern the field of antennas
- Contains a chapter on Mathematical Preliminaries

CONTENTS
1. Introduction
2. Mathematical Preliminaries
3. Maxwell's Equations and Electromagnetic waves
4. Radiation and Antennas
5. Analysis of Linear Arrays
6. Array Synthesis
7. HF, VHF and UHF Antennas
8. Microwave Antennas
9. Antenna Measurements
10. Wave Propagation
11. MCQ

Also Available
Foundations of Antenna Theory and Techniques
Vincent F. Fusco
ISBN: 9788131711255
246 pages  © 2007

Consumer Electronics
S. P. Bali
ISBN: 9788131717592
752 pages  © 2007
ABOUT THE BOOK
For a one/two-semester senior or first-year graduate level course in analog and digital communications. With an emphasis on digital communications, Communication Systems Engineering, Second Edition introduces the basic principles underlying the analysis and design of communication systems. In addition, this text gives a solid introduction to analog communications and a review of important mathematical foundation topics.

FEATURES
- New material has been added on wireless communication systems—GSM and CDMA/IS-94; turbo codes and iterative decoding; multicarrier (OFDM) systems; multiple antenna systems.
- Thorough coverage of basic digital communication system principles—including source coding, channel coding, baseband and carrier modulation, channel distortion, channel equalization, synchronization, and wireless communications.
- Exposes students to analog modulation methods such as amplitude modulation, phase modulation, and frequency modulation. Use of CD player and JPEG image coding standard as examples of systems that employ modern communication principles.
- Over 180 worked-out examples throughout the text.
- Over 480 problems—Involving applications to practical systems such as satellite communications systems, ionospheric channels, and mobile radio channels.
CONTENTS
1. Introduction.
2. Frequency Domain Analysis of Signals and Systems.
3. Analog Signal Transmission and Reception.
5. Effect of Noise on Analog Communication Systems.
6. Information Sources and Source Coding.
7. Digital Transmission through the Additive White Gaussian Noise Channel.
8. Digital Transmission through Bandlimited AWGN Channels.
10. Wireless Communications.
Appendix A: The Probability of Error for Multichannel Reception of Binary Signals.

ABOUT THE AUTHORS
John G. Proakis, Northeastern University
Masoud Salehi, Northeastern University

FEATURES
- Emphasis on digital communications—Prepares students for state-of-the-art communication systems.
- Computer problems in each chapter that require MATLAB to solve—Gives students experience in simulating communication systems and comparing results with theory.
- A large number of problems in varying levels of difficulty—At the end of each chapter.
- Two separate chapters on Information Theory and Coding—Provides sufficient emphasis on these key topics.

CONTENTS
1. Introduction
2. Signals and Linear Systems
3. Amplitude Modulation
4. Angle Modulation
5. Probability and Random Processes
6. Effect of Noise on Analog Communications
7. Analog to Digital Conversion
8. Digital Modulation in AWGN Baseband Channels
9. Transmission through Bandlimited AWGN Channels
10. Transmission of Digital Information via Carrier Modulation
11. Selected Topics in Digital Communications
12. An Introduction to Information Theory
13. Coding for Reliable Communications
ABOUT THE BOOK
This comprehensive introduction to Electronic Communications explores fundamental concepts and their state-of-the-art application in radio, telephone, facsimile transmission, television, satellite, and fiber optic communications. It provides an explanatory as well as descriptive approach, avoids lengthy mathematical derivations, and introduces the use of Mathcad for problem-solving in select areas.

FEATURES
- Comprehensive coverage that allows instructors a range of material from which to choose
- Avoids lengthy mathematical derivations, but gives important mathematical results and their physical interpretation
- Makes use of Mathcad for problem-solving in select areas to alleviate tedious mathematical manipulation of formulas
- Features new chapters on digital signals and digital communications

CONTENTS
1. Passive Circuits
2. Waveform Spectra
3. Digital Line Waveforms
4. Noise
5. Tuned Small Signal Amplifiers, Mixers and Active Filters
6. Oscillators
7. Receivers
8. Amplitude Modulation
9. Single-Sideband Modulation
10. Angle Modulation
11. Pulse Modulation
12. Digital Communication
13. Transmission Lines and Cables
14. Wave guides
15. Radio wave Propagation
16. Antennas
17. Telephone Systems
18. Facsimile and Television
19. Satellite Communications
20. Fiber Optic Communications
ABOUT THE BOOK
Digital Communications: Fundamentals and Applications, Second Edition is a thoroughly revised and updated edition of the field's classic, best-selling introduction to the subject. With remarkable clarity, the authors introduce this important discipline, which forms the nucleus of today's wireless and Internet revolutions. The authors provide a unified structure and context for understanding digital communications - all without sacrificing mathematical precision. Instructor's resources available at www.pearsoned.co.in/BernardSklar

CONTENTS
1. Signals and Spectra
2. Formatting and Baseband Modulation
3. Baseband Demodulation/Detection
4. Bandpass Modulation and Demodulation
5. Communications Link Analysis
6. Channel Coding: Part 1
7. Channel Coding: Part 2
8. Channel Coding: Part 3
9. Modulation and Coding Trade-Offs
10. Synchronization
11. Multiplexing and Multiple Access
12. Spread-Spectrum Techniques
13. Source Coding
14. Encryption and Decryption
15. Fading Channels
16. Optimum Detection and Estimation

ABOUT THE AUTHOR
Bernard Sklar has more than 40 years of experience in technical design and management positions at Republic Aviation Corporation, Hughes Aircraft, Litton Industries, and The Aerospace Corporation. At Aerospace, he helped develop the MILSTAR satellite system and was the principal architect for EHF Satellite Data Link Standards. Currently, he is head of advanced systems at Communications Engineering Services, a consulting company he founded in 1984.

Electronic Communications System: Fundamentals Through Advanced, 5/e

ABOUT THE BOOK
Comprehensive in scope and contemporary in coverage, this text introduces basic electronic and data communications fundamentals, and explores their application in modern digital and data communications systems. Students with previous knowledge in basic electronic principles and fundamental calculus concepts will gain a complete understanding of the topics presented here. Tomasi's Advanced Electronic Communications Systems 6/e is the last 10 chapters of this text.
FEATURES

- **Rewritten material on satellites**—Includes their history; orbits; elevation categories; orbital patterns; and antenna look angles.
- **Materials in the Fundamentals chapters on AM envelopes**—Produced by complex nonsinusoidal signals, Quadrature Amplitude Modulation, noise limiters and blankers, alternate signal-to-noise measurements, single-sideband suppressed carrier, frequency division multiplexing, double-sideband suppressed carrier, quadrature multiplexing, microstrip, and stripline.
- **Material in the Advanced chapters**—On trellis encoding, CCITT modem recommendations, PCM line speed, extended superframe format, wavelength division multiplexing, Kepler’s laws, Clark orbits, limits of visibility, Satellite Radio Navigation and Navstar GPS.
- **Optical fiber communications has been moved from Chapter 20 to Chapter 11**—Includes new sections on light sources, optical power, optical sources and link budget.

CONTENTS

1. Introduction to Electronic Communications.
2. Signal Analysis and Mixing.
5. Amplitude Modulation Reception.
11. Digital T-Carriers and Multiplexing.
15. Antennas and Waveguides.
17. The Telephone Circuit.
18. The Public Telephone Network.
21. Introduction to Data Communications and Networking.
22. Fundamental Concepts of Data Communications.
23. Data–Link Protocols and Data Communications Networks.
24. Microwave Radio Communications and System Gain.

Also Available

**Advanced Electronic Communications System, 6/e**
Wayne Tomasi
ISBN: 9789332549685

**Information Theory, Coding & Cryptography**
Arijit Saha
ISBN: 9788131797495

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COMMUNICATION SYSTEMS-DIGITAL & ANALOG COMMUNICATIONS
ABOUT THE BOOK
For an advanced course in digital design for seniors and first-year graduate students in electrical engineering, computer engineering, and computer science. This book builds on the student's background from a first course in logic design and focuses on developing, verifying, and synthesizing designs of digital circuits. The Verilog language is introduced in an integrated, but ive manner, only as needed to support design examples (includes appendices for additional language details). It addresses the design of several important circuits used in computer systems, digital signal processing, image processing, and other applications.

FEATURES
- Provides a brief review of basic principles in combinational and sequential logic
- Focuses on modern digital design methodology
- Demonstrates the utility of ASM and ASMD charts for behavioral modeling
- Clearly distinguishes between synthesizable and nonsynthesizable loops
- Provides several problems with a wide range of difficulty after each chapter
- Combines a solution manual with an on-line repository of additional worked exercises

CONTENTS
1. Introduction to Digital Design Methodology
2. Review of Combinational Logic Design
3. Fundamentals of Sequential Logic Design
4. Introduction to Logic Design with Verilog
5. Logic Design with Behavioral Models of Combinational and Sequential Logic
6. Synthesis of Combinational and Sequential Logic
7. Design and Synthesis of Datapath Controllers
8. Programmable Logic and Storage Devices
10. Architectures for Arithmetic Processors
11. Postsynthesis Design Tasks

ABOUT THE AUTHOR
Michael Ciletti is Professor Emeritus in the Department of Electrical and Computer Engineering at the University of Colorado, Colorado Springs. His areas of interest include Modeling, synthesis and verification of digital systems with hardware description languages, system-level design languages, and embedded systems with FPGAs.
FEATURES
- Extensive coverage on:
  - Counters such as Hybrid, Decade and Presetable
  - Edge Triggered Flip Flops
  - Hardware Description Languages
  - Design of Arithmetic Logic Unit
  - Exclusive chapter on Logic Description Using VHDL
- Includes topics such as synchronous/asynchronous mode circuits, pulse mode, sequential circuits, VHDL 7 segment decoder, VHDL code converters, etc
- Additional solve the examples and reading material available online

ABOUT THE AUTHOR
D P Kothari  Director Research, GPGI, Nagpur Director-In-Charge, Indian Institute of Technology Delhi Former Vice Chancellor, VIT, Vellore and Former Principal, VNIT, Nagpur
J S Dhillon  Professor, Department of Electrical and Instrumentation Engineering Sant Longowal Institute of Engineering and Technology, Punjab.

ABOUT THE BOOK
Digital Design, Sixth edition is a modern update of the classic authoritative text on digital design. This book teaches the basic concepts of digital design in a clear, accessible manner. The book presents the basic tools for the design of digital circuits and provides procedures suitable for a variety of digital applications.

FEATURES
- Closely reflects the content of a foundation course in digital design, and the mainstream technology of today’s digital systems—CMOS circuits
- Presents a clear development of a design methodology using the Verilog HDL
New To This Edition
- Addition of ‘Web Search Topics’ at the end of each chapter to point students to additional subject matter available on the Web
- Revision of approximately one-third of the problems at the end of the chapters
- Contains a smart sequence of topics to cater to different courses that adhere to traditional, manual-based, treatments of digital design; courses that treat design using an HDL; and courses that are in transition between or blend the two approaches.
- Streamlining of the discussion of Karnaugh-maps
- Inclusion of an appendix introducing semiconductor technology

CONTENTS
1. Digital Systems and Binary Numbers
2. Boolean Algebra and Logic Gates
3. Gate-Level Minimization
4. Combinational Logic
5. Synchronous Sequential Logic
6. Registers and Counters
7. Memory and Programmable Logic
8. Design at the Register Transfer Level
9. Asynchronous Sequential Logic
10. Digital Integrated Circuits
11. Laboratory Experiments with Standard ICs and FPGAs
12. Standard Graphic Symbols

ABOUT THE AUTHORS
M. Morris Mano, California State University, Los Angeles
Micheal D. Ciletti, University of Colorado, Colorado Springs
**Digital Logic and Computer Design**

M. Morris Mano

560 | © 2016

**ABOUT THE BOOK**

“This book presents the basic concepts used in the design and analysis of digital systems and introduces the principles of digital computer organization and design. It discusses various methods and techniques suitable for a variety of digital system design applications and covers all aspects of digital systems. It also includes applications of Read Only Memory (ROM) and Programmable Logic Array (PLA). The flexible organization of the book permits it to be used in a variety of ways to suit the needs of courses in digital systems taught in electrical, electronics, computer science and engineering departments.”

