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ENGINEERING AND TECHNOLOGY

AERONAUTICAL ENGINEERING

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Fuels and Combustion

(Third Edition)

Samir Sarkar

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Fundamentals of Computational Fluid Dynamics

Tapan K Sengupta
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Gas Tables

(Third Edition)

E Rathakrishnan
Professor, Department of Aerospace Engineering,
Indian Institute of Technology Kanpur, Kanpur, India

Gas Tables will serve as a useful took for solving compressible flow problems. The book is divided into three parts. *Part 1* provides a unified perspective of the basic concepts of gas dynamics that are common to many branches of engineering. The physical aspects of compressible flow are given in a clear and concise manner, and will help those who wish to apply gas dynamics theory to numerical problem solving. *Part 2* consists of the tables for compressible fluid flows. The tables will be useful to students, teachers and practising engineers for carrying out gas dynamic calculations. *Part 3* gives the program listing for generating the tables. The programs are written in C so that they can be run even on personal computers and will be invaluable for students.

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Heat Transfer

Y V C Rao

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Industrial Psychology

Dipak Kumar Bhattacharyya & Sutapa Bhattacharya
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Principles of Fluid Mechanics and Fluid Machines

(Third Edition)

N Narayana Pillai

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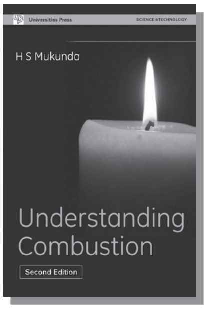
Understanding Combustion
(Second Edition)

H S Mukunda
Group Leader, Combustion, Gasification and Propulsion Laboratory (CGPL), Department of Aerospace Engineering, Indian Institute of Science, Bengaluru, India



The phenomenon of combustion, seemingly so simple and present almost in all spheres of our lives, is a fascinatingly complex process that involves elements of chemistry, thermodynamics, and fluid mechanics. In *Understanding Combustion*, the author takes on the task of revealing its myriad aspects for the benefit of a general reader with a background in science. The narrative introduces the reader to the process of combustion happening everywhere, in the domestic, industrial and scientific spheres and then goes on to explain the aspects of engineering design involved in the control of the process. From a simple candle flame to cooking stoves to combustion in hybrid rocket engines, the book looks at combustion in varied fuel media, examines the chemistry behind it, analyses the stability of the process and the modelling of combustion devices. *In this revised edition, three new chapters on gasification of solid fuels, emission of pollutants and explosion and detonation have been included to expand the field of discourse to recent developments and also cover practical issues related to conservation of fuels and environmental degradation.* This book would be of interest to students of science and technology.

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2009 184 pp. Paperback
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Applied Physics

Applied Physics

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Sunil M Pande
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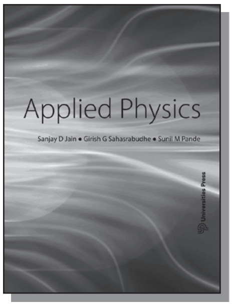

- *Caters to the needs of first- and second-semester undergraduate engineering students and is fully syllabus-compliant*
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Engineering Physics
(Second Edition)

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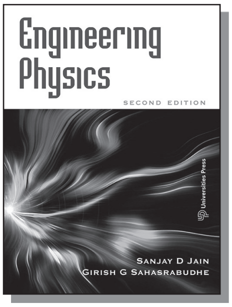

Engineering Physics has been conceived to develop a coherent, comprehensive and practical view of physics among engineering students. This will help them to develop fundamental ways of thinking and inventing in their future engineering practice. The book attempts to break the monotony of just stating theoretical concepts through the following special features:

- The historical development of the subject is traced to show interesting links between the various topics.
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- Numerical problems are included at appropriate places to offer quantitative appreciation of parameters involved.
- Charts are used to facilitate comparative learning of topics that share the same unifying and founding aspects.
- Applications of each topic are discussed at the end of the chapter to give an idea of how engineering grows through the utilitarian translation of discoveries and concepts in physics.
- New chapter on nanophysics introduced
- Updated chapter and exercises

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Optical Communication

M Mukunda Rao
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Physics of Semiconductor Devices
(Second Edition)

