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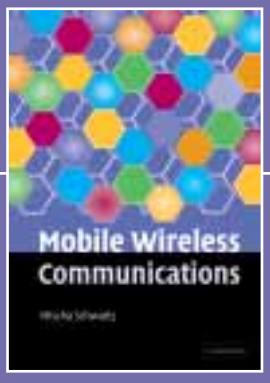

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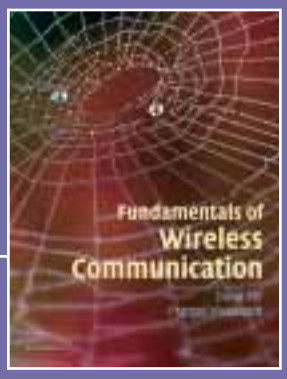

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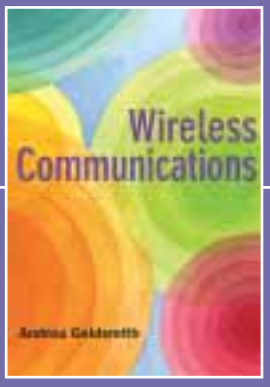

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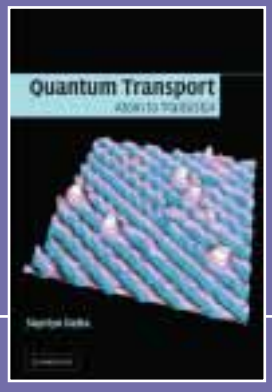

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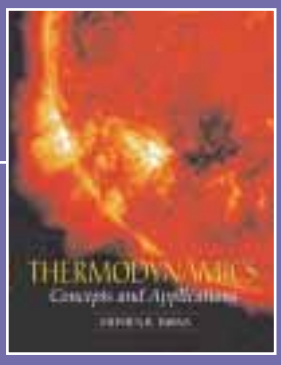

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Useful contacts

Book proposals: **Philip Meyler, Publishing Director for Engineering (pmeyler@cambridge.org)**

For further information about Engineering titles: **Cherrill Richardson (crichardson@cambridge.org)**

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Electrical and Computer Engineering

Wireless Communications

TEXTBOOK

Mobile Wireless Communications

Mischa Schwartz
Columbia University, New York

This book provides a tutorial introduction to digital mobile wireless networks, illustrating theoretical underpinnings with a wide range of real-world examples. In particular, 2.5G and 3G packet-switched systems are discussed in detail, as are wireless LANs and personal-area networks. Many worked examples and homework exercises are provided and a solutions manual is available for instructors. The book is an ideal text for electrical engineering and computer science students taking courses in wireless communications. It will also be an invaluable reference for practising engineers.

• Provides an accessible introduction to the theory and practice of modern wireless networks

• Contains many worked examples and homework exercises

• Solutions manual available for instructors

– 2004 247 x 174 mm 470pp 26 tables 147 exercises 136 figures
– 978 0 521 84347 8 (0 521 84347 2) Hardback £40.00

TEXTBOOK

Fundamentals of Wireless Communication

David Tse
University of California, Berkeley

and Pramod Viswanath
University of Illinois, Urbana-Champaign

The past decade has seen many advances in physical layer wireless communication theory and their implementation in wireless systems. This textbook takes a unified view of the fundamentals of wireless communication and explains the web of concepts underpinning these advances at a level accessible to an audience with a basic background in probability and digital communication. An abundant supply of exercises and figures reinforce the material in the text. This book is for use on graduate courses in electrical engineering and will also be of great interest to practising engineers.

• Explains cutting-edge ideas in a simple and intuitive way, using discussions and summaries

• Many exercises and figures illustrate the concepts

• Solutions are available for instructors

'Fundamentals of Wireless Communication is a terrific introduction to principles of physical-layer design for state-of-the-art wireless systems. It is a wonderful and much-needed resource for new graduate students and practicing professionals alike. Tse and Viswanath have written a text of enduring value.'
Professor Gregory W. Wornell, MIT

– 2005 246 x 189 mm 586pp 203 line diagrams 8 tables 237 exercises
– 978 0 521 84527 4 (0 521 84527 0) Hardback £40.00

TEXTBOOK

Wireless Communications

Andrea Goldsmith
Stanford University, California

This book provides a comprehensive introduction to the basic principles, design techniques and analytical tools of wireless communications, focusing primarily on core principles of wireless system design. It begins with an overview of wireless systems and standards. The characteristics of the wireless channel are then described, including capacity limits. Various modulation and coding schemes are then discussed in detail, including state-of-the-art adaptive modulation and diversity techniques. The concluding chapters deal with multiple and random access in wireless networks, cellular system design, and ad-hoc network design.

• Emphasizes the core principles of wireless system design

• Covers state-of-the-art topics such as space-time coding, dynamic resource allocation, and ad-hoc networks

• Lecture slides and solutions available for instructors

'Andrea Goldsmith has successfully created a book that balances the pressing needs of practical design and an appreciation for deep insights that come from theory. Written by a pioneer in adaptive modulation techniques for fading channels, this book is excellent in developing a working knowledge of modern wireless communication techniques that have been invented over the past decade. It is likely to become the standard textbook for wireless communications for the next 10 years.'
Volkan Rodoplu, University of California, Santa Barbara

– 2006 253 x 177 mm 648pp 7 tables 295 exercises 214 figures
– 978 0 521 83716 3 (0 521 83716 2) Hardback £40.00
– **Publication April 2006**

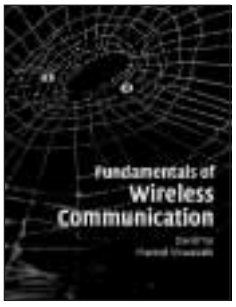
TEXTBOOK

Networking Wireless Sensors

Bhaskar Krishnamachari
University of Southern California

This book provides a comprehensive and organized survey of the field of wireless sensor networks, one of the most rapidly developing new information technologies, with a wide range of applications. Ideal for researchers and practioners, it also contains many exercises and can be used in a graduate course on Networks.

– 2005 247 x 174 mm 220pp 57 line diagrams 1 half-tone 2 tables 60 exercises
– 978 0 521 83847 4 (0 521 83847 9) Hardback c. £45.00
– **Publication November 2005**



TEXTBOOK

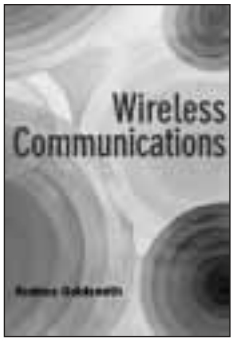
Principles of Embedded Networked Systems Design

Gregory Pottie
University of California, Los Angeles

and William Kaiser
University of California, Los Angeles

Embedded network systems provide a set of technologies that can link the physical world to large scale networks allowing monitoring and control in many physical processes. This book details the fundamentals for this fast-moving field. It contains extensive examples and problems and is ideal for graduate students and practicing engineers.

– 2005 247 x 174 mm 544pp 8 half-tones 20 tables 169 exercises 232 figures
– 978 0 521 84012 5 (0 521 84012 0) Hardback £50.00
– **Publication October 2005**



Space-Time Coding
Theory and Practice

Hamid Jafarkhani
University of California, Irvine

This book covers the fundamental principles of space-time coding for wireless communications over multiple-input multiple-output (MIMO) channels, and the practical coding methods for achieving the performance improvements predicted by the theory. Ideal for graduate students familiar with the basics of digital communications, and engineers implementing the theory in real systems.

– 2005 247 x 174 mm 315pp
117 line diagrams 9 tables 61 exercises
– 978 0 521 84291 4 (0 521 84291 3)
Hardback £45.00
– **Publication September 2005**

WCDMA Design Handbook

Andrew Richardson

This practical handbook provides a comprehensive explanation of the WCDMA air interface of 3rd generation UMTS cellular systems. Addresses all aspects of the WCDMA radio interface from RF and baseband processing to the non-access stratum and RRC layers. An ideal course book and reference for engineers and students.

– 2005 247 x 174 mm 592pp
315 line diagrams 167 tables
– 978 0 521 82815 4 (0 521 82815 5)
Hardback £65.00

Next Generation Mobile Access Technologies
Implementing TDD

Edited by Harald Haas
Universität Bremen

and Stephen McLaughlin
University of Edinburgh

Describing the features of various mobile access technologies, this book also assesses their strengths and weaknesses. It explains the underlying principles and practical implementation of time division duplexing and uses real world examples from UMTS, wireless LAN, and Bluetooth systems. For graduate students and practitioners designing and implementing wireless systems.

– 2005 247 x 174 mm 400pp 10 tables
100 figures
– 978 0 521 82622 8 (0 521 82622 5)
Hardback c. £48.00
– **Publication September 2005**

Principles of Space-Time Coding

Giuseppe Caire
University of Southern California

Mohamed Damen
University of Alberta

and Hesham El Gamal
Ohio State University

Space-time coding techniques play a central role in modern wireless communications systems. This self-contained and unified treatment provides a comprehensive description of space-time coding techniques and the most common design approaches. Ideal for graduate courses on space-time coding, it will also appeal to practitioners in wireless communications.

– 2006 247 x 174 mm 350pp 80 figures
– 978 0 521 83790 3 (0 521 83790 1)
Hardback c. £45.00
– **Publication April 2006**

TEXTBOOK

Space-Time Block Coding for Wireless Communications

Erik G. Larsson
Royal Institute of Technology, Stockholm

and Petre Stoica
Uppsala Universitet, Sweden

Space-time coding is an important technique that promises greatly improved performance in wireless networks by using multiple antennas at the transmitter and receiver. *Space-Time Block Coding for Wireless Communications* provides detailed coverage of a technology that is already embedded in the UMTS and WCDMA mobile standards.