**FEATURES**

- Covers all aspects of digital systems from electronic gate circuits to the complex structure of microprocessor systems
- Facilitates a thorough understanding of the register-transfer method used for the analysis and design of processor units and control units

**CONTENTS**

1. Binary Systems
2. Boolean Algebra and Logic Gates
3. Simplification of Boolean Functions
4. Combinational Logic
5. Combinational Logic with MSI and LSI
6. Sequential Logic
7. Registers, Counters, and the Memory Unit
8. Register-Transfer Logic
9. Processor Logic Design
10. Control Logic Design
11. Computer Design
12. Microcomputer System Design
13. Digital Integrated Circuits

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**Digital Fundamentals, 11/e**

Thomas L Floyd

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**ABOUT THE BOOK**

Digital Fundamentals, Eleventh Edition, continues its long and respected tradition of offering students a strong foundation in the core fundamentals of digital technology, providing basic concepts reinforced by plentiful illustrations, examples, exercises, and applications. The text’s teaching and learning resources include an Instructor's Manual, PowerPoint lecture slides, and Test Bank, as well as study resources for students.

**FEATURES**

- A new boxed feature, Implementation, shows how various logic functions can be implemented using fixed-function devices or by writing a VHDL program for PLD implementation.
- A new chapter on data transmission has been added and includes extensive coverage of standard busses.
- A new page layout and design provides better visual appearance and ease of use.
ABOUT THE BOOK
Featuring a strong emphasis on the fundamentals underlying contemporary logic design using hardware description languages, synthesis, and verification, this book focuses on the ever-evolving applications of basic computer design concepts with strong connections to real-world technology.

FEATURES
- Balance of Hardware Description Language coverage - VHDL, Verilog, or none
- Strong connections to real-world technology - Discusses SRAM, DRAM, and synchronous DRAM technologies
- Provides solid digital system design fundamentals while accomplishing a gradual, bottom-up development of fundamentals

CONTENTS
1. Digital Systems and Information
2. Combinational Logic Circuits
3. Combinational Logic Design
4. Arithmetic Functions and HDLs
5. Sequential Circuits
6. Selected Design Topics
7. Registers and Register Transfers
8. Memory Basics
9. Computer Design Basics
10. Instruction Set Architecture
11. Memory Systems
12. Input-Output and Communication
13. RISC and CISC Processors

ABOUT THE AUTHORS
M. Morris Mano, California State University, Los Angeles
Charles Kime

Also Available

Digital Systems: Principles and Applications, 10/e
Tocci
ISBN: 9788131727249
599 |
2009

Digital Design: Principles and Practices, 4/e
Wakerly
ISBN: 9788131713662
852 |
2008
ABOUT THE BOOK
Progressive in content and form, this text successfully bridges the gap between the circuit perspective and system perspective of digital integrated circuit design. Beginning with solid discussions on the operation of electronic devices and in-depth analysis of the nucleus of digital design, the text maintains a consistent, logical flow of subject matter throughout. The revision addresses today’s most significant and compelling industry topics, including: the impact of interconnect, design for low power, issues in timing and clocking, design methodologies, and the tremendous effect of design automation on the digital design perspective. The revision reflects the ongoing evolution in digital integrated circuit design, especially with respect to the impact of moving into the deep-ubmicron realm.

FEATURES

- ISBN: 9789332573925
- Digital Integrated Circuits: A design perspective, 2/e
  - Jan M. Rabaey
  - Anantha Chandrakasan
  - Borivoje Nikolic
  - 784
  - 2016

- ISBN: 9788131701836
  - Switching Theory and Logic Design
  - C. V. S. Rao
  - 336
  - 2006

- ISBN: 9788131787045
  - Express Learning Series - Digital Electronics and Logic Design
  - ITL Edu. Solutions
  - 436
  - 2013

- ISBN: 9788131714126
  - High Speed Digital Design: A Handbook of Black Magic
  - Howard Johnson
  - 464
  - 2007

- ISBN: 9789332555228
  - An Engineering Approach to Digital Design
  - William I. Fletcher
  - 784
  - 2015

- ISBN: 9789332522299
  - Digital Electronics
  - Betty Lincoln
  - 412
  - 2014
ABOUT THE BOOK
Progressive in content and form, this text successfully bridges the gap between the circuit perspective and system perspective of digital integrated circuit design. Beginning with solid discussions on the operation of electronic devices and in-depth analysis of the nucleus of digital design, the text maintains a consistent, logical flow of subject matter throughout. The revision addresses today's most significant and compelling industry topics, including: the impact of interconnect, design for low power, issues in timing and clocking, design methodologies, and the tremendous effect of design automation on the digital design perspective. The revision reflects the ongoing evolution in digital integrated circuit design, especially with respect to the impact of moving into the deep-submicron realm.

FEATURES
- NEW - Updating of technology of the deep-submicron realm—The piece makes sure that updates to most of the numeric values with respect to advancing processes can be accomplished easily.
- Interconnect material takes a more predominant position and is moved forward in the presentation.
- A number of the circuit techniques have been removed or updated or newer approaches have been introduced—Reflects the changes in design approaches over the last decade.
- A chapter on manufacturing technology has been introduced—Design methodologies are introduced throughout the text in synchronicity with the circuit content.
- Design methodology inserts—Discuss design automation.

CONTENTS
Part 1 The Fabrics
1. Introduction
2. The Manufacturing Process
3. The Devices
4. The Wire
Part 2 A Circuit Perspective
5. The CMOS Inverter
6. Designing Combinational Logic Gates in CMOS
7. Designing Sequential Logic Circuits
Part 3 A System Perspective
8. Implementation Strategies for Digital IC
9. Coping with Interconnect
10. Timing Issues in Digital Circuits
11. Designing Arithmetic Building Blocks
12. Designing Memory and Array Structures

ABOUT THE AUTHORS
Jan M. Rabaey, University of California, Berkeley
Anantha Chandrakasan, Massachusetts Institute of Technology, Cambridge
Borivoje Nikolic, University of California, Berkeley
ABOUT THE BOOK
“The fourth edition of , which celebrates the book’s 40th anniversary, continues its cutting-edge focus on contemporary developments in all mainstream areas of image processing. It focuses on material that is fundamental and has a broad scope of application.”

FEATURES
- Coverage of graph cuts and their application to segmentation.
- A discussion of superpixels and their use in region segmentation.
- 425 new images, 135 new drawings, 220 new exercises and 120 MATLAB projects.
- Two new chapters:
  - A chapter dealing with active contours for image segmentation, including snakes and level sets.
  - A chapter that brings together wavelets, several new transforms, and many of the image transforms that were scattered throughout the book.
- A complete update of the image pattern recognition chapter to incorporate new material on deep neural networks, backpropagation, deep learning, and especially, deep convolutional neural networks.
- Coverage of feature extraction, including the Scale Invariant Feature Transform (SIFT), maximally stable extremal regions (MSERs), and corner detection.
- Coverage of the fundamentals of spatial filtering, image transforms, and finite differences with a focus on edge detection.

CONTENTS
1. Introduction
2. Digital Image Fundamentals
3. Intensity Transformations and Spatial Filtering
4. Filtering in the Frequency Domain
5. Image Restoration and Reconstruction
6. Wavelet and Other Image Transforms
7. Color Image Processing
8. Image Compression and Watermarking
9. Morphological Image Processing
10. Image Segmentation I: Edge Detection,
11. Image Segmentation II: Active Contours: Snakes and Level Sets
12. Feature Extraction
13. Image Pattern Classification

ABOUT THE AUTHOR
Rafael C. Gonzalez received the B.S.E.E. degree from the University of Miami in 1965 and the M.E. and Ph.D. degrees in electrical engineering from the University of Florida, Gainesville, in 1967 and 1970, respectively. He joined the Electrical and Computer Engineering Department at University of Tennessee, Knoxville (UTK) in 1970, where he became Associate Professor in 1973, Professor in 1978, and Distinguished Service Professor in 1984. He is currently a Professor Emeritus at UTK. Gonzalez is the founder of the Image & Pattern Analysis Laboratory and the Robotics & Computer Vision Laboratory at the University of Tennessee.

Richard E. Woods earned his B.S., M.S., and Ph.D. degrees in Electrical Engineering from the University of Tennessee, Knoxville. His professional experiences range from entrepreneurial to the more traditional academic, consulting; governmental, and industrial pursuits. Most recently, he founded MedData Interactive, a high technology company specializing in the development of hand-held computer systems for medical applications. He was also a founder and Vice President of Perceptics Corporation.
ABOUT THE BOOK
A thorough overview of the major topics in digital image processing — representation, processing techniques, and communication.

FEATURES
- covers aspects of image representation including luminance, color, spatial and temporal properties of vision, and digitization.
- explores various image processing techniques.
- discusses algorithm development (software/firmware) for image transforms, enhancement, reconstruction, and image coding.

CONTENTS
1. Introduction.
2. Two Dimensional Systems and Mathematical Preliminaries.
3. Image Perception.
4. Image Sampling and Quantization.
5. Image Transforms.
8. Image Filtering and Restoration.
10. Image Reconstruction From Projections.
11. Image Data Compression.
ABOUT THE BOOK
The definitive, authoritative text on DSP — ideal for those with an introductory-level knowledge of signals and systems. Written by prominent DSP pioneers, it provides thorough treatment of the fundamental theorems and properties of discrete-time linear systems, filtering, sampling, and discrete-time Fourier Analysis. By focusing on the general and universal concepts in discrete-time signal processing, it remains vital and relevant to the new challenges arising in the field.

FEATURES
- Chapter organization is self-contained — A background of advanced calculus and exposure to linear system theory for continuous-time signals is inferred.
- Material on:
  - Multi-rate filtering banks.
  - The discrete cosine transform.
  - Noise-shaping sampling strategies.
- Includes several dozen problem-solving examples that not only illustrate key points, but demonstrate approaches to typical problems related to the material.
- Contains a wealth of class-tested problems which are the best produced over decades of undergraduate and graduate signal processing classes at MIT and Georgia Tech.
- Problems are organized by level of difficulty into separate categories:
  - Basic Problems with Answers to allow students to check their results, but not solutions (20 per chapter).
  - Basic Problems - without answers.
  - Advanced Problems - provide an opportunity for students to understand.
  - Extension Problems - start from the discussion in the text and lead students beyond to glimpse some advanced areas of signal processing.
- Offers a wealth of problems and examples.

CONTENTS
1. Introduction
2. Discrete Time-Signals and Systems
3. The z-Transform
4. Sampling of Continuous-Time Signals
5. Transform Analysis of Linear Time-Invariant Systems
6. Structures for Discrete-Time Systems
7. Filter Design Techniques
8. The Discrete Fourier Transform
9. Computation of the Discrete Fourier Transform
10. Fourier Analysis of Signals Using the Discrete Fourier Transform
11. Parametric Signal Modeling
12. Discrete Hilbert Transforms

Appendix A: Random Signals
Appendix B: Continuous-Time Filters
Appendix C: Answers to Selected Basic Problems

ABOUT THE AUTHOR(S)
Alan V. Oppenheim, Massachusetts Institute of Technology
Ronald W. Schafer, Georgia Institute of Technology
ABOUT THE BOOK
This fourth edition covers the fundamentals of discrete-time signals, systems, and modern digital signal processing. Appropriate for students of electrical engineering, computer engineering, and computer science, the book is suitable for undergraduate and graduate courses and provides balanced coverage of both theory and practical applications.

FEATURES
- Newly written and updated chapter on sampling and reconstruction of signals
- New addition on the discrete cosine transform
- Updated chapter on multirate digital signal processing.