Dilip K Roy
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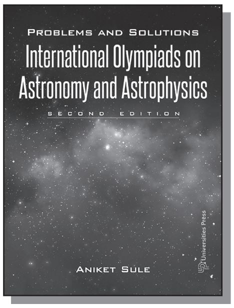
Problems and Solutions: International Olympiads on Astronomy and Astrophysics

Aniket Sule
Academic Coordinator, Indian Astronomy Olympiad Programme; Regional Coordinator (Asia-Pacific), International Olympiads on Astronomy and Astrophysics; Reader, Homi Bhabha Centre for Science Education, Tata Institute of Fundamental Research, Mumbai, India



The International Olympiads on Astronomy and Astrophysics (IOAA) are competitions where teams of high-school students from around the world compete in a series of tests and are awarded medals based on their performance. Started in 2007, more than 45 countries have participated in these olympiads. The competition comprises three rounds: theoretical problems, data analysis problems and night sky observation tests. This book presents problems from all the eight IOAAs held thus far. The problems are categorised according to the concepts involved and also graded according to the difficulty level. Solutions to all the problems are provided. Additional notes help make the solutions self-explanatory.

Salient Features:

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- Problems arranged based on topic and level of difficulty
- Non-calculus based approach, making it accessible to high-school students
- Numerical values use the SI system of units wherever applicable
- For problems with multiple solutions, all the solutions are provided
- Includes current syllabus of IOAA

Contents: *Preface* ◈ *Acknowledgments* ◈ Academic Committees of Previous IOAAs ◈ President's Message ◈ A Note about the Problems ◈ Table of Constants ◈ Celestial Mechanics ◈ Celestial Coordinate Systems ◈ Geometric Astronomy and Time ◈ Optics and Detectors ◈ Physics of Stars and Planets ◈ Stellar Observations ◈ Binaries and Variables ◈ Galactic Astrophysics ◈ Extragalactic Astrophysics ◈ Night Sky Observation ◈ Solutions: Celestial Mechanics ◈ Solutions: Celestial Coordinate Systems ◈ Solutions: Geometric Astronomy and Time ◈ Solutions: Optics and Detectors ◈ Solutions: Physics of Stars and Planets ◈ Solutions: Stellar Observations ◈ Solutions: Binaries and Variables ◈ Solutions: Galactic Astrophysics ◈ Solutions: Extragalactic Astrophysics ◈ Solutions: Night Sky Observations ◈ *Appendix: Syllabus of IOAA*

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Statistical Mechanics: An Elementary Outline

(Revised Edition)

Avijit Lahiri
Formerly Associate Professor, Vidyasagar Evening College, Kolkata, India

The revised edition of *'Statistical Mechanics: An Elementary Outline'* is a novel experiment in the pedagogy of statistical mechanics, wherein the reader is made familiar with the basic concepts relating to the foundations of the subject and, at the same time, gets to know how the practical derivations are worked out in elementary applications. The material is arranged so that the reader can decide which of the two to focus upon, perhaps relegating the latter to a cursory attention in the first reading. The book includes a small number of well-chosen exercises of a heuristic nature, designed to enable the reader to undertake with confidence and initiative the next higher course on the subject. Some of the problems are challenging, like the problem on the anharmonic correction to the equipartition of energy. A number of new topics are introduced in this edition to make the material more complete and solidly founded.

Contents: *Preface to the First Revised Edition* ◈ *Preface to the First Edition* ◈ Introduction: Getting Launched from Classical Mechanics: A Preview of Statistical Mechanics ◈ Quantum Mechanics: Elementary Notions ◈ Quantum Mechanics: Illustrations; Statistical Mechanics: The First Fundamental Postulate ◈ The Entropy Postulate; The Programme of Equilibrium Statistical Mechanics ◈ *Appendix to Chapter 1:* More on the Fundamental Postulates ◈ The Microcanonical Ensemble and its Applications: Stirling's Approximation; System of Non-Interacting Spins ◈ Einstein's Theory of Crystalline Specific Heat ◈ Systems of Identical Particles; State Counting for Bosons and Fermions;