– 2003 247 x 174 mm 302pp 2 tables
71 exercises 38 figures
– 978 0 521 82456 9 (0 521 82456 7)
Hardback £45.00

TEXTBOOK

Introduction to Space-Time Wireless Communications

Arogyaswami Paulraj
Imperial College, London

Rohit Nabar
ETH Zentrum, Switzerland

and Dhananjay Gore
Qualcomm.Inc, California

This book is an accessible introduction to the theory of space-time wireless communications. The book is an ideal introduction to this rapidly growing field for graduate students and for practitioners in the wireless industry. Homework problems and other supporting material are available on a companion website.

– 2003 247 x 174 mm 308pp 6 tables
141 figures
– 978 0 521 82615 0 (0 521 82615 2)
Hardback £45.00

Mobile Web Services

Ariel Pashtan
Aware Networks, Illinois

Mobile web services are designed to provide access to web content anywhere, any time. This book describes the key network elements, software components, and software protocols that are needed to realize these services, including the concept of user context and its potential to create personalized services. The book includes Java and XML code examples and a case study that shows how all the elements of system design fit together. It is aimed at wireless web architects, network managers, and graduate students in electrical engineering and computer science.

• Describes clearly which network elements, software components, and software protocols are needed to implement a mobile web service

• Contains practical code examples in Java and XML

• Includes a detailed case study that illustrates mobile web service implementation in practice

– 2005 247 x 174 mm 284pp 5 half-tones
91 figures
– 978 0 521 83049 2 (0 521 83049 4)
Hardback £35.00

Communications and Signal Processing

TEXTBOOK

TCP/IP Essentials
A Lab-Based Approach

Shivendra S. Panwar
Polytechnic University, New York
Shiwen Mao
Virginia Polytechnic Institute and State University
Jeong-dong Ryoo
Electronics and Telecommunications Research Unit, South Korea
and Yihan Li
Polytechnic University, New York

TCP/IP Essentials is a hands-on guide to TCP/IP technologies, and shows how the protocols are implemented in practice. It is aimed at electrical engineering and computer science students, and will also be an ideal guide for engineers studying for networking certifications.

– 2004 247 x 174 mm 284pp 30 tables 103 exercises 86 figures
– 978 0 521 84144 3 (0 521 84144 5) Hardback £50.00
– 978 0 521 60124 5 (0 521 60124 X) Paperback £24.99

TEXTBOOK

An Introduction to Statistical Signal Processing

Robert M. Gray
Stanford University, California
and Lee D. Davisson
University of Maryland, College Park

This book describes the essential tools and techniques of statistical signal processing. Hundreds of homework problems are included and the book is ideal for graduate students of electrical engineering and applied mathematics. It is also a useful reference for researchers in signal processing and communications.

– 2004 247 x 174 mm 478pp 261 exercises 16 figures
– 978 0 521 83860 3 (0 521 83860 6) Hardback £40.00

TEXTBOOK

Digital Signal Processing
System Analysis and Design

Paulo S. R. Diniz
Universidade Federal do Rio de Janeiro
Eduardo A. B. da Silva
Universidade Federal do Rio de Janeiro
and Sergio L. Netto
Universidade Federal do Rio de Janeiro

This book covers all the major topics in digital signal processing (DSP) design and analysis, supported by MatLab examples and other modelling techniques. An ideal textbook for students, it will also be a useful reference for engineers working on the development of signal processing systems.

'This textbook covers, clearly and concisely, the core material of a DSP course …'.
Times Higher Education Supplement

– 2002 247 x 174 mm 632pp 222 figures
– 978 0 521 78175 6 (0 521 78175 2) Hardback £45.00

TEXTBOOK

Introduction to Coding Theory

Ron Roth
Technion - Israel Institute of Technology, Haifa

This book introduces the reader to the theoretical foundations of error-correcting codes, with an emphasis on Reed-Solomon codes and their derivative codes. It is designed to be accessible to a broad readership, including students of computer science, electrical engineering, and mathematics, from senior-undergraduate to graduate level.

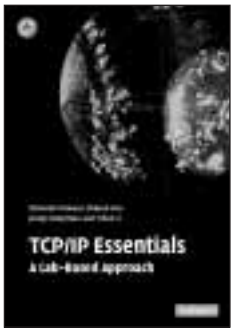
– 2005 247 x 174 mm 586pp 66 line diagrams 12 tables 348 exercises
– 978 0 521 84504 5 (0 521 84504 1) Hardback c. £40.00
– **Publication December 2005**

Survivability and Traffic Grooming in WDM Optical Networks

Arun Somani
Iowa State University

This book provides coverage of survivability (dealing with the risk of losing large volumes of traffic data due to failure of a node or single fiber span) and traffic grooming (managing the increased complexity of smaller user requests over high capacity data pipes); two key issues in modern optical networks.

– 2005 247 x 174 mm 464pp 225 line diagrams 58 tables
– 978 0 521 85388 0 (0 521 85388 5) Hardback c. £55.00
– **Publication December 2005**



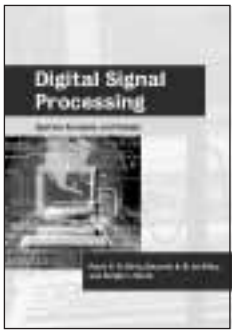
TEXTBOOK

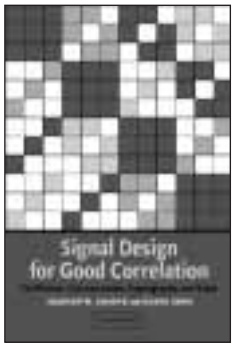
Performance Analysis of Communications Networks and Systems

Piet Van Mieghem
Technische Universiteit Delft, The Netherlands

This rigorous and self-contained book describes mathematical and in particular, stochastic methods to assess the performance of networked systems. It concentrates on probability theory, classical theory of stochastic processes and the newer field of physics of networks.Containing problems and solutions, it is ideal for graduate courses in performance analysis.

– 2005 247 x 174 mm 542pp 87 line diagrams 3 tables 47 exercises
– 978 0 521 85515 0 (0 521 85515 2) Hardback c. £45.00
– **Publication November 2005**





Signal Design for Good Correlation

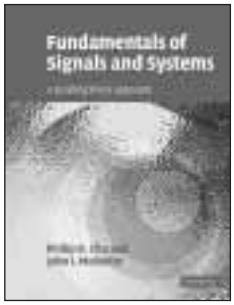
For Wireless Communication, Cryptography, and Radar

Solomon W. Golomb
University of Southern California

and Guang Gong
University of Waterloo, Ontario

This comprehensive, up-to-date text and reference presents all the necessary mathematical background to explain how signals with favorable correlation properties are generated, and to show how they satisfy the appropriate correlation constraints. Applications such as CDMA telephony, coded radar, and stream cipher generation are treated in depth.

– 2005 228 x 152 mm 464pp
– 41 line diagrams 34 tables
– 978 0 521 82104 9 (0 521 82104 5)
Hardback £40.00
– **Publication September 2005**



TEXTBOOK

Fundamentals of Signals and Systems

A Building Block Approach

Philip D. Cha
Harvey Mudd College, California

and John I. Molinder
Harvey Mudd College, California

This innovative textbook provides a solid foundation in both signal processing and systems modeling using a building block approach. Containing many worked examples, homework exercises, and a range of Matlab laboratory exercises, this is an ideal textbook for undergraduate students of engineering, and related disciplines.

– 2005 247 x 174 mm 392pp
349 line diagrams 19 tables 117 exercises
– 978 0 521 84966 1 (0 521 84966 7)
Hardback c. £35.00
– **Publication December 2005**

Fractal Speech Processing

Marwan Al-Akaidi
De Montfort University, Leicester

This book represents the fruit of research carried out to develop novel fractal-based techniques for the analysis of speech and audio signals. Fractal techniques are described in detail with numerous real-world applications and examples. A valuable reference for researchers, academics and engineers.

– 2004 247 x 174 mm 224pp 63 figures
– 978 0 521 81458 4 (0 521 81458 8)
Hardback £75.00

TEXTBOOK

Algebraic Codes for Data Transmission

Richard E. Blahut
University of Illinois, Urbana-Champaign

Error-correcting codes play a fundamental role in modern communications and data-storage systems. This book provides an accessible introduction to the basic elements of algebraic codes, and describes a range of important coding techniques, including Reed-Solomon codes, BCH codes, trellis codes, and turbocodes. Written for graduate students and practising engineers.

– 2003 247 x 174 mm 496pp
144 line diagrams 19 tables
– 978 0 521 55374 2 (0 521 55374 1)
Hardback £45.00

Bootstrap Techniques for Signal Processing

Abdelhak M. Zoubir
Technische Universität, Darmstadt, Germany

and D. Robert Iskander
Griffith University, Queensland

The statistical bootstrap is a powerful tool in signal processing. This book covers the foundations of the bootstrap, its properties, its strengths, its limitations, and model selection. The theory developed in the book is supported by a number of useful practical examples written in MATLAB.

– 2004 247 x 174 mm 232pp
41 line diagrams 34 tables
– 978 0 521 83127 7 (0 521 83127 X)
Hardback £45.00

TEXTBOOK

Theory of Remote Image Formation

Richard E. Blahut
University of Illinois, Urbana-Champaign

There are many applications where images are recorded and then analyzed with specialized processors in order to extract information. Such processing requires the development of algorithms of great precision and sophistication. This book presents a unified treatment of the mathematical methods that underpin the algorithms used in remote image formation.