CONTENTS
1. Introduction
2. Discrete-Time Signals And Systems
3. The Z-Transform And Its Application To The Analysis Of Lti Systems
4. Frequency Analysis Of Signals And Systems
5. Frequency Domain Analysis Of Lti Systems
6. Sampling And Reconstruction Of Signals
7. The Discrete Fourier Transform: Its Properties And Applications
8. Efficient Computation Of The Dft: Fast Fourier Transform Algorithms
9. Implementation Of Discrete-Time Systems
10. Design Of Digital Filers
11. Multirate Digital Signal Processing
12. Linear Prediction And Optimum Linear Filters
13. Adaptive Filters
14. Power Spectrum Estimation

Also Available
- Theory and Application of Digital Signal Processing, 1/e
  L. R. Rabiner
  ISBN: 9789332560123
  778  © 2015

- Digital Signal Processing 2/e
  Ifeachor Emmanuel
  ISBN: 9788131708248
  960  © 2006
ABOUT THE BOOK
This introductory book on digital filtering and digital signal processing is pedagogically sound and self-contained: the student is assumed to have only a background in calculus and an exposure to continuous-time linear systems theory.

ISBN: 9789332560130

Introduction to Digital Signal Processing

Johnny R. Johnson

432 | © 2015

ABOUT THE BOOK
An up-to-date and detailed introduction to the fundamentals of processing signals by digital techniques and their applications to practical problems.

ISBN: 9789332550339

Digital Signal Processing

Alan V. Oppenheim | Ronald W. Schafer

608 | © 2015

ABOUT THE BOOK
An up-to-date and detailed introduction to the fundamentals of processing signals by digital techniques and their applications to practical problems.
ABOUT THE BOOK
One of the most widely-read texts, this book includes the basic electromagnetic theory & its extension to problems of transmission, radiation & propagation of electromagnetic waves. The book presents the interaction of field & matter and the relationship between Maxwell’s electromagnetic theory & Special Relativity. Engineering applications covered are transmission lines, wave guides and antennas (conventional elements, arrays, apertures, frequency-independent and log-periodic structure). Material on free space, ground wave and ionospheric propagation completes the background essentials for the communication engineer.

CONTENTS
1. Fundamentals of Electromagnetic Analysis
2. Electromagnetics
3. The Steady magnetic field
4. Maxwell’s Equations
5. Electromagnetic Waves
6. Poynting Vector and the Flow of Power
7. Guided Waves
8. Wave Guides
9. Interaction of Fields and Matter
10. Radiation
11. Antenna Fundamentals
12. Antenna Arrays
13. Secondary Sources and Aperture Antennas
14. Impedance
15. Principles of Broadband Antenna Design
16. Ground Wave Propagation
17. Ionospheric Propagation
18. Electromagnetic Theory and Special Relativity
19. Appendix I
20. Appendix II
21. List of Symbols

ABOUT THE AUTHOR
Edward C Jordan, Professor of Electrical Engineering, College of Engineering, University of Illinois.
Keith G Balmain, Associate Professor, Department of Electrical Engineering, University of toronto.
Electromagnetic Field Theory and Transmission Lines

G. S. N. Raju

584 | © 2006

ABOUT THE BOOK
Electromagnetic Field Theory and Transmission Lines is an ideal textbook for a single semester, first course on Electromagnetic Field Theory (EMFT) at the undergraduate level. This book uses plain and simple English, diagrammatic representations and real life examples to explain the fundamental concepts, notations, representation and principles that govern the field of EMFT. The chapters cover every aspect of EMFT from electrostatics to advanced topics dealing with Electromagnetic Interference (EMI)/Electromagnetic Compatibility (EMC), EMC standards and design methods for EMC. Careful and detailed explanation of challenging concepts will help students understand better.

FEATURES
- Simple, clear and concise presentation
- Balanced exposition to both theory and application
- Unique introduction that discusses the fundamental concepts, notations, representation and principles that govern the field of EMFT
- Includes an exclusive chapter on basic mathematics required for problem solving

CONTENTS
1. Mathematical Preliminaries
2. Electrostatic Fields
3. Steady Magnetic Fields
4. Maxwell's Equations
5. Electromagnetic Fields and Waves
6. Guided Waves
7. Transmission Lines
8. Radiation and Antennas
9. Advanced Topics
Also Available

Field & Wave Electromagnetic, 2/e
David K. Cheng
ISBN: 9789332535022
720 © 2014

Fundamentals of Engineering Electromagnetics
David K. Cheng
ISBN: 9789332535138
504 © 2014

Electromagnetic Concepts and Applications, 4/e
Richard E. Dubroff
ISBN: 9789332559462
756 © 2015

Foundations of Electromagnatic Theory
John R. Reitz
ISBN: 9788131733424
640 © 2010

Electro Magnetic Field Theory
Yaduvir Singh
ISBN: 9788131760611
504 © 2011

Fundamentals of Applied Electromagnetics, 6/e
Fawwaz T. Ulaby
ISBN: 9789332535145
480 © 2014
ABOUT THE BOOK
The eleventh edition of Electronic Devices and Circuit Theory offers students a complete, comprehensive coverage of the subject, focusing on all the essentials they will need to succeed on the job. Setting the standard for nearly 30 years, this highly accurate text is supported by strong pedagogy and content that is ideal for new students of this rapidly changing field. This text is an excellent reference work for anyone involved with electronic devices and other circuitry applications, such as electrical and technical engineers.

FEATURES
- Using a systems approach, this edition represents an exhaustive effort to enhance the material that introduces the concept of systems engineering
- Ample photographs and examples enhances students' understanding of important topics
- Practical applications in every chapter that cover the latest examples from the industry

CONTENTS
1. Semiconductor Diodes
2. Diode Applications
3. Bipolar Junction Transistors
4. DC Biasing—BJTs
5. BJT AC Analysis
6. Field-Effect Transistors
7. FET Biasing
8. FET Amplifiers
9. BJT and JFET Frequency Response
10. Operational Amplifiers
11. Op-Amp Applications
12. Power Amplifiers
13. Linear-Digital ICs
14. Feedback and Oscillator Circuits
15. Power Supplies (Voltage Regulators)
16. Other Two-Terminal Devices
17. npn and Other Devices

ABOUT THE AUTHOR
Robert L. Boylestad, Queensborough Community College
Louis Nashelsky, Queensborough Community College
ABOUT THE BOOK
Electronic Devices (Conventional Current Version), Ninth Edition, provides a solid foundation in basic analog electronics and a thorough introduction to analog integrated circuits and programmable devices. The text identifies the circuits and components within a system, helping students see how the circuit relates to the overall system function. Easy-to-follow worked examples support the text’s strong emphasis on real-world application and troubleshooting. Updated throughout, the ninth edition features new GreenTech Applications and a new chapter, “Basic Programming Concepts for Automated Testing.” With recent significant efforts to create renewable, sustainable energy sources to offset and eventually replace fossil fuels, a write-up on GreenTech Applications in every chapter, familiarizes students with these relatively new technologies.

FEATURES
- Sound foundation in basic circuits and concepts—and then coverage of analog integrated circuits
- Programmable Analog Design feature—follows the Application Activity in Chapters 12-16
- Provides students with an introduction to analyzing and designing analog circuits by programming FPAAs (field programmable analog arrays) or dpASPs (dynamically programmable analog signal processors)
- Coverage of advanced integrated circuits—including operational amplifiers; instrumentation and isolation amplifiers; OTAs; log/antilog amplifiers; and converters.
- LED coverage has been expanded and updated to include more emphasis on high-intensity LEDs which are becoming widely used in many areas, such as residential lighting, automotive lighting, traffic signals, and informational signs
- More emphasis on MOSFETs, particularly in switching power supplies

CONTENTS
1. Introduction to Electronics
2. Diodes and Applications
3. Special-Purpose Diodes
4. Bipolar Junction Transistors
5. Transistor Bias Circuits
6. BJT Amplifiers
7. Power Amplifiers
8. Field-Effect Transistors (FETs)
9. FET Amplifiers and Switching Circuits
10. Amplifier Frequency Response
11. Thyristors
12. The Operational Amplifier
13. Basic Op-Amp Circuits
14. Special-Purpose Op-Amp Circuits
15. Active Filters
16. Oscillators
17. Voltage Regulators
18. Basic Programming Concepts for Automated Testing
ABOUT THE BOOK
One of the most widely used introductory books on semiconductor materials, physics, devices and technology, Solid State Electronic Devices aims to develop basic semiconductor physics concepts, so students can better understand current and future devices and provide a sound understanding of current semiconductor devices and technology, so that their applications to electronic and optoelectronic circuits and systems can be appreciated. Students are brought to a level of understanding that will enable them to read much of the current literature on new devices and applications.

FEATURES
- The basics of semiconductor materials and conduction processes in solids are incorporated to understand p-n junctions, bipolar and metal oxide semiconductor transistors, optoelectronic and other devices.
- A discussion of device fabrication processes and CMOS integrated circuit technology, along with data in the Appendices, provide a useful understanding of how semiconductor devices are made.
- The extensive discussion of circuit and other application examples provides students with feedback about the practical relevance of the theory.
- The discussion of MOS devices is updated, both in the underlying theory of ballistic FETs as well as discussion of advanced MOSFETs such as FinFETs, strained Si devices, metal gate/high-k devices, III-V high channel mobility devices.
- The treatment of optoelectronic devices is updated, including high bandgap nitride semiconductors and quantum cascade lasers.
- A brand new section on nanoelectronics introduces students to exciting concepts such as 2D materials including graphene and topological insulators, 1D nanowires and nanotubes, and 0D quantum dots.
- A new discussion highlights spintronics and novel resistive and phase change memories.

CONTENTS
- Crystal Properties and Growth of Semiconductors
- Atoms And Electrons
- Energy Bands And Charge Carriers In Semiconductors
- Excess Carriers In Semiconductors
- Junctions
- Field-Effect Transistors
- Bipolar Junction Transistors
- Optoelectronic Devices
- Integrated Circuits
- High-frequency, high-power and Nanoelectronic devices
- Municipal Solid Waste
- Hazardous Waste Management
- Air Pollution and Control
- Noise Pollution and Control

ABOUT THE AUTHOR
Ben G. Streetman is Dean Emeritus of the College of Engineering at The University of Texas at Austin.
Sanjay Kumar Banerjee is the Cockrell Chair Professor of Electrical and Computer Engineering, and Director of the Microelectronics Research Center at The University of Texas at Austin.
Also Available

**Fundamentals of Analog Circuits, 2/e**
- Thomas L. Floyd
- ISBN: 9788131787960
- 936 pages © 2012

**Fundamentals of Nanoelectronics**
- George W. Hanson
- ISBN: 9788131726792
- 400 pages © 2009

**Microelectronic Circuit and Devices, 2/e**
- M N Horenstein
- ISBN: 9789332550186
- 1126 pages © 2015

**Modern Semiconductor Devices for Integrated Circuits**
- Chenming C. Hu
- ISBN: 9788131730249
- 384 pages © 2009

**Electronic Devices and Circuits**
- B. Visvesvara Rao
- ISBN: 9788131705858
- 424 pages © 2006

**RF Circuit Design: Theory and Applications**
- Reinhold Ludwig
- ISBN: 9788131762189
- 720 pages © 2011
ABOUT THE BOOK
Senior is an established core text in a field that is growing fast, and in which technology is constantly evolving. The text succeeds in giving a practical introduction to the fundamentals, problems and techniques of design and utilisation of optical fiber systems. It is respected as the most comprehensive and practical book in the market. This new edition will retain all core features, while incorporating recent improvements and developments in the field. Optical fiber systems have now become more sophisticated and, as a result, are now the communication method of choice for many systems. New/additional material will include optical amplifiers, soliton systems and optical networks.

FEATURES
- SI units used throughout
- Includes all major developments in single-mode fibers
- Contains a wealth of worked examples, problems and exercises
- Has broadest coverage of optical amplifiers and optic devices
- Coverage of advanced systems and techniques
- Extensive references throughout the text
- Worked examples illustrate applications
- Coverage of op amps and soliton systems
- Updated and expanded coverage of optical networks

CONTENTS
1. Introduction
2. Optical fiber waveguides
3. Transmission characteristics of optical fibers
4. Optical fibers and cables
5. Optical fiber connection: joints and couplers
6. Optical sources 1: the laser
7. Optical sources 2: the light emitting diode
8. Optical detectors
9. Direct detection receiver performance considerations
10. Optical amplification and integrated optics
11. Integrated Optics and Photonics
12. Optical fiber systems 1: intensity modulation/direct detection
13. Optical Fiber Systems 2: coherent and phase modulated
14. Optical fiber measurements
15. Optical Networks
ABOUT THE AUTHOR
Professor John Senior is Pro Vice-Chancellor for Research and Dean of the Faculty of Engineering and Information Sciences at the University of Hertfordshire, UK.