The Ideal Gas ◆ The Classical Ideal Gas: Semiclassical State Counting ◆ The Canonical and the Grand Canonical Ensembles: Introducing the Canonical Ensemble ◆ Probability Distribution in the Canonical Ensemble ◆ Thermodynamic Quantities in the Canonical Ensemble ◆ Energy Dispersion in the Canonical Ensemble ◆ Statistical Mechanics of Large System: Recapitulation ◆ The Grand Canonical Ensemble: Introduction ◆ Probability Distribution in the Grand Canonical Ensemble ◆ Thermodynamic Functions in the Grand Canonical Ensemble ◆ Entropy as 'Disorder' ◆ Evolution Towards Maximal Disorder; *Appendices to Chapter 3:* Statistical Mechanics: Simple Applications: A Single Harmonic Oscillator at Temperature T ◆ A System of Distinct Non-Interacting Constituents at Temperatures T ◆ Semiclassical Statistical Mechanics in the Canonical Ensemble and Applications ◆ The Vibrating Lattice: Specific Heat at Low Temperatures ◆ Black Body Radiation: Plank's Formula ◆ Paramagnetic Susceptibility ◆ Ideal Fermi and Bose Gases in the Grand Canonical Ensemble ◆ Quantum Virial Expansion for the Ideal Gas ◆ The 'Electron Gas' in a Conductor ◆ Bose Condensation ◆ Ferromagnetic Behaviour and the Using Model ◆ Gas with Weakly Interacting Molecules: Deviation from Ideality ◆ *References* ◆ *Index*

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APPLIED CHEMISTRY

Engineering Chemistry

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S S Das
Professor, Department of Chemistry, Deen Dayal Upadhyay Gorakhpur University, Gorakhpur, India

Kalpana Singh
Associate Professor, GNIT, Greater Noida, India

Engineering Chemistry has been tailored precisely *to suit the needs of technical universities in Uttar Pradesh and meets the requirements of the B Tech students.* The book is written in simple language which makes understanding easy. The authors have presented the subject matter in a very lucid and comprehensive manner. Several solved examples are included. SI units have been consistently used. Relevant figures, tables, labelled diagrams and equations are presented wherever required. Exhaustive exercises in the form of questions and problems have been provided to test the comprehension of students.

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V Ganesan

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Computer Simulation of Spark-Ignition Engine Processes

V Ganesan

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Engineering Optimization: A Modern Approach

Ranjan Ganguli

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Industrial Psychology

Dipak Kumar Bhattacharyya & Sutapa Bhattacharya
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BIOMEDICAL ENGINEERING

Principles of Medical Electronics and Biomedical Instrumentation

C Raja Rao
Formerly Senior Professor of Electronics and Communication Engineering; Principal and Dean of Engineering, Sri Venkateswara University College of Engineering, Tirupati, India

S K Guha
Professor, Centre for Biomedical Engineering, Indian Institute of Technology and All India Institute of Medical Sciences, New Delhi; Chair Professor, Indian Institute of Technology Kharagpur, Kharagpur, India

The book caters primarily to the syllabi of medical electronics and biomedical instrumentation courses at the B.Tech. and M.Tech. levels in engineering, applied physics and also serves the needs of AMIE (Section-B) students as well as polytechnic students. For medical and paramedical personnel, this book is useful as a reference and for the electronics engineer and technician, the book will serve as a bridge to the medical world they will be serving. Chapters on biotelemetry, computer applications in medicine, and the hospital and medical electronics department are some of the highlights of this book.

Contents: *Introduction* ◈ Human Cell-Action Potentials ◈ Basis of Bioelectric Potentials ◈ Biopotential Electrodes ◈ Transducers for Biomedical Applications ◈ Biomedical Amplifiers ◈ Principles of Recorders for Recording Bioelectric Events ◈ Electrocardiography ◈ Electroencephalography ◈ Electromyography ◈ Respiration ◈ Special Techniques for Measurements of Nonelectrical Biological Parameters ◈ Electronic Instruments for Affecting the Human Body ◈ Biotelemetry ◈ Patient Monitoring and Intensive Care System ◈ Patient Safety and Electromedical Equipment ◈ Computer Applications in Medicine ◈ The Hospital and The Medical Electronics Department ◈ *Bibliography* ◈ *Index*

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978-81-7371-257-9		₹ 575.00

Short Introduction to Biomedical Engineering, A

S N Sarbadhikari
Project Director, Centre for Health Informatics, National Health Portal, New Delhi, India

Bioengineering is the application of electrical, mechanical, chemical, optical and other engineering principles to understand, modify or control biological systems, and also to design and manufacture products for monitoring physiological functions, assisting in diagnoses, assessing prognoses and helping in the treatment of patients. *This book presents a bird's eye view of the important components of biomedical engineering for the benefit of undergraduate and postgraduate students.* It also provides a glimpse of the emerging trends in biomedical engineering like telemedicine and the wider use of computers in health care.