– 2004 247 x 174 mm 554pp 5 tables
227 exercises 181 figures
– 978 0 521 55373 5 (0 521 55373 3)
Hardback £65.00

Two-Dimensional Wavelets and their Relatives

Jean-Pierre Antoine
Université Catholique de Louvain, Belgium

Romain Murenzi
Clark Atlanta University, Georgia

Pierre Vandergheynst
Swiss Federal Institute of Technology, Zürich

and Syed Twareque Ali
Concordia University, Montréal

Two-dimensional wavelets offer a number of advantages over discrete wavelet transforms, in particular for analysis of real-time signals. This book provides thorough and comprehensive treatment of 2-D wavelets, with extensive use of practical applications and illustrative examples throughout. For engineers, physicists and mathematicians.

– 2004 247 x 174 mm 476pp
115 line diagrams 19 half-tones 3 tables
137 figures
– 978 0 521 62406 0 (0 521 62406 1)
Hardback £75.00

Multiuser Detection

Sergio Verdú
Princeton University, New Jersey

This comprehensive book is the first to set out the basic details of multiuser detection, one of the most important areas in modern communications technology. It will be an ideal textbook or self-study guide for students and practising engineers, as well as a valuable reference volume for researchers in communications, information theory, and signal processing.

'The topic of multiuser detection lies at the heart of modern terrestrial and satellite-based wireless communication systems. In this book one has on offer a clear and comprehensive exposition by the pioneering researcher in the field. This timely and fundamental book will be welcomed by every communication engineer.'
Professor Venkat Anantharam, University of California, Berkeley

– 1998 253 x 177 mm 474pp
114 line diagrams 247 exercises
– 978 0 521 59373 1 (0 521 59373 5)
Hardback £55.00

TEXTBOOK

Fundamentals of Error-Correcting Codes

W. Cary Huffman
Loyola University, Chicago
and Vera Pless
University of Illinois, Chicago

Fundamentals of Error Correcting Codes is an in-depth introduction to coding theory from both an engineering and mathematical viewpoint. As well as covering classical topics, much coverage is included of recent techniques which until now could only be found in specialist journals and book publications.

– 2003 247 x 174 mm 664pp
10 line diagrams 20 tables
– 978 0 521 78280 7 (0 521 78280 5)
Hardback £55.00

Image Processing and Machine Vision

TEXTBOOK

Machine Vision

Wesley E. Snyder
North Carolina State University
and Hairong Qi
University of Tennessee, Knoxville

This book is an introduction to machine vision. It provides all the necessary theoretical tools and shows how they are applied in actual image processing and machine vision systems. A key feature is the inclusion of programming exercises that give insights into the development of practical image processing algorithms.

– 2004 246 x 189 mm 452pp 14 tables
83 exercises 215 figures
– 978 0 521 83046 1 (0 521 83046 X)
Mixed Media £40.00

TEXTBOOK

Introduction to Color Imaging Science

Hsien-Che Lee
Foxlink Peripherals Inc.

Color imaging technology has become almost ubiquitous in modern life in the form of monitors, color printers, and digital cameras. This book is a comprehensive guide to the scientific and engineering principles of color imaging. It covers the physics of light and color, how the eye and physical devices capture color images, how color is measured and calibrated, and how images are processed. It stresses physical principles and includes many real-world examples. For scientists and engineers working in the industry or as a text for graduate courses on color imaging.

• A comprehensive introduction to a rapidly growing, multi-disciplinary field of color imaging science

• Only requires a college-level knowledge of the physics, biology and mathematics behind the field

• Contains many exercises with solutions available by emailing solutions@cambridge.org

– 2005 247 x 174 mm 716pp
208 line diagrams 16 tables 110 exercises
– 978 0 521 84388 1 (0 521 84388 X)
Hardback £70.00

Correlation Pattern Recognition

B. V. K. Vijaya Kumar
Carnegie Mellon University, Pennsylvania
Abhijit Mahalanobis
and Richard D. Juday

This book provides a needed review of the diverse background material needed for correlation pattern recognition, developing the signal processing theory, the pattern recognition metrics, and the practical application know-how from basic premises. Includes case studies of current interest, such as face and fingerprint recognition. For graduate students and practitioners.

– 2005 247 x 174 mm 400pp
95 line diagrams 31 half-tones 16 tables
– 978 0 521 57103 6 (0 521 57103 0)
Hardback £70.00
– **Publication October 2005**

Mathematics of Digital Images

Creation, Compression, Restoration, Recognition

S. G. Hoggar
University of Glasgow

The coverage in this text is rigorous and practical, with many worked examples, exercises with solutions, pseudocode, and sample calculations on images. Heavily illustrated, it is suited for course use or self-study and will appeal to all working in computer graphics, machine vision and image processing.

– 2005 247 x 174 mm 750pp 30 half-tones
20 tables 125 exercises 250 figures
– 978 0 521 78029 2 (0 521 78029 2)
Hardback c. £45.00
– **Publication December 2005**

Cellular Neural Networks and Visual Computing

Foundations and Applications

Leon O. Chua
and Tamas Roska

– 2002 247 x 174 mm 408pp 50 tables
36 exercises 400 figures
– 978 0 521 65247 6 (0 521 65247 2)
Hardback £55.00

Electronic and Optoelectronic Devices and Nanotechnology

TEXTBOOK

Introduction to Semiconductor Devices

For Computing and Telecommunications Applications

Kevin F. Brennan
Georgia Institute of Technology

From semiconductor fundamentals to state-of-the-art semiconductor devices used in the telecommunications and computing industries, this book provides a solid grounding in the most important devices used in the hottest areas of electronic engineering today. The book includes coverage of MODFETs and MOSFETs, Short channel effects and the challenges faced by continuing miniaturization. Future approaches to computing hardware and RF power amplifiers are also discussed. This is both an excellent senior/graduate text, and a valuable reference for engineers and researchers in the field.

• Covers current and emerging semiconductor devices

• Includes coverage of nanoelectronics

• Presents key devices in telecoms and computing

– 2005 247 x 174 mm 334pp
157 line diagrams 95 exercises
– 978 0 521 83150 5 (0 521 83150 4)
Hardback £40.00

TEXTBOOK

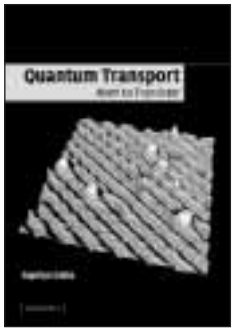
Photonic Devices

Jia-ming Liu
University of California, Los Angeles

A unique textbook covering every major photonic device, and striking a careful balance between theoretical and practical concepts. Devices covered include optical fibers, couplers, electro-optic devices, magneto-optic devices, lasers and photodetectors. Ideal for senior undergraduate and graduate courses, but being device driven it is also an excellent engineers' reference.

'The book is a welcome addition to the field of photonic engineering and is highly recommended as a suitable text for advanced undergraduate and graduate courses in this area.'
Nicolaas Bloembergen,College of Optical Sciences, University of Arizona
Nobel Laureate, Physics, 1981

– 2005 247 x 174 mm 1104pp 23 tables 320 figures
– 978 0 521 55195 3 (0 521 55195 1) Hardback £60.00



TEXTBOOK

Quantum Transport

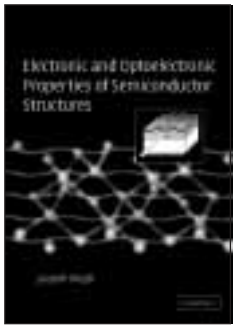
Atom to Transistor

Supriyo Datta
Purdue University, Indiana

This book presents the conceptual framework underlying the atomistic theory of matter, emphasizing those that relate to current flow. No prior acquaintance with quantum mechanics is assumed. The corresponding MATLAB codes and videostreamed lectures are also available through the web. For senior and graduate students.

'Molecular transport phenomena in junctions is a very 'hot' area, that is best understood in terms of quantum transport phenomena in general. This book, by one of the true leaders in this field, presents and clarifies molecular transport in the context of the larger quantum transport area. The text is lucid, masterful, understandable and unified. The numerical examples and MATLAB codes combine with the discussions to provide a strongly integrated and very readable overview of the field.'
Professor Mark Ratner, Professor of Chemistry, Northwestern University

– 2005 247 x 174 mm 418pp 218 line diagrams 4 tables 57 exercises
– 978 0 521 63145 7 (0 521 63145 9) Hardback £40.00



TEXTBOOK

Fundamentals of Quantum Mechanics

For Solid State Electronics and Optics

C. L. Tang
Cornell University, New York

The basic concepts of quantum mechanics are explained in this book in a concise and accessible manner. Illustrating real-world applications in many diverse fields, it is suitable for students in electrical engineering, materials science and applied physics. It contains many homework problems and worked examples, with solutions available to instructors.

– 2005 247 x 174 mm 220pp 40 line diagrams 5 tables 64 exercises
– 978 0 521 82952 6 (0 521 82952 6) Hardback £35.00
– 978 0 521 82952 6 (0 521 82952 6) Hardback £35.00

TEXTBOOK

Smart Electronic Materials

Fundamentals and Applications

Jasprit Singh
University of Michigan, Ann Arbor

Smart materials respond rapidly to external stimuli to alter their physical properties. This book explains the underlying physics of a wide range of these materials. It is written for graduate students in electrical engineering, material sciences or applied physics programs. It is also invaluable for engineers in research or industry.

– 2005 247 x 174 mm 432pp 193 line diagrams 43 tables 143 exercises
– 978 0 521 85027 8 (0 521 85027 4) Hardback £45.00

TEXTBOOK

Electronic and Optoelectronic Properties of Semiconductor Structures

Jasprit Singh
University of Michigan, Ann Arbor

This graduate textbook presents the underlying physics behind devices that drive today's technologies. Carefully chosen solved examples are utilized to convey important concepts. Over 250 figures and 200 homework exercises are included. Real-world applications are highlighted throughout the book, stressing the links between physical principles and actual devices.