ABOUT THE BOOK
The third edition of this best-selling textbook continues the successful approach adopted by previous editions - it is an introduction to optoelectronics for all students, undergraduate or postgraduate, and practicing engineers requiring a treatment that is not too advanced but gives a good introduction to the quantitative aspects of the subject. The book aims to put special emphasis on the fundamental principles which underlie the operation of devices and systems. Readers will then be able to appreciate the operation of devices not covered in the book and to understand future developments within the subject. All the material in this edition has been fully updated.

FEATURES
- Retains the introductory chapters on optics and solid-state physics.
- Increased coverage of parametric oscillation and flat-panel displays.
- Chapter on optical fibers has been updated to emphasize the increased importance of single mode fibers and very low (high bandwidth) fibers and includes a discussion of fibers manufacture and the production of long wavelength fibers.
- Introduction of topics such as wavelength division multiplexing, optical amplifiers, solutions, and coherent systems, along with a consideration of the systems which depend on these topics (including local area networks, worldwide telephone links and the Internet).
- Covers recent interest and developments in optical fibers sensors and distributed systems.

CONTENTS
1. Light.
2. Elements of Solid-State Physics.
4. Display Devices
5. Lasers 1
6. Lasers 2
7. Photodetectors.
8. Fibre Optical Waveguides.
ABOUT THE BOOK

This well illustrated book provides a broad and highly practical introduction to all aspects of biomedical instrumentation from design and use to maintenance. Readers having an elementary technical background in electronics or engineering and a casual familiarity with physiology should find this book quite beneficial. Besides, students of life sciences and other allied fields with some knowledge of instrumentation should also find this text useful. Furthermore, it should prove to be an excellent reference book for medical/paramedical personnel.
Modern Electronic Instrumentation and Measurement Techniques

ABOUT THE BOOK
Modern Electronic Instrumentation and Measurement Techniques caters to the requirements of undergraduate students of Electronics and Communication Engineering and other courses in electronics. The book features a balanced coverage of basic measurement techniques such as accuracy, precision, standards, etc. with some clarification and modernization to include new standards.

FEATURES
- Lucid coverage of standards of measurement, bridge measurements, signal generation, signal analysis, and computer-controlled test systems
- Supplemented by numerous illustrations, examples, and exercises to help understand the concepts better
- Essential for engineering students preparing for competitive examinations such as GATE and IES

ABOUT THE AUTHOR
Albert D. Helfrick
William D. Cooper

Also Available

Elements of Electronic Instrumentation and Measurement, 3/e
Carr
ISBN: 9788131712115
568
© 2007

Introduction to Biomedical Equipment Technology, 4/e
Carr
ISBN: 9788177588835
768
© 2006

Introduction to Biomedical Engineering 2/e
Domach
ISBN: 9789332555266
312
© 2015
ABOUT THE BOOK
For one-semester courses in Op-Amps, Op-Amp Applications or Linear Integrated Circuits. This successful technology-based text supports a thorough understanding of a wide variety of operational amplifiers and integrated circuit applications. It combines the right blend of theory and practice to present a simplified and methodical way to design, and develop students' understanding of the differences between theoretical, practical, and simulated results in the analysis of op-amp circuits.

FEATURES
- ISBN: 9789332549456
- Op-Amps and Linear Integrated Circuits
- Ramakant A. Gayakwad
- 543 |
- 2015
- Best Seller

Also Available

Process Control Instrumentation Technology, 8/e
- Curtis D. Johnson
- ISBN: 9789332549456
- 684 |
- 2015

Electronic Instrumentation and Measurement
- K. Lal Kishore
- ISBN: 9788131721995
- 448 |
- 2009

Medical Imaging Signals and Systems
- Jerry L Prince
- ISBN: 9788131721360
- 496 |
- 2008
ABOUT THE BOOK
For one-semester courses in Op-Amps, Op-Amp Applications or Linear Integrated Circuits. This successful technology-based text supports a thorough understanding of a wide variety of operational amplifiers and integrated circuit applications. It combines the right blend of theory and practice to present a simplified and methodical way to design, and develop students’ understanding of the differences between theoretical, practical, and simulated results in the analysis of op-amp circuits.

FEATURES
- PSpice Simulation Examples and Problems—Added to most of the important chapters.
- Illustrates how many of the concepts presented in a given chapter can be simulated using the PSpice program, and demonstrates step-by-step approaches to circuit simulation.
- Reorganized, more logical approach—Opens text with an introduction to op-amps, and ends with IC system projects.
- Gives students a smoother and more methodical flow of information.
- Op-amps theory, experiments, and simulation.
- Makes the material more meaningful, and effective for learning.
- Analysis and design approach.
- Serves students with both theory and practice as it relates to op-amps, most popular linear, and lab tested circuits.
- An entire chapter on specialized integrated applications—Includes universal active and switched capacitor filters; phase-locked loop; 555 timer; voltage and switching regulators; and power amplifiers.
- A complete chapter on integrated system projects—Includes an audio function generator; LED temperature indicator; digital dc motor speed control; and appliance timer.
- Demonstrates the use of operational amplifiers with special purpose integrated circuits, in practical settings that serve a number of useful purposes.
- Focus on operational amplifier circuits—e.g., filters; oscillators; detectors; clippers; and sample-and-hold circuits.
- Introduces students to a collection of those commonly used.
- Thorough discussion of various op-amp characteristics, circuit analysis, and design considerations.
- Provides students with a firm grasp of basic principles enabling them to adapt to changing technology as new devices appear on the market.
- Chapter objectives.
- Presents students with an outline of important topics so that they can organize their chapter goals and studies.
- Chapter-end summaries and lists of questions.
- Enables students to review and check their understanding of material before moving on.
- Worked-out examples and chapter-end problems—In every chapter.
- Allows students to better understand how to perform desired operations, and focus on design.
- Focus on practical and functional op-amp circuits.
- Provides students with a firm grasp of principles in practice op-amp circuits.

CONTENTS
1. Introduction to Operational Amplifiers
2. Interpretation of Data Sheets and Characteristics of an Op-Amp
3. An Op-Amp with Negative Feedback
4. The Practical Op-Amp
5. Frequency Response of an Op-Amp
6. General Linear Applications
7. Active Filters and Oscillators
8. Comparators and Converters
9. Specialized IC Applications
10. Selected IC System Projects

Appendix A: Resistance Chart
Appendix B: Capacitance Chart
Appendix C: Important Derivations
Appendix D: Data Sheets
Appendix E: Answers to Selected Problems
Also Available

Operational Amplifiers and Linear Integrated Circuits, 6/e
Coughlin
ISBN: 9789332550483
560 © 2015

Linear Integrated Circuits
B. Visvesvara Rao
ISBN: 9789332534124
504 © 2015

Operational Amplifiers with Linear Integrated Circuits, 4/e
Stanley
ISBN: 9788131708453
692 © 2006

Design and Application of Analog Integrated Circuits
Soclof
ISBN: 9789332556928
838 © 2015
ABOUT THE BOOK
Embedded Systems—An Integrated Approach is exclusively designed for the undergraduate courses in electronics and communication engineering as well as computer science engineering. This book is well-structured and covers all the important processors and their applications in a sequential manner. It begins with a highlight on the building blocks of the embedded systems, moves on to discuss the software aspects and new processors and finally concludes with an insightful study of important applications. This book also contains an entire part dedicated to the ARM processor, its software requirements and the programming languages.

FEATURES
- Extensive coverage on the embedded hardware including details of processors, sensors, actuators, buses and system development
- Comprehensive discussion on the architecture and programming of the ARM, 8051 and PSoC microcontrollers
- Analysis on the concepts of operating systems with a special emphasis on the real time operating systems
- Step-by-step solutions provided for programming examples in Assembly and C
- Detailed coverage on DSP processors, ASIC design, product life-cycle management and software development tools
- An entire chapter on the important applications of the embedded systems

CONTENTS
1. Introduction to Embedded Systems
2. Embedded Systems—The Hardware Point of View
3. Sensors, ADCs and Actuators
4. Examples of Embedded Systems
5. Buses and Protocols
6. Software Development Tools
7. Operating System Concepts
8. Real-time Operating Systems
9. Programming in Embedded C
11. ARM—The World's Most Popular 32-bit Embedded Processor (Part II - Peripheral Programming of ARM MCU Using C)
12. Cypress's PSoC: A Different Kind of MCU
13. The 8051 Microcontroller: The Programmer's Perspective
14. Programming the Peripherals of 8051
15. DSP Processors
16. Automated Design of Digital ICs
17. Hardware Software Co-design and Embedded Product Development Lifecycle Management
18. Embedded Design: A Systems Perspective
19. Academic Projects

ABOUT THE AUTHOR
Lyla B. Das is Associate Professor, Department of Electronics and Communication Engineering, National Institute of Technology-Calicut, Kozhikode, Kerala.
ABOUT THE BOOK
This introductory textbook on Embedded Systems focuses on the design and development of hardware and software for embedded systems. The full spectrum of topics related to the embedded system development cycle such as CPU, Memory, Transducers, Operating System, Issues in RTOS, Legacy Microcontrollers and Processors are discussed in detail. Pedagogical features such as real-world case studies and live examples of embedded systems make learning and teaching from this book a pleasure.

FEATURES
- Extensive coverage on
  - ADC & DAC Converters
  - Noise & EMI in Embedded Systems
  - Operating Systems
  - Digital Signal Processing
- Large number of live examples and case studies
- Exclusive chapter on Issues in Real Time Operating Systems
- In-depth discussion on embedded system debugging
- Excellent Pedagogy
  - 350+ Figures and Illustrations
  - 150+ Solved Questions
  - 400+ Unsolved Questions
  - 300+ MCQs
  - 50+ Lab assignments
  - 15+ Case Studies

CONTENTS
1. Embedded System
2. A simple embedded system: Material filling machine
3. CPU and Memory
4. Input/Output (I/O) Methods
5. Input/Output (I/O) Interfaces and transducers
6. Operating Environment
7. Development Environment
8. Programming in C
9. Case studies
10. Embedded systems debugging
11. An example design
   - Appendix A: Logic Circuits, FPGA and ASIC
   - Appendix B: Some Legacy Microcontrollers
   - Appendix C: Noise and EMI in embedded systems
   - Appendix D: ADC and DAC converters
   - Appendix E: Digital Signal Processing and Transforms

ABOUT THE AUTHOR
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Parag Dave, Former Lecturer, Department of Computer Engineering, SVNIT, Surat, Gujarat
ABOUT THE BOOK
8051 Microcontrollers is one of the most widely used microcontrollers in embedded system design. The second edition of the book discusses its internal architecture, instruction set and interfacing techniques through simple language, excellent graphical annotations and a large variety of solved examples. The latest edition of the book features additional C language based programs for varied applications.