Contents: *Foreword* ◈ *Preface* ◈ *Section 1: Bio instrumentation:* Origin of Biopotentials, Electrodes, Transducers and Amplifiers ◈ Some Important Biomedical Equipment ◈ Biotelemetry ◈ *Section 2: Electrophysiological Signal Analysis and Processing:* Interaction of Signals in the Neuromuscular System and their Models ◈ Acquisition, Digitisation, Storing and Display of some Important Biomedical Signals ◈ Some Signal Processing Tools ◈ Methods of Medical Data Acquisition, Analysis, Compression and Monitoring ◈ *Section 3: Biomechanics:* Properties and Models of Bones ◈ Biomechanics of Implant Tissues ◈ Sports Biomechanics ◈ *Section 4: Biomaterials*: Structure and Properties of Some Biological Materials ◈ Properties, Compatibility Characteristics and Performance of Implants ◈ Structural Properties of Synthetic Biomaterials and their Use as Biomaterial Substitutes ◈ *Section 5: Kinesiology and Biological Control:* Kinesiology of Human Musculoskeletal System, Orthopedic Biomechanics, Locomotion Analysis ◈ Biomechanics of Human Motion and Control Interfaces with Application to Limb Orthotics and Prosthetics ◈ Principles of Feedback Control and Fluid (Blood/Air) Mechanics in Biology ◈ *Section 6: Imagology:* Ultrasonography Colour Doppler ◈ X-rays, CT, MRI and other scanners ◈ *Section 7: Computers in Medicine and Healthcare:* Medical Informatics ◈ *Section 8: Biostatistics:* Basic Statistical Methods for Analysing Biomedical

Data ◈ *Section 9: Safety, Planning and Ethical Issues:* Safety Measures for Biomedical Equipment ◈ Planning Biomedical Instrumentation for Diagnosis, Therapy and Rehabilitation ◈ Social and Ethical Issues Related to Biomedical Engineering ◈ *Appendix 1* ◈ *Appendix 2* ◈ *Appendix 3* ◈ *Appendix 4* ◈ *Index*

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2006 978-81-7371-558-7	276 pp.	Paperback, ₹ 525.00

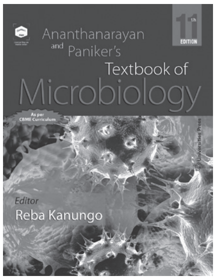
BIOTECHNOLOGY

Ananthanarayan and Paniker's Textbook of Microbiology

NEW

(Eleventh Edition)

Reba Kanungo
Dean of Research, and Professor and Head,
Department of Microbiology, Pondicherry Institute of Medical Sciences (PIMS), Puducherry, India



First published in 1978, *Ananthanarayan and Paniker's Textbook of Microbiology* has been a trusted reference book on microbiology for more than four decades and has evolved with the rapidly changing field of medical microbiology. To stay abreast of recent developments across the global and local infectious disease spectra, the new Competency-Based Medical Education (CBME) curriculum is aimed at integrating microbiology into the system-based approach to human disease. The eleventh edition of *Ananthanarayan and Paniker's Textbook of Microbiology* has been revised to address this restructuring of the curriculum and to make it better suited for the shorter course duration and system-based integration.

Chapters have been pruned without compromising on essential elements which have been presented in a lucid style and flow for an easy and enjoyable reading experience. Several clinical and laboratory images have been updated and line diagrams included for better visual impact and comprehension. Recent advances in disease detection, molecular diagnosis, quality control, infection prevention and control, public health and epidemiology and preventive strategies including national programmes have been brought up to date. An entire chapter (chapter 60) has been devoted to the essence of the competency-based integrated approach to system-wise infectious diseases. This chapter delves into the entire gamut of organisms involved in infectious diseases commonly affecting various systems of the human body and will pave the way for the study of pathogenic microorganisms as individuals and as groups. The traditional approach to the learning and understanding of the microbe–host–environment interaction, pathogenesis, clinical presentations, diagnosis, treatment and prevention of infections has been retained.