'I have often recommended Singh's texts in the past, and I intend to do the same with this present one … represents good value for money …'.
Contemporary Physics

– 2003 247 x 174 mm 554pp 30 tables 199 exercises 255 figures
– 978 0 521 82379 1 (0 521 82379 X) Hardback £45.00

Electronic Composites

Modeling, Characterization, Processing, and MEMS Applications

Minoru Taya
University of Washington

This book describes the processing, simulation, and applications of electronic composites. It contains a comprehensive list of references and is aimed at graduate students of electrical engineering and materials science. It will also be a useful reference for researchers and engineers in the MEMS industry.

– 2005 247 x 174 mm 320pp 204 line diagrams 24 half-tones 20 tables
– 978 0 521 84174 0 (0 521 84174 7) Hardback £70.00
– **Publication September 2005**

Analog Optical Links

Theory and Practice

Charles H. Cox, III
Photonic Systems Inc, Massachusetts

Analog links are used for the distribution of cable TV signals, and in conveying signals to/from antennas. Unlike books on *devices* used in links, this book focuses on the collection of devices that form a *link*, on how the individual device performance effects the link performance - and vice versa.

'… this introductory book can become a standard book for students …'.
Zeitschrift für Angewandte Mathematik und Mechanik

– 2004 247 x 174 mm 302pp 107 line diagrams 11 half-tones 14 tables
– 978 0 521 62163 2 (0 521 62163 1) Hardback £70.00

TEXTBOOK

Light-Emitting Diodes

E. Fred Schubert
Rensselaer Polytechnic Institute, New York

This graduate textbook covers all aspects of the technology and physics of infrared, visible-spectrum, and white-light-emitting diodes (LEDs) made from III–V semiconductors. It reviews elementary properties of LEDs such as the electrical and optical characteristics.

'*Light-Emitting Diodes* is an excellent examination of the physics and technology of semiconductor LEDs. the narration is simple and direct, and the book is well referenced for those seeking a deeper understanding of the topic.'
Physics Today

– 2003 247 x 174 mm 326pp
154 line diagrams 21 half-tones 21 tables
– 978 0 521 53351 5 (0 521 53351 1)
Paperback £35.00

TEXTBOOK
NEW EDITION

Applied Quantum Mechanics

Second edition

A. F. J. Levi
University of Southern California

This updated and expanded edition makes quantum mechanics accessible to electrical engineers, mechanical engineers, materials scientists and applied physicists by using real-world applications and engineering examples. Numerous illustrations, exercises, worked examples and problems are included; MATLAB source code and additional materials to support the text are available from the web.

– 2006 247 x 174 mm 550pp
240 line diagrams 69 exercises
– 978 0 521 86096 3 (0 521 86096 2)
Hardback c.£45.00 / c.$75.00
– **Publication January 2006**

TEXTBOOK

Optoelectronics

Emmanuel Rosencher
and Borge Vinter
Translated by P. G. Piva

– 2002 247 x 174 mm 744pp
290 line diagrams 10 tables 290 figures
– 978 0 521 77129 0 (0 521 77129 3)
Hardback £120.00
– 978 0 521 77813 8 (0 521 77813 1)
Paperback £45.00

Low-Dimensional Semiconductor Structures

Fundamentals and Device Applications

Edited by Keith Barnham
Imperial College of Science, Technology and Medicine, London
and Dimitri Vvedensky
Imperial College of Science, Technology and Medicine, London

This book provides a seamless, atoms-to-devices introduction to the latest quantum heterostructures. It covers their fabrication, their electronic, optical, and transport properties, their role in exploring new physical phenomena, and their utilisation in devices.

– 2001 247 x 174 mm 408pp
270 line diagrams 5 half-tones 78 exercises
– 978 0 521 59103 4 (0 521 59103 1)
Hardback £45.00

High-Speed Heterostructure Devices

From Device Concepts to Circuit Modeling

Patrick Roblin
and Hans Rohdin

– 2002 247 x 174 mm 724pp
220 line diagrams 40 tables
– 978 0 521 78152 7 (0 521 78152 3)
Hardback £75.00

TEXTBOOK

Fundamentals of Modern VLSI Devices

Yuan Taur
and Tak H. Ning

– 1998 253 x 177 mm 496pp
233 line diagrams 10 tables 74 exercises
– 978 0 521 55056 7 (0 521 55056 4)
Hardback £75.00
– 978 0 521 55959 1 (0 521 55959 6)
Paperback £35.00

Circuits and Systems

An Analog Electronics Companion

Basic Circuit Design for Engineers and Scientists

Scott Hamilton
University of Manchester

Engineers and scientists frequently find themselves having to design electronics circuits even though this may not be their specialty. This book is specifically designed for these situations, and has two major advantages: it assumes little prior knowledge of electronics and it takes a modular approach, so you can find just what you need. The book covers the basic mathematics, physics and component descriptions and describes commonly encountered circuit elements such as oscillators and filters. PSpice models are included together with the student edition of the PSpice simulation software package.

- Modular approach - learn the bits you want, ignore the bits you don't
- Includes fully functional PSpice student edition simulation software and lots of example circuits
- Starts right from the basics

'The aim of this book is to be a guide for neophytes as well as a useful travelling companion for the nature designer confronted with such a bast world. In my opinion it successfully meets these intentions. The subjects are treated in a concise, clear and self-contained fashion, always helped by a broad exhaustive bibliography, and coverall the necessary aspects for electronic design …'.
Measurement Science and Technology

– 2003 247 x 174 mm 668pp
465 line diagrams 465 figures
– 978 0 521 79838 9 (0 521 79838 8)
Hardback £75.00

TEXTBOOK

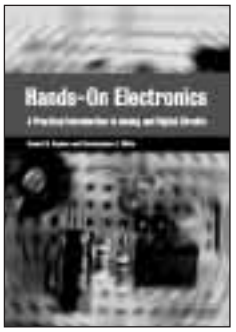
Hands-On Electronics

A Practical Introduction to Analog and Digital Circuits

Daniel M. Kaplan
Illinois Institute of Technology
and Christopher G. White
Illinois Institute of Technology

Packed full of real circuits to build and test, *Hands-On Electronics* is a unique introduction to analog and digital electronics. Ideal both as a college textbook and for self-study, the friendly style, clear illustrations and construction details included encourage rapid and effective learning of analog and digital circuit design theory.

– 2003 247 x 174 mm 226pp
107 line diagrams 6 tables
– 978 0 521 81536 9 (0 521 81536 3)
Hardback £55.00
– 978 0 521 89351 0 (0 521 89351 8)
Paperback £19.99



TEXTBOOK

Fast Analytical Techniques for Electrical and Electronic Circuits

Vatché Vorpérian
California Institute of Technology

In this unique book, Vorpérian describes a remarkable alternative to nodal or loop analysis for analysing linear circuits. This technique can be used to solve, almost by inspection, complex circuits in symbolic form and obtain meaningful analytical answers for any transfer function or impedance.

– 2002 247 x 174 mm 490pp
550 line diagrams
– 978 0 521 62442 8 (0 521 62442 8)
Hardback £50.00

TEXTBOOK

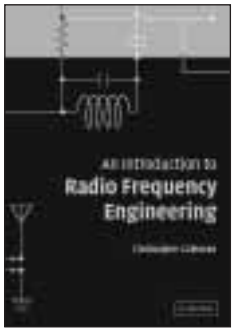
Practical Interfacing in the Laboratory

Using a PC for Instrumentation, Data Analysis and Control

Stephen E. Derenzo

– 2003 247 x 174 mm 628pp
360 line diagrams 10 half-tones 54 tables
5 figures
– 978 0 521 81527 7 (0 521 81527 4)
Hardback £45.00

RF and Microwave Engineering



TEXTBOOK

The Design of CMOS Radio-Frequency Integrated Circuits

Second edition

Thomas H. Lee
Stanford University, California

Presenting an expanded and revised new edition of Tom Lee's acclaimed guide to the design of gigahertz RF integrated circuits. A new chapter on the principles of wireless systems providing a bridge between system and circuit issues has been added whilst the chapters on low-noise amplifiers, oscillators and phase noise have been significantly expanded. The chapter on architectures now contains several examples of complete chip designs, including a GPS receiver and a wireless LAN transceiver, that bring together the theoretical and practical elements involved in producing a prototype chip.

• Thoroughly revised and expanded new edition of a best-selling guide to the design of CMOS RF chips

• Contains a new chapter on the fundamentals of wireless systems

• Now contains several complete, stage-by-stage chip designs, including a GPS receiver and a wireless LAN transceiver

'Tom Lee has written a terrific book. Everyone that visits my office wants to borrow it, and I tell them to go buy their own.'
David Rutledge, California Institute of Technology

– 2004 253 x 177 mm 816pp
562 line diagrams 30 tables 185 exercises
– 978 0 521 83539 8 (0 521 83539 9)
Hardback £45.00

TEXTBOOK

Planar Microwave Engineering

A Practical Guide to Theory, Measurement, and Circuits

Thomas H. Lee
Stanford University, California

This book covers everything you need to know to design, build, and test a high-frequency circuit. Microstrip components are discussed, including tricks for extracting good performance from cheap materials. Connectors and cables are also described, as are discrete passive components, antennas, low-noise amplifiers, oscillators, and frequency synthesizers. Practical measurement techniques are presented in detail, including the use of network analyzers, sampling oscilloscopes, spectrum analyzers, and noise figure meters. A CD-ROM that contains a variety of design and analysis programs is included.