FEATURES
- Pictorial representation of most 8051 instructions
- An exclusive chapter devoted to power management using 8051
- A chapter on advanced microcontrollers such as the AVR
- Extensive comment statements in example programs for better understanding of the program-logic.
- Separate chapters on servo motor interfacing with laboratory experiments
- Checklists for software developers to ensure zero-error
- A new section (section 2.8) on IDE
- Additional solved examples of programming 8051 using C

CONTENTS

Part A: Electrical Fundamentals
1. Introduction
2. General Architecture of Microcontrollers
3. I/O Ports and Special Function Registers
4. Addressing Modes and Data Move Operations
5. Arithmetic Operations
6. Program Branching
7. Programming Examples
8. Subroutines and Stacks
9. Logical Operations
10. Boolean Variable Manipulation
11. Programming Examples
12. Advanced Instructions
13. Programming Examples
14. External Interrupts
15. Timer Counter Interrupts
16. Serial Communications and Serial Interrupts
17. Interfacing: External Memory
18. Interfacing: Keyboards
19. Interfacing: Display Devices
20. Interfacing: DAC/ADC
21. Interfacing: DC Motor
22. Interfacing: Stepper Motor
23. Interfacing: Servomotors
24. Power Management of Microcontrollers
25. Case Study: An Home Protection System
26. Advanced Microcontrollers
27. Interfacing Intel 8255 PPI with 8051

Appendix A: MCS-51 Instruction Set
Appendix B: 8051 Programs using C
Appendix C: Intel MCS - 51 Programmer’s Guide and Instruction Set

ABOUT THE AUTHOR
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The AVR Microcontroller and Embedded Systems: Using Assembly and C

Muhammad Ali Mazidi | Sarmad Naimi | Sepehr Naimi

ISBN: 9789332518407

ABOUT THE BOOK
The AVR Microcontroller and Embedded Systems: Using Assembly and C features a step-by-step approach in covering both Assembly and C language programming of the AVR family of Microcontrollers. It offers a systematic approach in programming and interfacing of the AVR with LCD, keyboard, ADC, DAC, Sensors, Serial Ports, Timers, DC and Stepper Motors, Opto-isolators, and RTC. Both Assembly and C languages are used in all the peripherals programming. In the first 6 chapters, Assembly language is used to cover the AVR architecture and starting with chapter 7, both Assembly and C languages are used to show the peripherals programming and interfacing.

FEATURES
- Uses a step-by-step approach in covering the Architecture, Registers, and Assembly language programming of the AVR and emphasizes the use of I/O ports programming in Assembly language throughout.
- It covers The AVR C Programming with many examples and emphasizes the use of I/O ports programming in C language.
- There is a chapter for each of the Peripherals of Timer, LCD, ADC, Motors, and RTC.
- Appendix dedicated to the detail description of the AVR instructions with many examples.

CONTENTS
1. Introduction to Computing
2. The AVR Microcontrollers: History and Features
3. AVR Architecture & Assembly Language Programming
4. Branch, Call, and Time Delay Loop
5. AVR I/O Port Programming
6. Arithmetic, Logic Instructions, and Programs
7. AVR Advanced Assembly Language Programming
8. AVR Programming in C
9. AVR Hardware Connection and Flash Loaders
10. AVR Timer Programming in Assembly and C
11. Interrupt Programming in Assembly and C
12. AVR Serial Port Programming in Assembly and C
13. LCD and Keyboard Interfacing
14. ADC, DAC, and Sensor Interfacing
15. Relay, Optoisolator, and Stepper Motor Interfacing
16. Input Capture and Wave Generation in AVR
17. PWM Programming and DC Motor Control
18. SPI Protocol and Max7221 Display Interfacing
19. I2C Protocol and DS1307 RTC Interfacing
20. APPENDICES
21. A: AVR Instruction Description
22. H: Data Sheets
ABOUT THE BOOK
Assembly Language for x86 Processors, 7e is suitable for undergraduate courses in assembly language programming and introductory courses in computer systems and computer architecture. Proficiency in one other programming language, preferably Java, C, or C++, is recommended.

Written specifically for 32- and 64-bit Intel/Windows platform, this complete and fully updated study of assembly language teaches students to write and debug programs at the machine level. This text simplifies and demystifies concepts that students need to grasp before they can go on to more advanced computer architecture and operating systems courses. Students put theory into practice through writing software at the machine level, creating a memorable experience that gives them the confidence to work in any OS/machine-oriented environment.

FEATURES
- **NEW!** Protected mode programming is entirely the focus of the printed chapters (1 through 13). This edition uses the x86 and x86-64 processor types, explaining the differences between instruction operands and basic architecture differences.
- Students create applications that take full advantage of 32-bit and 64-bit processors, using protected mode and flat memory addressing. This also allows students to create Microsoft® Windows applications.
- 16-bit programming is still covered, using chapters from the previous edition, supplied electronically from the Pearson supplements website.
- **UPDATED:** There is far less dependency on the author's subroutine libraries in this edition. Students are encouraged to call system functions themselves and use the Visual Studio debugger to step through the programs. The Irvine32 and Irvine64 libraries are available to help students handle input/output, but their use is not required.
- **UPDATED:** This edition features increased use of supplementary explanations of short program examples, particularly in the first 5 chapters.
- Review exercises aid students in their comprehension skills. Answers to questions are included for instructors to use in test material.
- **UPDATED:** New programming exercises have been added, others removed, and a few existing exercises were modified. Programming exercises with solutions give students first-hand experience in writing software and allow them to immediately check their results.
- **UPDATED:** Review questions and exercises have been moved from the middle of the chapter to the end of chapters, and divided into two sections: (1) Short answer questions, and (2) Algorithm workbench exercises. The latter exercises require the student to write a short amount of code to accomplish a goal.
- **NEW:** Each chapter now has a Key Terms section, listing new terms and concepts, as well as new MASM directives and Intel instructions.
- Optional chapter topics are offered in the final chapters. This chapter flexibility allows instructors to cover these chapters in varying order and depth.
- **NEW:** Early chapters now include short sections that feature 64-bit CPU architecture and programming, and we have created a 64-bit version of the book's subroutine library named Irvine64.
- **UPDATED:** Students can program in either 32-bit or 64-bit mode.
- **UPDATED:** Legacy chapters on 16-bit programming are provided electronically through the Pearson supplements website.
ABOUT THE BOOK

*PIC Microcontroller and Embedded Systems* offers a systematic approach to PIC programming and interfacing using the Assembly and C languages. Offering numerous examples and a step-by-step approach, it covers both the Assembly and C programming languages and devotes separate chapters to interfacing with peripherals such as timers, LCDs, serial ports, interrupts, motors and more. A unique chapter on the hardware design of the PIC system and the PIC trainer round out coverage, while text appendices and online support make it easy to use in the lab and classroom.

FEATURES

- Systematic coverage of the PIC18 family of microcontrollers.
- Chapters (9-17) on programming and interfacing the PIC with peripherals.
- An entire chapter (Chapter 8) dedicated to the design of the PIC Trainer.

CONTENTS

1. The PIC Microcontrollers: History and Features
2. PIC Architecture & Assembly Language Programming
3. Branch, Call, and Time Delay Loop
4. PIC I/O Port Programming
5. Arithmetic, Logic Instructions, and Programs
6. Bank Switching, Table Processing, Macros, and Modules
7. PIC Programming in C
8. PIC18F Hardware Connection and ROM Loaders
9. PIC18 Timer Programming in Assembly and C
10. PIC18 Serial Port Programming in Assembly and C
11. Interrupt Programming in Assembly and C
12. LCD and Keyboard Interfacing
13. ADC, DAC, and Sensor Interfacing
14. CCP and ECP Programming
15. Radio wave Propagation
16. SPI Protocol and DS1306 RTC Interfacing
17. Motor Control: Relay, PWM, DC, and Stepper Motors

ABOUT THE AUTHORS

Muhammad Ali Mazidi holds Master's degrees from both Southern Methodist University and the University of Texas at Dallas. He teaches microprocessor-based system design at DeVry University in Dallas, Texas.

Rolin McKinlay has a BSEET from DeVry University. He is currently working on his Master's degree and PE license in the state of Texas. He is currently self-employed as a programmer and circuit board designer, and is a partner in MicroDigitalEd.com

Danny Causey graduated from CET department of DeVry University. His areas of interest include networking, game development, microcontroller and embedded system design.
ABOUT THE BOOK
This textbook covers the hardware and software features of the 8051 in a systematic manner. Using Assembly language programming in the first six chapters, it provides readers with an in-depth understanding of the 8051 architecture. From Chapter 7, this book uses both Assembly and C to show the 8051 interfacing with real-world devices such as LCDs, keyboards, ADCs, sensors, real-time-clocks, and the DC and Stepper motors. The use of a large number of examples helps the reader to gain mastery of the topic rapidly and move on to the topic of embedded systems project design.

FEATURES
- A new chapter on 8051 C programming.
- A new section on the 8051 C programming of timers.
- A new section on the second serial port of the DS89C4x0 chip.
- A new section on the 8051 C programming of the second serial port.
- A new section on the 8051 C programming of interrupts.
- Programming of the 1KB SRAM of the DS89C4x0 chip.
- A new section on the 8051 C programming of external memory.
- A new chapter on the DS12887 RTC (real-time clock) chip.
- A new chapter on motors, relays, and optoisolators.

CONTENTS
1. The 8051 Microcontroller
2. 8051 Assembly Language Programming
3. Jump, Loop, and Call Instructions
4. I/O Port Programming
5. 8051 Addressing Modes
6. Arithmetic and Logic instructions and Programs
7. 8051 Programming in C
8. 8051 Hardware Connection and Intel Hex File
9. 8051 Timer Programming in Assembly and C
10. 8051 Serial Port Programming in Assembly and C
11. Interrupts Programming in Assembly and C
12. LCD and Keyboard interfacing
13. ADC, DAC, and Sensor interfacing
14. 8051 Interfacing to External Memory
15. 8051 Interfacing with The 8255
16. DS12887 RTC Interfacing and Programming
17. Motor Control: Relay, PWM, DC, and Stepper Motors

ABOUT THE AUTHORS
Muhammad Ali Mazidi holds Master’s degrees from both Southern Methodist University and the University of Texas at Dallas. He is co-author of a widely used textbook, The 80x86 IBM PC and Compatible Computers, also available from Prentice Hall. He teaches microprocessor-based system design at DeVry University in Dallas, Texas.

Janice Gillispie Mazidi has a Master of Science degree in Computer Science from the University of North Texas. She has several years of experience as a software engineer in Dallas.

Rolin McKinlay has a BSEET from DeVry University. He is currently working on his Master’s degree and PE license in the state of Texas. He is currently self-employed as a programmer and circuit board designer, and is a partner in MicroDigitalEd.com.
ABOUT THE BOOK
An Embedded Software Primer is a clearly written, insightful manual for engineers interested in writing embedded-system software. The example-driven approach puts you on a fast track to understanding embedded-system programming and applying what you learn to your projects. This book will give you the necessary foundation to work confidently in this field. Building on a basic knowledge of computer programming concepts.

FEATURES
- Learn core principles and advanced techniques of embedded-system software
- Find out what a real-time operating system (RTOS) does and how to use one effectively
- Experiment with sample code and the uC/OS RTOS version 1.11 (on the accompanying CD)
- Apply what you learn, no matter which microprocessor or RTOS you use

CONTENTS
1. A First Look at Embedded Systems
2. Hardware Fundamentals for the Software Engineer
3. Advanced Hardware Fundamentals
4. Interrupts
5. Survey of Software Architecture
6. Introduction to Real-Time Operating Systems
7. More Operating System Services
8. Basic Design Using a Real-Time Operating System
9. Embedded Software Development Tools
10. Debugging Techniques
11. An Example System

ABOUT THE AUTHOR
David E. Simon is a partner in Probitas Corporation, a software development consulting firm. Much of his Work at Probitas is in embedded systems for firms such as Apple, Adobe, Hewlett-Packard, and Symbol technologies. David has 20 years of experience in software development, and is the author of three previous books. He regularly teaches a class on embedded systems for the University of California at Berkeley Extension program.
Also Available

Design with PIC Microcontrollers
Peatman
ISBN: 9788177585513
280 © 2005

Microcontrollers: Architecture, Programming, Interfacing and System Design, 2/e
Raj Kamal
ISBN: 9788131759905
888 © 2011

Embedded Systems
Steven F. Barrett
ISBN: 9788131720233
668 © 2008

Programmable Logic Controllers: Programming Methods and Applications
Hackworth
ISBN: 9788177587715
316 © 2006

Fundamentals of Embedded Software with the ARM Cortex-M3, 2/e
Lewis
ISBN: 9789332549937
256 © 2015

The 8051 Microcontroller, 4/e
I. Scott MacKenzie
ISBN: 9788131720189
552 © 2008
ABOUT THE BOOK
This text focuses on the theory and operation of PLC systems with an emphasis on program analysis and development. The book is written in easy-to-read and understandable language with many crisp illustrations and practical examples. It describes the PLC instructions for the Allen-Bradley PLC 5, SLC 500, and Logix processors with an emphasis on the SLC 500 system using numerous figures, tables, and example problems. The text features a new two-column and four-color interior design that improves readability and figure placement. The book's organization also has improved all the chapter questions and problems are listed in one convenient location in Appendix D with page locations for all chapter references in the questions and problems. This book describes the technology in a clear, concise style that is effective in helping students who have no previous experience in PLCs or discrete and analog system control.