Contents: *Preface* ◈ **General Microbiology** ◈ Introduction to Microbiology ◈ Morphology and Physiology of Bacteria ◈ Sterilisation and Disinfection ◈ Culture and Identification of Bacteria ◈ Genetics of Bacteria ◈ Molecular Techniques Applied to Microbiology ◈ **Immunology** ◈ Structure and Functions of the Immune System ◈ Antigens ◈ Antibodies ◈ Complement System ◈ Immune Response ◈ Antigen–Antibody Reactions ◈ Hypersensitivity ◈ Immunodeficiency Diseases ◈ Autoimmunity and Immunohematology ◈ Immunology of Transplantation and Tumour Immunity ◈ **Bacteriology** ◈ Normal Microbial Flora of the Human Body ◈ Antimicrobial Agents ◈ Staphylococci ◈ Streptococci, Enterococci and Pneumococci ◈ Neisseria and Moraxella ◈ Corynebacterium ◈ Bacillus ◈ Actinomycetes ◈ Clostridia ◈ Non-sporing Anaerobic Bacteria ◈ Mycobacteria I ◈ Mycobacteria II ◈ Enteric Bacilli (Gram-Negative Rods) ◈ Vibrionaceae ◈ Gram-Negative Non-fermenters ◈ Haemophilus ◈ Brucella and Bordetella ◈ Spirochetes ◈ Chlamydia ◈ Mycoplasma and Ureaplasma ◈ Rickettsiae and Related Bacteria (Arthropod-Borne Bacterial Infections) ◈ Miscellaneous Bacteria Causing Human Infections ◈ **Virology** ◈ Introduction to Virology ◈ Basic Concepts of Viral Infections ◈ Bacteriophages ◈ Herpesviruses ◈ Pox and Other Viruses ◈ Adenovirus ◈ Picornavirus ◈ Reoviridae ◈ Orthomyxovirus ◈ Paramyxovirus, Pneumovirus and Rubella ◈ Arthropod- and Rodent-Borne Viral Infections ◈ Rhabdovirus and Other Viral and Prion Diseases ◈ Hepatitis Viruses ◈ Retrovirus ◈ Oncogenic Viruses and Other Miscellaneous Viruses ◈ Antiviral Chemotherapy and Immunoprophylaxis ◈ **Medical Mycology** ◈ Basic Mycology and Superficial Mycoses ◈ Systemic Fungal Infections ◈ Laboratory Diagnosis of Fungal Infections ◈ **Clinical Microbiology as Applied to Infectious Diseases** ◈ Diagnostic Microbiology ◈ Systemic Infections and Their Laboratory Diagnosis ◈ Emerging and Re-emerging Infections ◈ Health Care-Associated Infections ◈ Immunoprophylaxis ◈ Bacteriology of Water, Air, Milk and Food ◈ Biomedical Waste Management ◈ Quality Control and Recent Advances in Diagnostic Microbiology ◈ *Further Reading* ◈ *Index*

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Bioinformatics and Bioprogramming in C

L N Chavali
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Bioinformatics: Basics, Algorithms and Applications

Ruchi Singh & Richa Sharma
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Cell Biology

Channarayappa
Professor and Head, M S Ramaiah Institute of Technology, Bengaluru, India

Cell Biology covers one of the most fundamental and elaborately studied areas of biology: the cell. The cell is the basic unit of life and has all the structural and functional properties required for life. *The book has been divided into 20 chapters—beginning with the origin of biological systems and ending with tools for the study of cells.* Every effort has been made to include the most recent information. Each chapter is provided with an adequate number of illustrations.

This book can serve as a basic textbook for students of molecular biology, genetics, biochemistry, agriculture and biotechnology, or as a reference book for those interested in learning the fundamentals of cell biology, in particular, the origin, organisation and functions of subcellular components and cell types.