• Packed with design tips and tricks of the trade

• Contains many worked examples and design projects

• Includes a CD-ROM with design and analysis software

'… a fantastic CD-ROM … that is full of all sorts of useful toys to help engineers design their circuits, both microwave and lower frequencies … well written, printed and clear … This book answers all your practical questions (or wakes you up to some you did not know existed!) in this complex field. Most highly recommended for all working in it.'
Circuit World

– 2004 254 x 177 mm 880pp 45 tables
582 figures
– 978 0 521 83526 8 (0 521 83526 7)
Hardback £45.00

TEXTBOOK

Computational Electromagnetics for RF and Microwave Engineering

David B. Davidson
University of Stellenbosch, South Africa

Computational Electromagnetics (CEM) has emerged as a crucial enabling technology for radio-frequency, microwave and wireless engineering. The three most popular 'full-wave' methods are introduced in this book and commercial or public domain codes implementing them are applied to real-world engineering problems. For graduate students taking CEM courses and practising engineers.

– 2005 247 x 174 mm 430pp 11 tables
150 figures
– 978 0 521 83859 7 (0 521 83859 2)
Hardback £45.00

TEXTBOOK

An Introduction to Radio Frequency Engineering

Christopher Coleman
University of Adelaide

This book provides an excellent introduction to radio frequency engineering, using a straightforward and easily understood approach combined with numerous worked examples, illustrations and homework problems. Written for upper level undergraduate courses, it will also provide an excellent introduction to the subject for graduate students, researchers and practising engineers.

– 2004 247 x 174 mm 332pp
338 line diagrams 73 exercises
– 978 0 521 83481 0 (0 521 83481 3)
Hardback £40.00

Low-Voltage CMOS RF Frequency Synthesizers

Howard Cam Luong
Hong Kong University of Science and Technology
and Gerry Chi Tak Leung
Hong Kong University of Science and Technology

This book provides the reader with architectures and design techniques to enable CMOS frequency synthesizers to operate at low supply voltage at high-frequency with good phase noise and low power consumption. For engineers, managers and researchers working in RFIC design for wireless applications.

– 2004 247 x 174 mm 198pp
171 line diagrams 12 tables
– 978 0 521 83777 4 (0 521 83777 4)
Hardback £60.00

The Electronics of Radio

David Rutledge

– 1999 253 x 177 mm 448pp
261 line diagrams 10 tables 202 exercises
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Paperback £34.00

TEXTBOOK

Electromagnetic Field Theory Fundamentals

Second edition

Bhag Singh Guru
Kettering University, Michigan
and Hüseyin R. Hiziroglu
Kettering University, Michigan

Guru and Hiziroglu have produced a user-friendly undergraduate text on electromagnetics that will appeal to both students and professors. Includes examples and problems throughout and background revision material where appropriate. MathCad code for many examples in the book and a comprehensive solutions set are available at www.cambridge.org/0521830168.

– 2004 247 x 174 mm 698pp 350 figures
– 978 0 521 83016 4 (0 521 83016 8)
Hardback £45.00

Cylindrical Antennas and Arrays

Ronold W. P. King
George J. Fikioris
and Richard B. Mack

– 2002 247 x 174 mm 648pp
230 line diagrams 40 tables 230 figures
– 978 0 521 43107 1 (0 521 43107 7)
Hardback £120.00

Electromagnetics

Polarimetric Doppler Weather Radar

Principles and Applications
V. N. Bringi
and V. Chandrasekar

– 2001 247 x 174 mm 662pp 5 half-tones
6 tables 350 figures
– 978 0 521 62384 1 (0 521 62384 7)
Hardback £90.00

Control Systems

TEXTBOOK

Convex Optimization

Stephen Boyd
Stanford University, California
and Lieven Vandenberghe
University of California, Los Angeles

The focus of this book is on recognizing convex optimization problems and then finding the most appropriate technique for solving them. It contains many worked examples and homework exercises and will appeal to students, researchers and practitioners in fields such as engineering, computer science, mathematics, statistics, finance, and economics.

'Boyd and Vandenberghe have written a beautiful book that I strongly recommend to everyone interested in optimization and computational mathematics: *Convex Optimization* is a very readable introduction to this modern field of research.'
Mathematics of Operations Research

– 2004 246 x 189 mm 730pp 337 exercises
178 figures
– 978 0 521 83378 3 (0 521 83378 7)
Hardback £45.00

TEXTBOOK

Applied Optimization

Formulation and Algorithms for Engineering Systems

Ross Baldick
University of Texas, Austin

This book provides step-by-step descriptions of how to formulate numerical problems so that they can be solved by existing software. A number of engineering case studies are used to illustrate the formulation process. Contains many worked examples and homework exercises and is suitable for students taking courses in optimization.

– 2005 247 x 174 mm 760pp
180 line diagrams 369 exercises
– 978 0 521 85564 8 (0 521 85564 0)
Hardback c. £45.00
– **Publication October 2005**

Computer Engineering

TEXTBOOK

Testing of Digital Systems

N. K. Jha
Princeton University, New Jersey
and S. Gupta
University of Southern California

The most comprehensive and wide ranging book of its kind, *Testing of Digital Systems* covers everything you need to know about how to test semiconductor devices and systems. Written for students and engineers, it is both an excellent senior/graduate level textbook and a valuable reference.

– 2003 247 x 174 mm 1016pp 90 tables
469 figures
– 978 0 521 77356 0 (0 521 77356 3)
Hardback £65.00

TEXTBOOK

Applied Linear Optimal Control

Examples and Algorithms

Arthur E. Bryson
Stanford University, California

This book helps readers utilize the theory of optimal control to solve practical problems in the face of uncertainty. It offers hundreds of problems and worked examples, and a CD-ROM supplement containing MATLAB codes of the OPTEST toolbox, as well as code for many of the problems within the text.

'The author stated the goal at the beginning of the book as 'to aid readers in utilizing the theory of optimal control to solve practical problems in the face of uncertainty.' It appears this goal has been achieved. *Applied Linear Optimal Control: Examples and Algorithms* should be a good addition to the optimal control community. It makes an excellent text for engineering and applied mathematics students who already have some optimal control background. It is strongly recommended as a helpful guide for anyone who desires to learn and apply many of the current state of the art results in optimal control.'
Applied Mechanics Reviews

– 2002 228 x 152 mm 384pp
291 line diagrams 3 tables
– 978 0 521 81285 6 (0 521 81285 2)
Mixed Media £90.00
– 978 0 521 01231 7 (0 521 01231 7)
Mixed Media £40.00

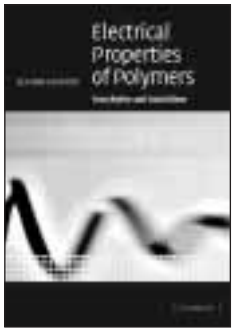
TEXTBOOK

Designing Digital Computer Systems with Verilog

David J. Lilja
University of Minnesota
and Sachin S. Sapatnekar
University of Minnesota

This is both an introduction to computer architecture and a guide to using a hardware description language (HDL) to design a simple processor. The authors demonstrate how behavioral and structural models can be developed using the popular Verilog HDL. For senior and graduate students, and practising engineers.

– 2004 247 x 174 mm 176pp 5 tables 42 figures
– 978 0 521 82866 6 (0 521 82866 X) Hardback £35.00



Materials Engineering

NEW EDITION

Electrical Properties of Polymers

Second edition

Tony Blythe
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University of Durham

Fully revised and expanded, this new edition of A. Blythe's successful title on electrical properties of polymers covers underlying physical principles of conductive polymers through to modern applications, including light emitting diodes and flexible polymers. This book will appeal to students and researchers working in this evolving field.

– 2005 247 x 174 mm 492pp 221 line diagrams 16 half-tones
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NEW EDITION

Liquid Crystalline Polymers

Second edition

Athene Donald
University of Cambridge
Alan Windle
University of Cambridge
and Simon Hanna
University of Bristol

The new edition of this authoritative guide explains the underlying science and applications of liquid crystalline polymers. A new chapter on liquid biopolymers is included, whilst established and novel applications are reviewed. This will be indispensable to graduate students and researchers in the polymer and materials science field.

'This book admixes chemistry, physics, and mechanics at an accessible level. It also presents a lucid, practical view on potentially useful materials. I find this text rather unique'
Pierre-Gilles de Gennes, College de France, Paris, France
Nobel Prize in Physics 1991

– 2005 247 x 174 mm 504pp 178 line diagrams 73 half-tones
– 978 0 521 58001 4 (0 521 58001 3) Hardback c. £50.00
– **Publication October 2005**

TEXTBOOK

Mechanical Behavior of Materials

William F. Hosford
University of Michigan, Ann Arbor

The term mechanical behavior encompasses the response of materials to external forces. This text considers a wide range of topics including mechanical testing to determine material properties, plasticity needed for FEM analyses of automobile crashes, means of altering mechanical properties and treatment of several modes of failure. This text fits courses on Mechanical Behavior of Materials taught in departments of Mechanical Engineering and Materials Science. It includes numerous examples and problems for student practice and emphasizes quantitative problem solving. End of the chapter notes are included to increase student's interest.

• Includes numerous examples and end-of-chapter problems

• Emphasizes quantitative problem solving

• Briefer, less expensive, and more modern than competition

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– 978 0 521 84670 7 (0 521 84670 6) Hardback £48.00

Introduction to the High Temperature Oxidation of Metals

Second edition

Neil Birks
Gerald H. Meier
University of Pittsburgh
and Frederick S. Pettit
University of Pittsburgh

A straightfoward treatment describing the oxidation processes of metals and alloys at elevated temperatures. This new edition retains the fundamental theory and applies it to reactions in mixed environments and protective techniques. This book will be a useful guide to students and researchers requiring an understanding of this elementary process.