FEATURES
- Describes the PLC instructions for the Allen-Bradley PLC 5, SLC 500, and Logix processors with an emphasis on the SLC 500 system using numerous figures, tables, and example problems.
- Provides student problems from easy to challenging in the following five formats:
  - PLC system and setup based problems using the text CD
  - PLC 5
  - SLC 500
  - Logix
  - Challenge problems that could use any PLC system.
- Effective two-part organization:
  - Part I covers fundamental PLC concepts plus the operation and programming formats for the most frequently used PLC instructions.
  - Part II addresses advanced ladder logic instructions and applications, analog and process control instructions, the new IEC 61131 PLC languages, and industrial networks.
- Includes a CD-ROM with reference material from Allen-Bradley.
- Provides a concise description of the five IEC 61131 programming languages and includes detailed descriptions and example problems;

CONTENTS
1. Introduction to Programmable Logic Controllers
2. Input Devices and Output Actuators
3. Introduction to PLC Programming
4. Programming Timers
5. Programming Counters
6. Arithmetic and Move Instructions
7. Comparison Instructions
8. Program Control & Miscellaneous Instructions
9. Indirect and Indexed Addressing
10. Data Handling Instructions and Shift Registers
11. PLC Sequencer Functions
12. Analog Sensors and Control Systems
13. PLC Programming Standard IEC 61131-3 - Function Block Diagrams
14. Intermittent and Continuous Process Control
15. PLC Programming Standard IEC 61131-3 - Text Based Languages
16. PLC Programming Standard IEC 61131-3 - Sequential Function Charts
17. Appendix A - Glossary
18. Appendix B - PLC Module Interface Circuits
19. Appendix C—Programmable Logic Controller History
ABOUT THE BOOK
For an undergraduate-level course on PLCs or Electronic Controls. This practical and clearly written introduction provides both fundamental and cutting-edge coverage on programmable logic controllers today—a billion dollar industry. It combines comprehensive, accessible coverage with a wealth of industry examples that make intangible concepts come to life—offering students a broad-based foundation that will serve them well on the job. It examines every aspect of controller usage in an easy-to-understand, jargon-free narrative. Beginning with a basic layout, the text goes right into programming techniques, it progresses through fundamental, intermediate, and advanced functions—and concludes with chapters on related topics. Applications are discussed for each PLC function, and vast arrays of examples and problems help students achieve an understanding of PLCs, and the experience needed to use them.

FEATURES
- Latest developments in PLC model functions and networking capabilities.
- Provides students with guidelines on the most recent programming developments.
- New chapter on electrical devices connected to I/O modules.
- Provides students with a complete explanation of the latest technology in input/output on/off switching and analog devices.
- Updated and enhanced pedagogical tools—e.g. equipment illustrations, additional example problems, more troubleshooting questions, enhanced glossary and bibliography.
- Provides students with more effective tools that are easier to use and more motivating.
- Updated PLC manufacturers listing.
- Provides students with the most current listing of PLC manufacturers.
- Provides students with a comprehensive look at all the important new standards in the field.
- Provides students with helpful activities that reinforce the material in accompanying chapters in the book.
- Provides students with easy-to-follow guides for determining the important points within each chapter and learning them.
- Presents material in a logical and orderly fashion—Stand-alone chapters provide flexibility and customization.
- Provides students with fortified comprehension every step of the way, so that they can keep pace with technology.
- Maintains a generic approach—By exploring many alternative formats.
- Enables students to apply all the techniques presented to any manufacturer's equipment.

CONTENTS
I. PLC Basics
II. Basic PLC Programming
III. Basic PLC Functions
IV. Intermediate Functions
V. Data Handling Functions
VI. PLC Functions Working with Bits
VII. Advanced PLC Functions
VIII. Related Topics
Appendix A: PLC Manufacturers
Appendix B: Operational Simulation and Monitoring
Appendix C: Commonly Used Circuit Symbols
Appendix D: Major PLC Instruction, Function, and Word Codes by Typical Manufacturers
ABOUT THE BOOK
This book provides a comprehensive view of programming and interfacing of the Intel family of Microprocessors from the 8088 through the latest Pentium 4 and Core2 microprocessors. The text is written for students who need to learn about the programming and interfacing of Intel microprocessors, which have gained wide and at times exclusive application in many areas of electronics, communications, and control systems, particularly in desktop computer systems. Many applications include Visual C++ as a basis for learning assembly language using the inline assembler. Organized in an orderly and manageable format, this text offers more than 200 programming examples using the Microsoft Macro Assembler program and provides a thorough description of each of the Intel family members, memory systems, and various I/O systems.

FEATURES
- Illustrated concepts for students with relevant programming examples, many written in Visual C++ with embedded assembly language code.
- Coverage of how to develop software to control application interfaces to the microprocessor.
- Coverage of how to program the microprocessor using the popular Microsoft Visual C programming environment with embedded assembly language to control personal computers.
- Descriptions of how to use real mode (DOS) and protected mode (Windows) of the microprocessor.
- Explanation of the operation of a real-time operating system (RTOS) in an embedded environment.

CONTENTS
1. Introduction to the Microprocessor and Computer
2. The Microprocessor and Its Architecture
3. Addressing Modes
4. Data Movement Instructions
5. Arithmetic and Logic Instructions
6. Program Control Instructions
7. Using Assembly Language With C/C++
8. Programming The Microprocessor
9. 8086/8088 Hardware Specifications
10. Memory Interface
11. Basic I/O Interface
12. Interrupts
13. Direct Memory Access and Dma-Controlled I/O
14. The Arithmetic Coprocessor, Mmx, and Simd Technologies
15. Bus Interface
16. The 80185, 80188, and 80286 Microprocessors
17. The 80386 and 80486 Microprocessors
18. The Pentium and Pentium Pro Microprocessors
19. The Pentium II, Pentium III, Pentium 4, and Core2 Microprocessors
ABOUT THE BOOK
This second edition of The x86 Microprocessors has been revised to present the hardware and software aspects of the subject in a logical and concise manner. Designed for an undergraduate course on the 16-bit microprocessor and Pentium processor, the book provides a detailed analysis of the x86 family architecture while laying equal emphasis on its programming and interfacing attributes. The book also covers 8051 Microcontroller and its applications completely.

FEATURES
- Comprehensive analysis of programming and interfacing of the 8086 processor, with practical examples.
- Inclusive discussion on the features and enhancements of the 80386, 80486 and Pentium processors
- A chapter dealing with advanced computer architecture
- Two Online chapters
- 80186 -The embedded microprocessors
- The x86 base personal computer
- New to the second edition
  - Architecture of Intel's advanced Atom SoC processor explained in detail
  - Exclusive chapter on Multicore processors
  - Critical evaluation of Intel processors launched after Pentium
  - Three chapters devoted to the essential features of the 8051 Microcontroller

CONTENTS
PART I: The x86 Microprocessors
1. Basics of Computer Systems
2. Architecture of 8086
3. Programming Concepts—I
4. Programming Concepts—II
5. Programming Concepts—III
6. Programming Concepts—IV
7. The Hardware Structure of 8086
8. Memory and I/O Decoding
9. The Interrupt Structure of 8086
10. Peripheral Interfacing—I
11. Peripheral Interfacing—II
12. Peripheral Interfacing—III
13. Semi conductor memory Devices
14. Multiprocessor Configurations
15. Advanced Processors-80286 to Pentium
16. Microarchitectural Techniques of Advanced Processors
17. Multi core processors
18. Beyond Pentium-More advanced processors
19. Atom SoC-Intel's High-end Embedded Processor

PART II: The 8051 Microcontroller
20. The 8051 Microcontroller: The Programmer's Perspective
21. Programming the Peripherals of 8051
22. Interfacing External Peripherals to the 8051

APPENDIX A: 8086 16-bit HMOS Microprocessor 8086/8086-2/8086-1
APPENDIX B: Use of DOS and Debug Commands for MASM
APPENDIX C: Instruction Set and Instruction Timing of 8086
APPENDIX D: List of DOS and BIOS Functions
APPENDIX E: 80x87 Instruction Set (x87 — Pentium)

ABOUT THE AUTHOR
Lyla B. Das is Associate Professor, Department of Electronics and Communication Engineering, National Institute of Technology Calicut, Kozhikode, Kerala
ABOUT THE BOOK
Praised by experts for its clarity and topical breadth, this visually appealing, comprehensive source on PCs uses an easy-to-understand, step-by-step approach to teaching the fundamentals of 80x86 assembly language programming and PC architecture. This edition has been updated to include coverage of the latest 64-bit microprocessor from Intel and AMD, the multi core features of the new 64-bit microprocessors, and programming devices via USB ports.

Offering students a fun, hands-on learning experience, the text uses the Debug utility to show what action the instruction performs, then provides a sample program to show its application. Reinforcing concepts with numerous examples and review questions, its oversized pages delve into dozens of related subjects, including DOS memory map, BIOS, microprocessor architecture, supporting chips, buses, interfacing techniques, system programming, memory hierarchy, DOS memory management, tables of instruction timings, hard disk characteristics, and more.

FEATURES

- Comprehensive coverage of all the 80x86 microprocessors, from the 8088 to the Pentium Pro.
- Combines assembly and C programming early on.
- Introduces the 80x86 instructions with examples of how they are used, and covers 8-bit, 16-bit and 32-bit programming of x86 microprocessors.
- Uses fragments of programs from IBM PC technical reference, showing students a real-world approach to programming in assembly.
- Ensures a basic understanding of binary and hex numbering systems (before delving into PC assembly language and system programming).
- Places all C programming in the last section of each chapter, which maintains continuity for those with no C programming experience.
- Analyzes hardware differences among 8086, 286, 386, 486, Pentium and Pentium Pro chips—looks at the internal architecture on programming such chips.

CONTENTS

Part I: Assembly Language Programming on the IBM PC, PS and Compatibles
1. Introduction to Computing
2. The 80x86 Microprocessor
3. Assembly Language Programming
4. Arithmetic and Logic Instructions and Programs
5. BIOS and DOS Programming in Assembly and C
6. Macros and the Mouse
7. Signed Numbers, Strings, and Tables
8. Modules; Modular and C Programming
9. 32-Bit Programming for 386 and 486 Machines

Part II: Design and Interfacing of the IBM PC, PS and Compatibles
10. 8088/86 Microprocessors and Supporting Chips
11. 80286 Microprocessor and Supporting Chips
12. Memory and Memory Interfacing
13. I/O, 8255 and Device Interfacing
14. 8253/54 Timer and Music
15. Interrupts and the 8259 Chip
16. Direct Memory Accessing: the 8237 DMA Chip
17. Video and Video Adapters
18. Serial Data Communication and the 16550/8250/51 Chips
19. Keyboard and Printer Interfacing
20. Floppy Disks, Hard Disks, and Files
21. The 80x87 Math Coprocessor
22. 386 Microprocessor: Real vs. Protected Mode
23. High-Speed Memory Interfacing and Cache
24. 486, Pentium, Pentium Pro and MMX
25. MS DOS Structure, TSR, and Device Drivers
26. MS DOS Memory Management
27. IC Technology and System Design
28. ISA, EISA, MCA, Local, and PCI BUS
29. Programming DOS, BIOS, Hardware with C/C++
ABOUT THE BOOK
A comprehensive exploration of both the software and hardware for 6-bit microprocessors using the Intel 8086/8088 family — and their supporting devices.

FEATURES

- Gives readers a working knowledge of programming and designing 8086/8088-based microcomputer systems through an abundance of examples.
- Covers the 8089 I/O processor, the 8087 numeric data processor, and how they can be integrated into an 8086/8088 based system.
- Introduces the special features of 80130, 80186, and 80286.
- Includes more than 390 flowcharts, programming examples, logic diagrams, tables, and other illustrations.