Contents: Origin of Biological Systems ◈ Atomic Basis of Life ◈ Biomolecules ◈ Prokaryotic Cells ◈ Eukaryotic Cells ◈ Biological Membranes ◈ Mitochondria: Powerhouse of the Cell ◈ Plastids: Food Factory of the Cell ◈ Cell Division: Propagation of Genetic Information ◈ Cell Signalling ◈ Sensory Signalling ◈ Differentiation and Development ◈ Building Multicellular Organisms ◈ Cytoskeleton and Cell Motility ◈ Growth, Sexual Reproduction and Ageing ◈ Cell Death and Cell Renewal ◈ Plant Growth and Development ◈ Immune Response ◈ Non-Cellular Life Forms ◈ Tools for the Study of Cells ◈ *Index*

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Concepts in Biotechnology
(Second Edition)

D Balasubramanian (Ed.)
Director of Research, L V Prasad Eye Institute, Hyderabad, India

C F A Bryce (Ed.)
Emeritus Professor, Edinburgh Napier University, Edinburgh, UK

K Dharmalingam (Ed.)
Head and Coordinator, School of Biotechnology, Madurai Kamaraj University, Madurai, India

J Green (Ed.)
Department of Biological Sciences, Napier University, Edinburgh, UK

Kunthala Jayaraman (Ed.)
Director, Centre for Biotechnology, Vellore Institute of Technology, Vellore, India

The book covers the fundamental principles and concepts in biotechnology which form the basis for the subject and illustrates their applications in selected areas such as health care, agriculture, animal systems, food and beverage, production, environment maintenance and bioprocess technologies. *This textbook is the outcome of a COSTED-IBN project on curriculum development in biotechnology for undergraduate study.* It is designed to provide a strong base in this emerging, interdisciplinary area which holds great promise for economic development.

This revised edition incorporates two new chapters on biotechnology in food and beverage production and environmental biotechnology.

Contents: *About ICSU and COSTED-IBN* ◈ *Preface to the Second Edition* ◈ *Foreword* ◈ *Acknowledgements* ◈ *How to use this book?* ◈ From cell biology to biotechnology ◈ Interplay of macromolecules in a living cell ◈ Structural and functional dynamic of the cell ◈ Gene structure and expression ◈ Gene technology ◈ Protein engineering and design ◈ Enzyme technology ◈ Bioprocess technology: Exploitation of micro-organisms for the production of chemicals ◈ Bioprocess technology: Exploitation of animal cells ◈ Immunotechnology ◈ Biotechnology as a new frontier in health ◈ Plant biotechnology ◈ Biotechnology in livestock production ◈ Biotechnology in food and beverage production ◈ Environmental biotechnology ◈ Bio-informatics and pattern recognition in DNA and protein sequences ◈ Marine biotechnology ◈ Impact of biotechnology on the sustainability of the environment ◈ Biotechnology, international competition, and economic, ethical and social implications in developing countries ◈ *Contributors and editors* ◈ *Glossary* ◈ *Index*

2004	502 pp.	Paperback
978-81-7371-483-2		₹ 895.00

Molecular Biotechnology: Principles and Practices

Channarayappa
Professor and Head, M S Ramaiah Institute of Technology, Bengaluru, India

Molecular Biotechnology: Principles and Practices is intended as ***a textbook aimed at providing undergraduate and postgraduate students*** with a strong base in this emerging and highly promising interdisciplinary science. It strikes a balance between two important aspects of the science—the theory of molecular biology and the experimental approach to the study of biological processes. ***The main feature of this book is that it covers a wide range of molecular techniques in biotechnology and is designed to be a student- and teacher-friendly textbook***. Each technique is described conceptually, followed by a detailed experimental account of the steps involved. The book can also serve as a reference to the interested reader who is venturing into the field of biotechnology for the first time.

Special Features: Comprehensive and up-to-date coverage of key concepts in biotechnology ◈ Logical format to provide easy access to the information ◈ Clear and well-labelled figures ◈ Extensive cross–referencing between chapters.