– 2006 247 x 174 mm 367pp 175 line diagrams 103 half-tones 7 tables
– 978 0 521 48042 0 (0 521 48042 6) Hardback c. £60.00
– **Publication February 2006**

Aerospace Engineering

TEXTBOOK

Jet Propulsion

A Simple Guide to the Aerodynamic and Thermodynamic Design and Performance of Jet Engines

Second edition

Nicholas Cumpsty
University of Cambridge

The second edition of Cumpsty's excellent self-contained introduction to aerodynamic and thermodynamic design of modern civil and military jet engines. Throughly updated and revised, including a new appendix on noise control and expanded treatment of emissions. Suitable for student courses in aircraft propulsion, and an invaluable reference for aerospace engineers.

'I found the book eminently readable, will find it very helpful and will advocate it to students … and colleagues. One can think of many other engineering topics that would benefit from books having the lucid style and up-to-the-minute credibility of this well-priced one.'
Ray Whitford, Institute of Mechanical Engineering

– 2003 247 x 174 mm 322pp
140 line diagrams 3 half-tones 143 figures
– 978 0 521 54144 2 (0 521 54144 1)
Paperback £33.00

TEXTBOOK

Fundamentals of Jet Propulsion with Applications

Ronald D. Flack
University of Virginia

An introductory text in air-breathing jet propulsion, covering cycle analysis through component design and system matching. Written for upper-level undergraduate and graduate students, this is an ideal teaching tool, as well as a valuable reference for practising engineers. A CD included with the book contains example files and software.

Cambridge Aerospace Series

– 2005 247 x 174 mm 658pp 150 figures
– 978 0 521 81983 1 (0 521 81983 0)
Hardback £60.00

The Cambridge Aerospace Dictionary

Edited by Bill Gunston

The Cambridge Aerospace Dictionary is an authoritative and accessible reference useful to scholars and enthusiasts alike. This dictionary is an essential tool for people who must read and understand technical content regarding the aerospace industry and specific aircraft. *The Cambridge Aerospace Dictionary* is based on three previous editions of the popular and definitive *Janes Aerospace Dictionary* by Bill Gunston, OBE, FRaes. For this new edition, Gunston, one of the most widely read and respected aviation writers of all time, added over 15,000 terms, mostly acronyms, in this carefully updated volume.

• Comprehensive, authoritative reference

• Fully revised and up-to-date

'If your job is in aerospace then this will be a useful reference for all sorts of words and weird combinations of letters (including Greek symbology, phonetic alphabets, etc). An indication of an expanding subject is that this updated work incorporates more than 1,500 new terms …'.
Aviation News

– 2004 253 x 177 mm 750pp
– 978 0 521 84140 5 (0 521 84140 2)
Hardback £45.00

Automated Rendezvous and Docking of Spacecraft

Wigbert Fehse

The definitive reference for space engineers on all issues related to rendezvous and docking/berthing (RVD/B), this book provides an overview of the major issues governing approach and mating strategies, and system concepts for rendezvous and docking/berthing. Written for aerospace engineers, students and newcomers to the field.

Cambridge Aerospace Series, 16

– 2003 247 x 174 mm 516pp
245 line diagrams
– 978 0 521 82492 7 (0 521 82492 3)
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TEXTBOOK
NEW EDITION

Principles of Helicopter Aerodynamics

Second edition

J. Gordon Leishman
University of Maryland, College Park

This text provides a thorough, modern treatment of the aerodynamic principles of helicopters and other rotating-wing vertical lift aircraft. It covers basic topics of aerodynamic analysis, helicopter performance and design, and advanced topics, including airfoil flows and unsteady aerodynamics. Every chapter includes numerous illustrations, a bibliography, and homework problems.

'… Professor Leishman has provided a significant addition to the literature that will prove its worth for many years to come.'
Alfred Gessow, *Vertiflite*

Cambridge Aerospace Series

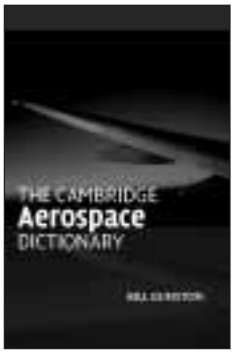
– 2006 253 x 177 mm 500pp 11 tables
163 exercises
– 978 0 521 85860 1 (0 521 85860 7)
Hardback c. £40.00
– **Publication March 2006**

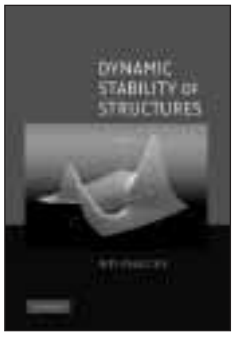
Compendium of Fundamental Solutions in Elastodynamics

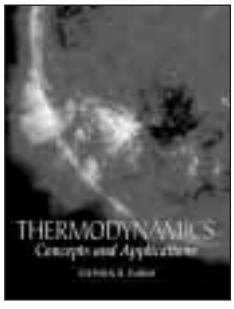
Eduardo Kausel
Massachusetts Institute of Technology

This work contains fundamental solutions for classical, canonical, problems in elastodynamics using common format and notation. These formulas describe the displacements and stresses elicited by dynamic sources in solid elastic media. The formulas were programmed in MATLAB. The program listings are available for free download on the book web site.

– 2006 253 x 177 mm 500pp 17 tables
– 978 0 521 85570 9 (0 521 85570 5)
Hardback c. £40.00
– **Publication February 2006**







Principles of Turbomachinery in Air-Breathing Engines

Erian Baskharone
Texas A & M University

This book is ideal for anyone interested in Turbomachinery or Aerospace Propulsion; beginning with a review of basic thermodynamics and fluid mechanics principles, for the reader who will face design decisions in the gas turbine industry. The text is fully supported by over 200 figures, numerous examples, and homework problems.

Cambridge Aerospace Series

– 2006 253 x 177 mm 1200pp
143 exercises 396 figures
– 978 0 521 85810 6 (0 521 85810 0)
Hardback c. £45.00
– **Publication March 2006**

Airplane Stability and Control

A History of the Technologies that Made Aviation Possible
Second edition

Malcolm J. Abzug
ACA Systems

and E. Eugene Larrabee
Massachusetts Institute of Technology

From early machines to today's sophisticated aircraft, stability and control have always been crucial considerations in aircraft design. This new edition includes new insights of those active in the field, from pre-Wright airplane builders through to contemporary aircraft designers. Professionals, students, and enthusiasts will appreciate this history of the field.

'This is a splendid book. The authors try to tell the whole story, starting with Cayley. With their immense background, practical as well as academic, the maths are all there but so are countless often fascinating references to actual aircraft … How often do you find an erudite treatise that is truly un-put-downable?'
Bill Gunston, *Aerospace Magazine*

Cambridge Aerospace Series, 14

– 2002 253 x 177 mm 414pp
153 line diagrams 39 half-tones
– 978 0 521 80992 4 (0 521 80992 4)
Hardback £65.00

Dynamic Stability of Structures

Wei-Chau Xie
University of Waterloo, Ontario

This book presents a systematic introduction to the theory of parametric stability of structures under both deterministic and stochastic loadings. A comprehensive range of theories are presented and various application problems are formulated and solved, often using several approaches. This book is suitable as a graduate textbook or for self-study.

– 2005 253 x 177 mm 456pp 22 exercises
– 978 0 521 85266 1 (0 521 85266 8)
Hardback c. £65.00
– **Publication December 2005**

TEXTBOOK

Introduction to Structural Dynamics and Aeroelasticity

Dewey H. Hodges
Georgia Institute of Technology

and G. Alvin Pierce
Georgia Institute of Technology

This text provides an introduction to structural dynamics and aeroelasticity, with an emphasis on conventional aircraft. The primary areas considered are structural dynamics, static aeroelasticity, and dynamic aeroelasticity. More than one hundred illustrations and tables help clarify the text, while upwards of fifty problems enhance student learning. Suitable for advanced undergraduate or beginning graduate aerospace engineering students.

Cambridge Aerospace Series, 15

– 2002 253 x 177 mm 182pp
41 line diagrams 17 tables 55 exercises
– 978 0 521 80698 5 (0 521 80698 4)
Hardback £40.00

TEXTBOOK

Low-Speed Aerodynamics

Second edition
Joseph Katz
and Allen Plotkin

Cambridge Aerospace Series, 13

– 2001 253 x 203 mm 630pp
398 line diagrams 3 tables
– 978 0 521 66219 2 (0 521 66219 2)
Hardback £100.00
– 978 0 521 66552 0 (0 521 66552 3)
Paperback £40.00

Mechanical Engineering

Thermal-Fluids Engineering

TEXTBOOK

Thermal-Fluid Sciences

An Integrated Approach

Stephen Turns
Pennsylvania State University

This text is an integrated approach to thermal-fluid science. Links between theory and applications are stressed through examples and by using the fundamental mass, energy, and momentum conservation laws as organizing principles and by using five practical applications as themes. All examples follow the problem-solving method in Chapter 1.

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800 line diagrams 60 half-tones
600 colour plates 61 tables 2400 exercises
– 978 0 521 85043 8 (0 521 85043 6)
Hardback c. £45.00
– **Publication January 2006**

TEXTBOOK

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Concepts and Applications

Stephen Turns
Pennsylvania State University

The focus of *Thermodynamics: Concepts and Applications* is on thermodynamics, while structurally it introduces thermal-fluid sciences. 2nd law topics are introduced hierarchically in one chapter, important structure for a beginner. Pedagogy includes objectives, overviews, summaries, historical perspectives, numerous examples, questions and problems with lavish illustrations.