CONTENTS

1. Introduction.
2. 8086 Architecture.
3. Assembler Language Programming.
4. Modular Programming.
5. Byte and String Manipulation.
7. Introduction to Multiprogramming.
8. System Bus Structure.
9. I/O Interfaces.
10. Semiconductor Memory.
11. Multiprocessor Configuration.
12. VLSI Processing and Supporting Devices.
13. The 80286/80287.

Appendix: 8086/8088 Instruction Set.
About the Book
This book is designed for engineers and engineering students who need an in-depth understanding of the hardware design of microprocessor-based products. It begins where introductory microprocessor books end. This book is distilled from the author's ten years of product development experience, so you can be sure of a realistic, practical perspective throughout.

Features

ISBN: 9789332575783

Microprocessor Base Design: A Comprehensive Guide to Effective Hardware Design
Michael Slater
624 | 2016
ABOUT THE BOOK
This book is designed for engineers and engineering students who need an in-depth understanding of the hardware design of microprocessor-based products. It begins where introductory microprocessor books end. This book is distilled from the author’s ten years of product development experience, so you can be sure of a realistic, practical perspective throughout.

FEATURES
- Covers device-independent fundamentals and then illustrating them with examples of real devices.
- This book provides you with the background required to understand today’s and tomorrow’s components and systems.

- After mastering the material in this book, you will be well prepared to design reliable, cost-effective products.
ABOUT THE BOOK
An ideal text and a ready reference on the latest in microwave electronic technology, this book provides a unified presentation of microwave solid-state devices, microwave tubes, and microwave circuits. This Third Edition has been extensively revised to better reflect modern advances in microwave technology. The text is ideal for microwaves or microwave engineering; physical electronics; microwave electronics courses.

CONTENTS
1. Introduction between Electrons and Fields.
2. Electromagnetic Plane Waves.
3. Microwave Transmission Lines.
4. Microwave Waveguides and Components.
5. Microwave Transistors and Tunnel Diodes.
6. Microwave Field-effect Transistors.
7. Transferred Electron Devices (TEDs).
9. Microwave Linear-beam Tubes (O type).
10. Microwave Crossed-field Tubes (M type).
11. Striplines.
ABOUT THE BOOK
This popular, application-oriented book has been revised as per the latest version of MATLAB® to capture the recent advances in software. It covers the fundamentals as well as advanced features of MATLAB® and its applications in control systems, neural networks, fuzzy logic, digital signal processing and mathematical methods. This book is valuable both as a textbook as well as a reference book for the theory and practical courses offered to students and practising engineers.

FEATURES
- “Based on the latest version of MATLAB®
- More than 30 graphs in color in the chapter
  MATLAB® Graphics
- List of commands at the end of the chapter for quick recapitulation
- Appendices on graphic user interface and control system analysis using the LTI viewer
- Approximately 250 figures and screenshots
- Programming tips to highlight good programming practices
- More than 250 solved examples and approximately 200 end-of-chapter exercises.”

CONTENTS
1. Introduction to MATLAB®
2. Constants, Variables and Expressions
3. Vectors and Matrices
4. Polynomials
5. Input Output Statements
6. MATLAB Graphics
7. Control Structures
8. Writing Programs and Functions
9. Ordinary Differential Equations and Symbolic Mathematics
10. Simulink® Basics
11. MATLAB Applications in Control Systems-I
12. MATLAB Applications in Control Systems-II
13. MATLAB Applications in Neural Networks
14. MATLAB Applications in Fuzzy Logic Systems
15. MATLAB Applications in Digital Signal Processing
16. MATLAB Applications in Computational Mathematics”

ABOUT THE AUTHOR
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Manoj Kumar Sharma, Associate Professor and Coordinator of Electrical and Electronics Engineering Department, University Institute of Engineering and Technology (UIET) Punjab University, Chandigarh
ABOUT THE BOOK
MATLAB® provides an interactive programming interface for numerical computation and data visualization making it the default framework used for analysis, design and research in many domains of science and industry. Programming in MATLAB® is intended as an aid to engineers and scientists with no prior programming expertise. The book focuses on the systematic development of practical programming skills through MATLAB language constructs, backed by several well-designed examples and exercises.

FEATURES
- More than 100 solved examples, 100 practice questions and 125 exercises
- Chapter-wise organization of common errors and programming pitfalls
- Exclusive chapters on debugging large programs, optimizing memory usage and making codes faster.
- Comprehensive overview of Simulink® Modeling and Graphical User Interface.
- Introduction to the concepts of digital image processing

CONTENTS
1. Introduction to MATLAB®
2. Matrix operations and applications
3. MATLAB graphics and plotting
4. Control structures, loops, and file handling
5. Scripts and functions
6. Numerical methods, calculus, and statistics
7. Using memory efficiently
8. Using the MATLAB debugger And profiler
9. Efficient coding using Vectorization technique
10. Precision and Errors
11. Advanced concepts in MATLAB
12. Modeling With Simulink®
13. Digital Image Processing

ABOUT THE AUTHORS
Ramnarayan Patel did his Ph.D. in the area of power systems from Indian Institute of Technology Delhi, in 2003. Currently, he is Professor in the Department of Electrical and Electronics Engineering, Shri Shankaracharya Technical Campus (SSGI), Bilai, and has many publications to his credit in various international journals of repute. He is a recipient of the prestigious ‘Career Award for Young Teachers’ from All India Council for Technical Education (AICTE), New Delhi.

Ankush Mittal received his B.Tech. in computer science and engineering from Indian Institute of Technology Delhi in 1996, and later, his Master’s degree in 1998 from the same institute. He received his Ph.D. degree in electrical and computer engineering from the National University of Singapore in 2001 and was a faculty member in the Department of Computer Science, National University of Singapore, for two years. He has also served as Associate Professor at IIT Roorkee. Currently, he is Director (Research) at Graphic Era University, Dehradun. A dedicated teacher and active researcher, he is a recipient of the IIT Roorkee Outstanding Teacher Award and the IBM Faculty Award.
ABOUT THE BOOK
This textbook offers an interesting, straightforward introduction to probability and random processes. While helping students to develop their problem-solving skills, the book enables them to understand how to make the transition from real problems to probability models for those problems. To keep students motivated, the author uses a number of practical applications from various areas of electrical and computer engineering that demonstrate the relevance of probability theory to engineering practice. Discrete-time random processes are used to bridge the transition between random variables and continuous-time random processes. Additional material has been added to the second edition to provide a more substantial introduction to random processes.

FEATURES
- Numerous examples—a wide selection of fully worked-out real-world examples.
- Problems—over 700 in all.

CONTENTS
1. Probability Models in Electrical and Computer Engineering
2. Basic Concepts of Probability Theory
3. Random Variables
4. Multiple Random Variables
5. Sums of Random Variables and Long-Term Averages
6. Random Processes
8. Markov Chains
9. Introduction to Queueing Theory
   Appendix A: Mathematical Tables
   Appendix B: Tables of Fourier Transformation
   Appendix C: Computer Programs for Generating Random Variables
Also Available

**Probability, Statistics and Random Processes**
- **Author:** Pappu Kousalya
- **ISBN:** 9788131774526
- **Pages:** 592
- **Year:** 2013

**Pulse and Digital Circuits**
- **Author:** Venkata Rao K
- **ISBN:** 9788131721353
- **Pages:** 728
- **Year:** 2010

**Satellite Communications**
- **ISBN:** 9788131702420
- **Pages:** 568
- **Year:** 2006
ABOUT THE BOOK
The first true introduction to semiconductor optoelectronic devices, this book provides, well-organized overview of optoelectric devices that emphasizes basic principles. This edition has enhanced readability and depth of coverage with expanded explanations of materials, device phenomena, and recent developments in the field. The book’s coverage begins with an review of key concepts such as properties of compound semiconductors, quantum mechanics, semiconductor statistics, carrier transport properties, optical processes, and junction theory.

FEATURES
1. Chapter on lightwave networks that reflects the enormous progress in the field of fiber-optic communication and the use of optoelectronic devices for this application
2. New devices such as the quantum cascade laser and the tunneling injection laser
4. Includes more worked out examples and problems in every chapter to help both readers and instructors
5. Chapter Highlights sections to highlight new and attractive portions of each chapter
6. Features a wealth of valuable appendices as vehicles for more rigorous treatment of selected subjects

CONTENTS
1. Elemental and Compound Semiconductors
2. Electronic Properties of Semiconductors
3. Optical Processes in Semiconductors
4. Junction Theory
5. Light-Emitting Diodes
6. Lasers: Operating Principles
7. Lasers: Structures and Properties
8. Photodetectors
9. Special Detection Schemes
10. Solar Cells
11. Optoelectronic Modulation and Switching devices
12. Optoelectronic Integrated Circuits
13. Lightwave Networks
14. List of symbols
15. Appendices

ABOUT THE AUTHOR
Pallab Bhattacharya is Professor of Electrical Engineering and Computer Science and Director of the Solid State Electronics Laboratory at the University of Michigan, Ann Arbor.
ABOUT THE BOOK
For undergraduate-level courses in Signals and Systems. This comprehensive expl-
oration of signals and systems develops continuous-time and discrete-time con-
cepts/methods in parallel highlighting the similarities and differences and features introductory treatments of the applications of these basic methods in such areas as filtering, communication, sampling, discrete-time processing of continuous-time signals, and feedback. Relatively self-contained, the text assumes no prior experience with system analysis, convolution, Fourier analysis, or Laplace and z-transforms.

FEATURES
- Develops continuous-time and discrete-time concepts in parallel—highlighting the similarities and differences.
- Introduces some of the important uses of the basic methods that are developed—e.g., filtering, communication, sampling, discrete-time processing of continuous-time signals, and feedback.
- Includes an up-to-date bibliography.
- A companion book contains MATLAB-based computer exercises for each topic in the text.
- Material on Fourier analysis has been reorganized significantly to provide an easier path for the student to master and appreciate the importance of this topic. Now represented in four chapters, each of which is far more streamlined and focused, introducing a smaller and more cohesive set of topics. This will greatly enhance the students ability to organize their understanding of the material.
- Frequency-domain filtering is introduced very early in the development to provide a central and concrete illustration of why this topic is important and to provide some intuition with a minimal amount of mathematical preliminaries. The students will be able to see why this topic is so important and gain some intuition which will enhance his or her appreciation of the developments that follow.
- Much of the advanced material that had appeared in the Fourier transform chapters in the first edition have now been pulled together into the time and frequency domain chapter, so that only the basic concepts are introduced in these chapters; and provide a more cohesive treatment of time and frequency domain issues.
- Relocates coverage of Sampling before Communication.
- Allows instructor and students to discuss important forms of communication, namely those involving discrete or digital signals, in which sampling concepts are intimately involved.
- Includes significantly more worked examples.
- Provides over 600 chapter-end problems,—20 per chapter, with answers (not solutions).
- Features a majority of new chapter-end problems.
- Chapter-end Problems have been reorganized and assembled to aid the student and instructor. They provide a better balance between exercises developing basic skills and understanding ones that pursue more advanced problem-solving skills. New edition organizes chapter-end problems into four types of sections which makes it easier for the instructor and student to locate the problems that will best serve their purposes; and provides two types of basic problems, ones with answers (but not solutions); and ones with solutions to provide immediate feedback to the student while attempting to master the material.

CONTENTS
1. Signals and Systems.
2. Linear Time-Invariant Systems.
3. Fourier Series Representation of Periodic Signals.
4. The Continuous-Time Fourier Transform.
5. The Discrete-Time Fourier Transform.
7. Sampling.
10. The Z-Transform.
ABOUT THE BOOK
For undergraduate-level courses in Signals and Systems. This comprehensive exploration of signals and systems develops continuous-time and discrete-time concepts/methods in parallel highlighting the similarities and differences and features introductory treatments of the applications of these basic methods in such areas as filtering, communication, sampling, discrete-time processing of continuous-time signals, and feedback. Relatively self-contained, the text assumes no prior experience with system analysis, convolution, Fourier analysis, or Laplace and Z-transforms.