Contents: *Part I:* Introduction to Biotechnology ◈ Biotechnology: Scope and Importance ◈ Biosafety and Good Laboratory Practices

Part II: Advanced Techniques in Molecular Biology ◈ Techniques of Cell Fractionation and Centrifugation ◈ Chemical Synthesis of Nucleic Acids ◈ DNA Chip Technology and its Potential Applications ◈ Bioinformatics in Biotechnology

Part III: Working with Nucleic Acids ◈ Isolation of Nucleic Acids ◈ Measuring Nucleic Acid Concentration and Purity ◈ Electrophoretic Techniques ◈ DNA Sequencing ◈ Genetic Maps and Marker Analysis ◈ Polymerase Chain Reaction (PCR) ◈ In Situ Hybridization

Part IV: Recombinant DNA and Genetic Engineering ◈ Fundamentals of Recombinant DNA Technology ◈ Enzymes in Molecular Cloning ◈ Gene Constructs and Cloning Vectors ◈ DNA Libraries ◈ Molecular Biology of Gene Transfer Systems ◈ Selection and Screening of Recombinant Molecules

Part V: Applications of Biotechnology ◈ Genetic Engineering of Microorganisms ◈ Genetic Engineering of Animals ◈ Genetic Engineering in Plants

Part VI: Working with Proteins ◈ Protein Purification Techniques ◈ Protein Detection and Estimation ◈ Protein Fractionation Techniques ◈ Immunochemical Techniques

Part VII: Bacterial and Mammalian Cell Culture ◈ Biology of Bacteria ◈ Cultivation of Mammalian Cells In vitro

Part VIII: In Vitro Plant Cell Culture and Crop Improvement ◈ Plant Cell Culture Laboratory and Requirements ◈ Plant Culture Media, Preparation, and Culture Initiation ◈ Micropropagation ◈ Cultures of Organized Tissues ◈ Culture of Unorganized Tissues ◈ Cryopreservation and Distribution of Clonal Material ◈ Measurement of Plant Cell Growth

Part IX: Cytological Analysis ◈ Protoplast Fusion and Somaclonal Variation ◈ Application of Plant Cell, Tissue and Organ Culture

Part X: Environmental Biotechnology ◈ Biotechnology in Pollution Control ◈ Biodiversity and Genetic Conservation ◈ Bioenergy Fuel from Biomass ◈ Regulatory Aspects of Using Genetically-Modified

Organisms ◈ Intellectual Property Rights and Socio-Legal Aspects of Biotechnology ◈ *Appendices*

Distributed worldwide (except India)
by CRC Press LLC, USA, Taylor and Francis Group

2006	1228 pp.	Paperback
978-81-7371-501-3		₹ 1,195.00

Plant Biotechnology: Methods in Tissue Culture and Gene Transfer

R Keshavachandran (Ed.)
Associate Professor and Coordinator, Centre for Plant Biotechnology and Molecular Biology, College of Horticulture, Kerala Agricultural University, Thrissur, India

K V Peter (Ed.)
Director, World Noni Research Foundation, Chennai, India

There is growing demand for more food crops. *The book has 21 chapters contributed by eminent scientists from all over the country.* It discusses the various techniques and aspects of biotechnology that can bring about crop improvement. *The book serves as a textbook for postgraduate students and researchers working in the fields of plant biotechnology and horticulture and as a reference book for undergraduates.*

Contents: Biotechnology in Indian Agriculture ◈ The Cell Biology of Plant Cell Culture and Development ◈ Hormonal Regulation of In Vitro Morphogenesis ◈ Maintenance of Asepsis in Tissue Culture ◈ Micropropagation—Principles and Practices ◈ Media Requirements of In Vitro Culture ◈ Haploid Production ◈ Triploid Production ◈ In Vitro Pollination and Fertilization ◈ Embryo Culture ◈ Protoplast Isolation and Culture ◈ Somatic Hybridization ◈ In Vitro Selection with Plant Cell, Tissue and Organ Cultures ◈ Synthetic Seeds ◈ Methods of Genetic Transformation in Plants ◈ Germplasm Storage ◈ GM Technology and Biosafety Regulations ◈ Patents in Biotechnology ◈ Molecular Markers and their Applications in Plant Species ◈ Useful Genes for Plant Genetic Engineering ◈ Biotechnology in the Conservation of Medicinal and Aromatic Plants

2008	312 pp.	Paperback
978-81-7371-616-4		₹ 595.00

Practical Biotechnology: Methods and Protocols

S Janarthanan
Senior Lecturer, Department of Zoology, Thiagarajar College, Madurai, India

S Vincent
Reader, Department of Advanced Zoology and Biotechnology, Loyola College, Chennai, India

The book will help undergraduate, postgraduate and research students perform basic experiments in biotechnology. The laboratory protocols in this book are simple to understand. Each laboratory exercise contains an introductory unit, protocol and easy-to-follow instructions for reagent preparation. The methods and protocols aim to make students ready for independent research in biotechnology laboratories.