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400 colour plates 41 tables 2000 exercises
– 978 0 521 85042 1 (0 521 85042 8)
Hardback c. £50.00
– **Publication January 2006**

Internal Flow
Concepts and Applications
E. M. Greitzer
Massachusetts Institute of Technology
C. S. Tan
Massachusetts Institute of Technology
and M. B. Graf
Mars & Co

This book describes the analysis and behavior of internal flows encountered in propulsion systems, fluid machinery (compressors, turbines, and pumps) and ducts (diffusers, nozzles and combustion chambers). The focus is on phenomena that are important in setting the performance of a broad range of fluid devices.

Cambridge Engine Technology Series, 3

– 2004 247 x 174 mm 736pp 9 tables 471 figures
– 978 0 521 34393 0 (0 521 34393 3) Hardback £70.00

TEXTBOOK

Fundamentals of Multiphase Flow
Christopher E. Brennen
California Institute of Technology

Multiphase flows are flows of mixtures of separate substances, such as bubbles of gas in liquids, solid particles in air, and so on. They are abundant in nature, in industrial processes and in our bodies. This book provides a coherent and unified treatment of multiphase flows with an emphasis on the underlying physical phenomena. It is intended as an important reference text both for researchers and engineers who must deal with the problems of multiphase flows and for scientists interested in the basic phenomena.

• Focus is on presenting a unified treatment of the fundamentals of multiphase flows

• Emphasizes the practical importance of multiphase flows

• Highlights the ubiquity of multiphase flows and the range of contexts in which they need to be understood

– 2005 253 x 177 mm 368pp 166 line diagrams 26 half-tones 3 tables
– 978 0 521 84804 6 (0 521 84804 0) Hardback £50.00

TEXTBOOK

Introduction to Computational Fluid Dynamics
Anil W. Date
Indian Institute of Technology, Bombay

Introduction to Computational Fluid Dynamics is a textbook for advanced undergraduate and first year graduate students in mechanical, aerospace and chemical engineering. The book emphasizes understanding CFD through physical principles with numerous exercises and examples. Practising engineers will find this particularly useful for reference and for continuing education.

– 2005 253 x 177 mm 400pp 131 line diagrams 35 tables 126 exercises
– 978 0 521 85326 2 (0 521 85326 5) Hardback £35.00
– **Publication October 2005**

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John Williams
University of Cambridge

Engineering Tribology is ideal for a first tribology course and as a reference for designers and researchers. Real design problems and solutions, such as those for journal and rolling element bearings, cams and followers, and heavily loaded gear teeth, elucidate concepts and motivate understanding.

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– 978 0 521 60988 3 (0 521 60988 7) Paperback £40.00

TEXTBOOK

Statistical Thermodynamics
Fundamentals and Applications
Normand Laurendeau
Purdue University, Indiana

Statistical Thermodynamics: Fundamentals and Applications discusses the fundamentals and applications of statistical thermodynamics for beginning graduate students. This book features a step-by-step development of the subject with each chapter carefully written to address student difficulties in learning this challenging subject. Both example and prompted homework problems are included.

– 2005 253 x 177 mm 448pp 92 line diagrams 64 tables 117 exercises
– 978 0 521 84635 6 (0 521 84635 8) Hardback £55.00
– **Publication November 2005**

Liquid Sloshing Dynamics
Theory and Applications
Raouf A. Ibrahim
Wayne State University, Michigan

The problem of liquid sloshing in moving or stationary containers remains of concern to aerospace, civil, and nuclear engineers, physicists, designers of road tankers and ship tankers, and mathematicians. This book takes the reader systematically from basic theory to advanced analytical and experimental results in a self-contained and coherent format.

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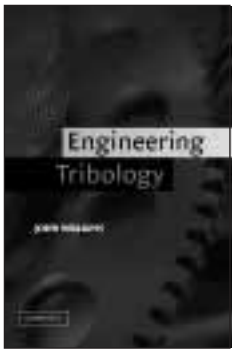

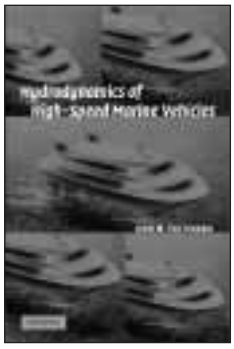

Hydrodynamics of High-Speed Marine Vehicles

Odd Faltinsen
Norwegian University of Science and Technology, Trondheim

Hydrodynamics of High-Speed Marine Vehicles discusses how ocean waves and the water flow affect high-speed vessels and how this depends on the vessel type and forward speed. All aspects of marine hydrodynamics are covered with an emphasis on rational and simplified methods. The book contains many illustrations, examples and exercises.

– 2005 253 x 177 mm 696pp
51 line diagrams 51 half-tones 42 tables 1 map
– 978 0 521 84568 7 (0 521 84568 8)
Hardback c. £50.00
– **Publication December 2005**

TEXTBOOK

Measurement in Fluid Mechanics

Stavros Tavoularis
University of Ottawa

Measurement in Fluid Mechanics is an introductory, general reference in experimental fluid mechanics, featuring classical and state-of-the-art methods for flow visualization, flow rate measurement, pressure, velocity, temperature, concentration and wall shear stress. Suitable as a textbook for graduate and advanced undergraduate courses, and for practising engineers and applied scientists.

– 2005 253 x 177 mm 384pp
97 line diagrams 3 half-tones 21 tables 106 exercises
– 978 0 521 81518 5 (0 521 81518 5)
Hardback £48.00
– **Publication November 2005**

Large-Eddy Simulations of Turbulence

M. Lesieur
Laboratoire des Ecoulements, Grenoble
O. Métais
Laboratoire des Ecoulements, Grenoble
and P. Comte
Laboratoire des Ecoulements, Grenoble

Large-Eddy Simulations of Turbulence is an ideal introduction and reference to LES, direct numerical simulation and Reynolds-averaged Navier-Stokes simulation. It features detailed discussion of vorticity, pressure, and the velocity gradient tensor, and an in-depth discussion of spectral subgrid-scale modeling. Also featured is a discussion of large-eddy simulation of compressible flows.

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70 line diagrams 48 half-tones 1 table
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Hardback £40.00
– **Publication October 2005**

TEXTBOOK

Chaotic Dynamics

Tamás Tél
Loránd Eötvös University, Budapest
and Márton Gruiz
Loránd Eötvös University, Budapest

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280 line diagrams 24 half-tones
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Hardback c. £70.00
– 978 0 521 54783 3 (0 521 54783 0)
Paperback c. £35.00
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Udo Fritsching
Universität Bremen

Spray forming combines the metallurgical processes of metal casting and powder metallurgy to fabricate metal products with enhanced properties. This book provides an introduction to the various modelling and simulation techniques employed in spray forming, and shows how they are applied in process analysis and development.

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Journal of Process Mechanical Engineering

– 2004 247 x 174 mm 286pp 13 tables 186 figures
– 978 0 521 82098 1 (0 521 82098 7)
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'… valuable source of information on free-surface flows …'
Journal of Fluid Mechanics

– 2003 234 x 156 mm 286pp 15 tables
– 978 0 521 80694 7 (0 521 80694 1)
Hardback £55.00

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T. J. Chung
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349 line diagrams 28 tables
– 978 0 521 59416 5 (0 521 59416 2)
Hardback £80.00

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Johannes Falnes
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72 line diagrams 3 tables 63 exercises
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Engineering Design and Kinematics

TEXTBOOK

Advanced Dynamics
Donald T. Greenwood
University of Michigan, Ann Arbor

Advanced Dynamics is a broad and detailed description of the analytical tools of dynamics. The strengths and weaknesses of various approaches are discussed, and particular emphasis is placed on learning through problem solving. Many worked examples and homework problems are provided.
– 2003 247 x 174 mm 436pp 115 exercises
168 figures
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Hardback £50.00

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Faydor L. Litvin
University of Illinois, Chicago
and Alfonso Fuentes
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This revised and expanded second edition covers the theory, design, geometry and manufacture of all types of gears and gear drives. Designers, theoreticians, students, and manufacturers will all find this to be a vital reference. This new edition includes advances in gear theory, gear manufacturing, and computer simulation.
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560 line diagrams
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TEXTBOOK

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The Queen's University of Belfast

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482 line diagrams
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Hardback £85.00
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Fundamentals of Noise and Vibration Analysis for Engineers
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– 978 0 521 49561 5 (0 521 49561 X)
Hardback £130.00
– 978 0 521 49913 2 (0 521 49913 5)
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Formal Engineering Design Synthesis
Edited by Erik K. Antonsson
California Institute of Technology
and Jonathan Cagan
Carnegie Mellon University, Pennsylvania

In recent years highly automated design synthesis techniques have emerged demonstrating that aspects of design can be formalized. This timely book, with chapters by internationally renowned experts, reviews the state-of-the-art in formal design synthesis methods, explores formal design synthesis, and examines future directions in computational design synthesis research.

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188 line diagrams 18 tables
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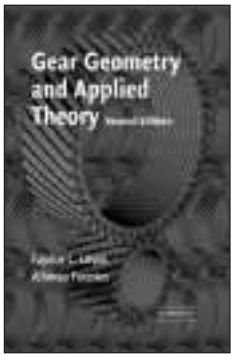

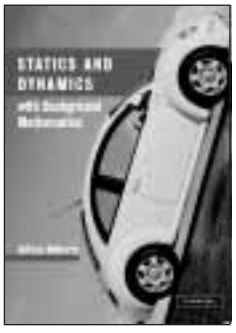

Analytical Elements of Mechanisms
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and Malcolm J. Crocker
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83 line diagrams
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Sridhar S. Condoor
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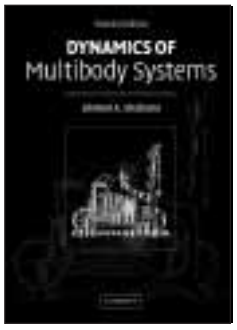
Solid Mechanics



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92 line diagrams 133 exercises
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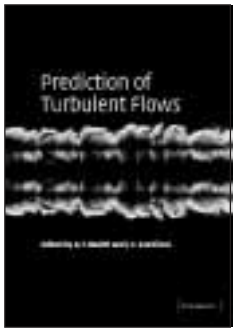

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A Systematic Approach

Anil Rao
Boston University

Intended for undergraduates who want a systematic and rigorous approach to particle and rigid body dynamics, Rao's highly rigorous presentation of concepts illuminates the connection between theory and practice. The work features a great range of examples reinforced by numerous problems for student solution.