FEATURES
ISBN: 9789332550230
Signals and Systems, 2/e
Alan V. Oppenheim

Also Available
Analog Signals and Systems
Erhan Kudeki
ISBN: 9788131787984
528 © 2012

Continuous and Discrete Signals and Systems, 2/e
Samir S. Soliman
ISBN: 9789332550537
544 © 2015

Signals, Systems and Transforms 4/e
Charles L. Phillips
ISBN: 9789332518490
776 © 2013

Signals and Systems: Continuous and Discrete, 4/e
Rodger E. Ziemer
ISBN: 9789332542044
640 © 2014

SIGNAL AND SYSTEMS
Telecommunication Switching, Traffic and Networks

J.E. Flood

328 | © 2006

ABOUT THE BOOK
This book deals with switching, signaling and traffic in the context of telecommunication networks. Its coverage moves from an introduction to those networks through the evolution of switching systems from electromechanical systems to stored-program-controlled digital systems and future broadband systems. The treatment of Teletraffic Theory includes both lost-call and queuing systems.

FEATURES
- Modern digital networks
- Modern digital switching systems
- Packet switching
- Common-channel signaling
- Digital transmission, including Synchronous Digital Hierarchy
- Integrated service digital network (ISDN)
- Broadband networks including ATM

The book fills the gap between texts in telecommunications that only treat networks in a cursory manner and advanced texts that are too specialized for undergraduates. It will therefore become important reading for final year undergraduates and M.Sc. students in departments of electrical and electronic engineering.

CONTENTS
1. Introduction
2. Telecommunication Transmission
3. Evolution of switching systems
4. Telecommunications traffic
5. Switching networks
6. Time-division switching
7. Control of switching systems
8. Signaling
9. Packet switching
10. Networks

ABOUT THE AUTHOR
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AVHDL Primer, 3/e

J. Bhasker

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ABOUT THE BOOK
This book introduces the VHDL language to the reader at the beginner’s level. It presents a subset of VHDL consisting of commonly used features that make it both simple and easy to use. The extensive hardware modeling coverage includes modeling of regular structures, delays, conditional operations, state machines, Moore and Mealy FSMs, clock dividers and much more.
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ABOUT THE AUTHORS
J. Bhasker (Ph.D., University of Minnesota) is a member of the Technical Staff at AT&T Bell Laboratories, Allentown, PA, where he is currently working on a high-level synthesis tool that would synthesize netlists from C or VHDL behavioral descriptions. He teaches courses on VHDL and VHDL Synthesis to internal AT&T designers as well as at Lehigh University.

Also Available

VHDL: Basics to Programming
Gaganpreet Kaur
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CMOS VLSI Design: A circuits and systems perspective, 4/e

Neil H. E. Weste  |  David Money Harris

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ABOUT THE BOOK
The fourth edition of the best-selling text details the modern techniques for the design of complex and high-performance CMOS systems on a chip. Covering the fundamentals of CMOS design from the digital systems level to the circuit level, this book explains the fundamental principles and is a guide to good design practices.

ISBN: 9789332542884

FEATURES
- Broad, in-depth, up-to-date, and comprehensive coverage of the entire field of CMOS VLSI design
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- Illuminates circuit simulation with SPICE through a complete tutorial chapter (Chapter 8)
- Presents extensive coverage of data-path, array, and special purpose building blocks (Chapters 11-13)
- Contains a rich set of problems, worked examples and exercises for learning reinforcement
- Presents “war stories” of “chips gone bad” and their lessons for today’s designers
- Links theory to practice through expert Historical Perspective and Pitfall sections that reveal what’s happening in real R&D and engineering laboratories

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ABOUT THE AUTHORS
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Neil Weste is a member of the faculty at the Department of Electronic Engineering, Macquarie University; Adjunct Professor of Electrical Engineering at The University of Adelaide; and Director, Engineering at Cisco’s Wireless Networking Business Unit. He has served as department head at Bell Laboratories; leader of design projects for Symbolics, Inc.; and as president of TLW, Inc., an IC engineering company that completed groundbreaking chip designs for companies such as North American Philips, Analog Devices, AT&T Microelectronics and Thomson Consumer Electronics.
ABOUT THE BOOK
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7. Floorplanning
8. Architecture Design
ABOUT THE AUTHOR
Wayne Wolf is Rhesa “Ray” S. Farmer Jr. Distinguished Chair in Embedded Computing Systems and Georgia Research Alliance Eminent Scholar at the Georgia Institute of Technology. Before joining Georgia Tech, he was with Princeton University from 1989 to 2007 and AT&T Bell Laboratories from 1984 to 1989. He received the B.S., M.S., and Ph.D. degrees in electrical engineering from Stanford University in 1980, 1981, and 1984, respectively. His research interests include VLSI systems, embedded computing, cyber-physical systems, and embedded computer vision. He has chaired several conferences, including CODES, EMSOFT, CASES, and ICCD. He was founding editor-in-chief of ACM Transactions on Embedded Computing Systems and founding co-editor-in-chief of Design Automation for Embedded Systems. He is a Fellow of the ACM and IEEE. He received the ASEE/CSE and HP Frederick E. Terman Award in 2003 and the IEEE Circuits and Systems Education Award in 2006.

APPENDIX A: A Chip Designer's Lexicon
APPENDIX B: Hardware Description Languages
ABOUT THE BOOK
Modern VLSI Design: IP-Based Design, 4/e
Wayne Wolf
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ISBN: 9789332550353
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1. Digital Systems and VLSI
2. Fabrication and Devices
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FPGA-Based System Design
Wayne Wolf
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ABOUT THE BOOK
Appropriate for all introductory-to-intermediate level courses in FPGAs, VLSI, and/or digital design. Writing specifically for FPGA designers, Princeton University's Wayne Wolf first introduces the essentials of VLSI: fabrication, circuits, interconnects, combinational and sequential logic design, system architectures, and more. He then shows how to reflect this VLSI knowledge in a state-of-the-art design methodology that leverages FPGAs most valuable characteristics while mitigating its limitations. Along the way, he introduces the basics of Verilog, VHDL, and leading tools for optimizing logic and sequential machine designs. Wolf then turns to the structure of large digital systems, introducing the sophisticated register-transfer design methodology and presenting a simple DSP case study that addresses a wide variety of design problems. The book concludes with a detailed look at large-scale systems built with FPGAs, including platform FPGAs and multi-FPGA systems. Includes selected content from Wolf's widely-acclaimed book Modern VLSI Design.
FEATURES
- FPGA-based logic design, in depth.
- Essential VLSI guidance for FPGA designers.
- HDL-based logic design—Makes use of modern HDL design techniques with both Verilog and VHDL.

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Sebastian Smith
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This text provides a comprehensive introduction to wireless communications, unraveling these techniques in an order consistent with the evolution of spectral utilization of the radio channel. *Modern Wireless Communication* begins with a discussion of FDMA systems and traces the progress of wireless communication through TDMA, CDMA, and SDMA techniques, while simultaneously presenting the engineering principles required for each multiple access strategy.

FEATURES
- Concise and Clear Presentation—Gives students the physical techniques behind antennas and radio wave propagation.
- Multiple-Input, Multiple-Output (MIMO)—Provides the first text that treats MIMO and space-time coding techniques at an introductory level.
- Worked Examples—Theme examples in each chapter illustrate how the concepts are used in engineering practice.
- Comprehensive Appendices—10 appendices added on theories, functions and computer assignments among other intrinsic topics indispensable for a thorough coverage of the subject.

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1. Introduction
2. Propagation and Noise
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5. Spread Spectrum and Code-Division Multiple Access
6. Diversity, Capacity and Space-Division Multiple Access
7. Wireless Architectures
Wireless Communications: Principles and Practice, 2/e

Theodore S. Rappaport

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FEATURES

- Complete information on all of the world’s most important standards—for cellular, cordless telephone, and personal communications systems, including AMPS, ETACS, U.S. Digital Cellular, GSM, CDMA, DECT, WACS, CT-2, PDC, and CDPD.
- All new end of chapter solved example problems—On topics ranging from cellular system design to networking.
- Hundreds of figures, tables, and diagrams—with clear explanations of all major concepts.

Also Available

Introduction to Wireless Technology

Gary S. Rogers

ISBN: 9788131715345

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ABOUT THE BOOK

Long-Term Evolution (LTE) is the next step in the GSM evolutionary path beyond 3G technology, and it is strongly positioned to be the dominant global standard for 4G cellular networks. LTE also represents the first generation of cellular networks to be based on a flat IP architecture and is designed to seamlessly support a variety of different services, such as broadband data, voice, and multicast video. Its design incorporates many of the key innovations of digital communication, such as MIMO (multiple input multiple output) and OFDMA (orthogonal frequency division multiple access), that mandate new skills to plan, build, and deploy an LTE network.

In Fundamentals of LTE, four leading experts from academia and industry explain the technical foundations of LTE in a tutorial style—providing a comprehensive overview of the standards. Following the same approach that made their recent Fundamentals of WiMAX successful, the authors offer a complete framework for understanding and evaluating LTE.

FEATURES

- Cellular wireless history and evolution: Technical advances, market drivers, and foundational networking and communications technologies
- Multicarrier modulation theory and practice: OFDM system design, peak-to-average power ratios, and SC-FDE solutions
- Frequency Domain Multiple Access: OFDMA downlinks, SC-FDMA uplinks, resource allocation, and LTE-specific implementation
- Multiple antenna techniques and tradeoffs: spatial diversity, interference cancellation, spatial multiplexing, and multiuser/networked MIMO
- LTE standard overview: air interface protocol, channel structure, and physical layers
- Downlink and uplink transport channel processing: channel encoding, modulation mapping, Hybrid ARQ, multi-antenna processing, and more
- Physical/MAC layer procedures and scheduling: channel-aware scheduling, closed/open-loop multi-antenna processing, and more
- Packet flow, radio resource, and mobility management: RLC, PDCP, RRM, and LTE radio access network mobility/handoff procedures
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Rias Muhamed is a director of business development with the AT&T Corporate Strategy and Development Team.
ABOUT THE BOOK
An explosion of Web-based language techniques, merging of distinct fields, availability of phone-based dialogue systems, and much more make this an exciting time in speech and language processing. The first of its kind to thoroughly cover language technology — at all levels and with all modern technologies — this text takes an empirical approach to the subject, based on applying statistical and other machine-learning algorithms to large corporations. The authors cover areas that traditionally are taught in different courses, to describe a unified vision of speech and language processing. Emphasis is on practical applications and scientific evaluation. An accompanying Website contains teaching materials for instructors, with pointers to language processing resources on the Web. The Second Edition offers a significant amount of new and extended material.

FEATURES
- Each chapter is built around one or more worked examples demonstrating the main idea of the chapter - Uses the examples to illustrate the relative strengths and weaknesses of various approaches
- Methodology boxes included in each chapter - Introduces important methodological tools such as evaluation, wizard of oz techniques, etc.
- Problem sets included in each chapter.
- Integration of speech and text processing - Merges speech processing and natural language processing fields.
- Empiricist/statistical/machine learning approaches to language processing-Covers all of the new statistical approaches, while still completely covering the earlier more structured and rule-based methods.
- Modern rigorous evaluation metrics.
- Unified and comprehensive coverage of the field - Covers the fundamental algorithms of various fields, whether originally proposed for spoken or written language.
- Emphasis on Web and other practical applications - Gives students an understanding of how language-related algorithms can be applied to important real-world problems.
- Emphasis on scientific evaluation - Offers a description of how systems are evaluated with each problem domain.
- Description of widely available language processing resources
- Seven new chapters that extend coverage to include:
  - Statistical sequence labeling
  - Information extraction
  - Question answering and summarization
  - Advanced topics in speech recognition
  - Speech synthesis

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22. Information Extraction
23. Question Answering and Summarization
24. Dialogue and Conversational Agents
25. Machine Translation

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James H. Martin is a professor in the Department of Computer Science and in the Department of Linguistics, and a fellow in the Institute of Cognitive Science at the University of Colorado at Boulder.

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Thomas F. Quatieri
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