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104 exercises
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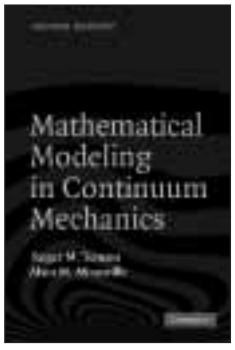
Hardback c. £40.00
– **Publication January 2006**



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Robert Asaro
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and Vlado Lubarda
University of California, San Diego

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180 exercises
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– **Publication March 2006**

Prediction of Turbulent Flows

Edited by Geoff Hewitt
Imperial College of Science, Technology and Medicine, London
and Christos Vassilicos
Imperial College of Science, Technology and Medicine, London

This volume arose from a major programme held at the Isaac Newton Institute in Cambridge. It takes an overview of the current situation on the prediction of such flows through modern computational fluid dynamics techniques. In this way, it addresses the needs of experienced practitioners and researchers in fluid dynamics.

– 2005 247 x 174 mm 348pp
56 line diagrams 2 half-tones 74 figures
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Hardback £95.00
– **Publication September 2005**

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Andrew Bennett
Oregon State University

Written at graduate level, the book provides the first detailed and comprehensive analytical development of the Lagrangian formulation of fluid dynamics, of interest not only to applied mathematicians but also oceanographers, meteorologists, mechanical engineers, astrophysicists and indeed all investigators of the dynamics of fluids.

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– **Publication December 2005**

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A Treatise on Finite Deformation of Heterogeneous Inelastic Materials

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University of California, San Diego

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113 line diagrams 17 tables
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Yiwei Li
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121 line diagrams
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Hardback £75.00

Chemical and Biomedical Engineering

TEXTBOOK

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Fundamentals for Applications

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University of Virginia
and J. M. Haile
Macatea Productions, South Carolina

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– 2005 253 x 177 mm 672pp
148 line diagrams 24 tables 287 exercises
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Rodney O. Fox
Iowa State University

This book presents the current state of the art in computational models for turbulent reacting flows, and analyzes carefully the strengths and weaknesses of the various techniques described. The focus is on formulation of practical models as opposed to numerical issues arising from their solution.

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Journal of Fluid Mechanics

Cambridge Series in Chemical Engineering

– 2003 247 x 174 mm 438pp 15 tables
89 figures
– 978 0 521 65049 6 (0 521 65049 6)
Hardback £80.00
– 978 0 521 65907 9 (0 521 65907 8)
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TEXTBOOK

Basic Concepts for Simple and Complex Liquids

Jean-Louis Barrat
Université Lyon
and Jean-Pierre Hansen
University of Cambridge

This book presents a unified approach to the liquid state. Important ideas are presented in a concise and rigorous manner, and illustrated with examples from both simple molecular liquids and more complex soft condensed matter systems such as polymers, colloids, and liquid crystals.

– 2003 246 x 189 mm 308pp
57 line diagrams 1 table 27 exercises
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Paperback £33.00
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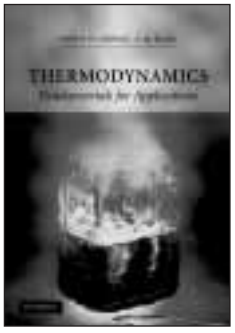
Hardback £80.00



TEXTBOOK

Principles of Chemical Separations with Environmental Applications

Richard D. Noble
University of Colorado, Boulder
and Patricia A. Terry
University of Wisconsin, Green Bay

This textbook is an introduction to chemical separations, focusing on their use in environmental applications. The approach for each technology is to present the chemical and/or physical basis for the process and explain how to evaluate it for design and analysis.

Cambridge Series in Chemical Engineering

– 2004 247 x 174 mm 336pp 22 tables
115 exercises 156 figures
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Hardback £80.00
– 978 0 521 01014 6 (0 521 01014 4)
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E. L. Cussler
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The chemical industry is increasingly devoted to the manufacture of specialty, high-value chemical products such as pharmaceuticals. However, the training of chemical engineers has remained static, emphasizing traditional commodities. This ground-breaking text reflects the new market needs. It expands the scope of chemical engineering design to encompass both process design and product design.

'The set of problems grouped at the end is superb and marvellously eclectic. many are ideal for novel 'design projects' for final year chemical engineering courses.'
Chemistry in Britain

Cambridge Series in Chemical Engineering

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44 line diagrams
– 978 0 521 79183 0 (0 521 79183 9)
Hardback £65.00
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Paperback £22.99

TEXTBOOK

Molecular Reaction Dynamics

Raphael D. Levine
Hebrew University of Jerusalem

Molecular Reaction Dynamics is a brand new version of the classic text by Levine and Bernstein. The book describes fundamental theory, experimental techniques and developing research. With problems sets included, this book will be suitable for those studying chemical reaction dynamics, and will supplement physical chemistry and natural science courses.

'… an excellent introduction to modern chemical reaction dynamics … throughout there is a nice balance of experimental and theoretical viewpoints … this is a book that should be on every chemical dynamicist's bookshelf, and one that I will certainly recommend to my students.'
Chemistry World

– 2005 246 x 189 mm 568pp
206 line diagrams 3 half-tones
125 exercises
– 978 0 521 84276 1 (0 521 84276 X)
Hardback £45.00

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A Natural Bond Orbital Donor-Acceptor Perspective

Frank Weinhold
University of Wisconsin, Madison
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University of Wisconsin, Madison

This graduate level text presents the first comprehensive overview of modern chemical valency and bonding theory, written by internationally recognised experts. The authors build on the foundation of Lewis- and Pauling-like localized structural and hybridization concepts, presenting a book that is directly based on current *ab-initio* computational technology.

– 2005 247 x 174 mm 735pp
307 line diagrams 19 half-tones
– 978 0 521 83128 4 (0 521 83128 8)
Hardback £60.00

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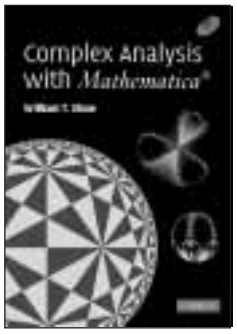

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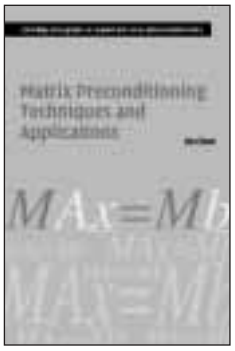

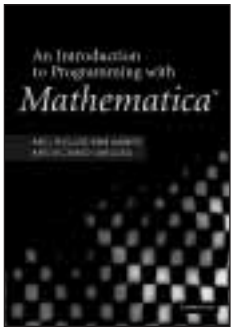

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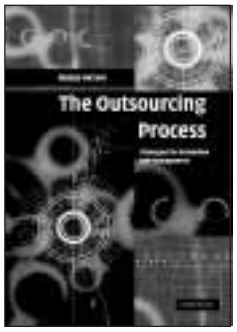

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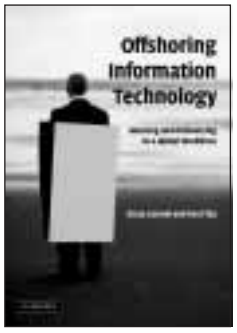

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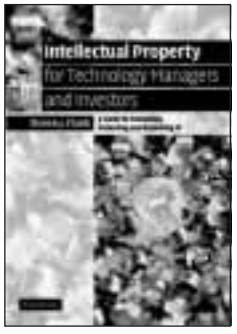

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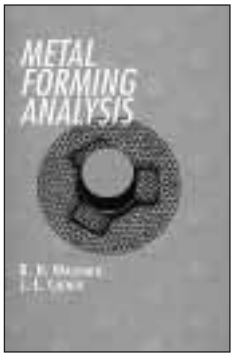

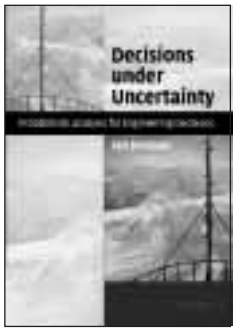

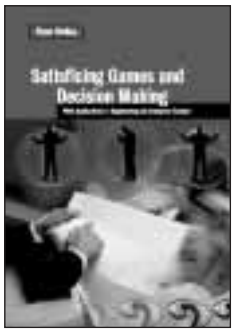

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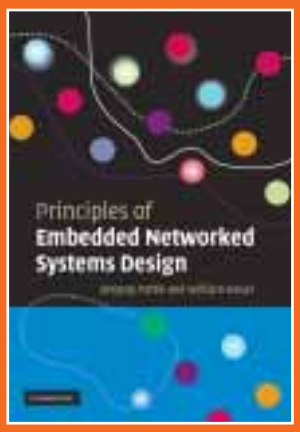

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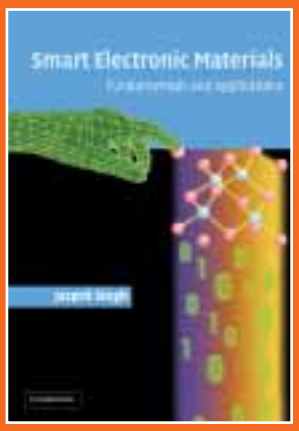

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