Contents: *DNA Isolation:* Isolation of Plasmid DNA ◈ Isolation of Bacterial Genomic DNA ◈ Isolation of Yeast Genomic DNA ◈ Isolation of Fungal Genomic DNA ◈ Isolation of Genomic DNA from Blood ◈ Isolation of DNA from Animal Cells ◈ Isolation of Genomic DNA from Eukaryotic Tissues ◈ Isolation of Plant DNA using CTAB Extraction Method ◈ Isolation of Chloroplast DNA ◈ Mitochondrial DNA Isolation ◈ Phenol Chloroform Extraction of DNA ◈ Ethanol Precipitation of DNA

RNA Isolation: Isolation of Total RNA from Bacterial Cells ◈ Isolation of Total RNA from Plant Tissues ◈ Hot Phenol Isolation of RNA from Plant Tissues ◈ Acid Phenol Extraction of RNA ◈ Messenger RNA Isolation or Poly (A) RNA Isolation

Working With DNA: Storage ◈ Purification ◈ Concentration ◈ Spectrophotometric Determination of Nucleic Acid Purity and Concentration ◈ Fluorescent Quantification of DNA ◈ Quantification of DNA using Diphenylamine (DPA) Assay

Molecular Biology Methods: Restriction Enzyme Digestion of DNA ◈ DNA Ligation ◈ Agarose Gel Electrophoresis of DNA ◈ Elution of DNA Fragments from Agarose ◈ Phenol Purification of DNA from Low Melting Agarose ◈ Southern Blotting ◈ Agarose Gel Electrophoresis of RNA ◈ Northern Blotting ◈ Cloning ◈ Polymerase Chain Reaction (PCR) (In Vitro Amplification of DNA) ◈ SDS–Polyacrylamide Gel Electrophoresis ◈ Western Blotting (Immunoblotting) ◈ Iso-electric Focusing (IEF) of Proteins ◈ 2D Gel Electrophoresis (2D PAGE) ◈ Trypsin Digestion of

Protein Gel ◈ Protein Dialysis ◈ Enzyme (Esterase) Gel Electrophoresis

Some Useful Information for Methods in Molecular Biology: Antibiotic Concentration in Media ◈ E. coli Growth Curve ◈ Storage of Bacterial Strains in Stab Agar ◈ Storage of Bacterial Strains in Glycerol Solution ◈ Decontamination of Ethidium Bromide (EtBr) Solutions ◈ Preparation of Solutions ◈ Glassware and Plasticware ◈ Disposal of Buffers and Chemicals ◈ Autoclave Operating Procedures ◈ Safety Procedures ◈ *Preparation of Solutions* ◈ *References*

2007	136 pp.	Paperback
978-81-7371-582-2		₹ 325.00

Textbook of Basic and Clinical Immunology

Sudha Gangal
Research Advisor, Integrated Cancer Treatment and Research Centre, Pune, India

Shubhangi Sontakke
Professor of Biochemistry, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth University, Pune, India

This book has been written keeping in mind the needs of the Indian student and curriculum. The content is exhaustive and cannot be found in any single textbook, Indian or foreign. Its uniqueness is the packaging of the basic and the clinical aspects of immunology in a single book.

The purpose of creating this book is:

- To put forth the concepts involved in immunology in as simplified a manner as possible for the students whose first language is not English
- To reduce to the minimum, description of animal experiments so elegantly conducted to explain several important concepts (This was intentionally done to avoid confusion amongst students who are not exposed to animal science—basically the book gives more weightage to human immunology)
- To include immunology of diseases commonly encountered in South-East Asian countries, so that students of medicine will grasp the basic complexities of the diseases they encounter

The book is thematically divided into *two sections*.

The *first sixteen chapters* deal with basic immunology. This part deals with development and maturation of cells of the immune system, molecular basis of diversity of immune response, movement of cells to the site of infection directed by soluble mediators, functions of effector cells and molecules, and careful control of harmful effects of activated immune effectors. *Chapter 17* is entirely devoted to the principles of laboratory techniques used in immunology.

The *second part*, covered in ten chapters, deals with immune response to infectious and non-infectious diseases such as cancer, autoimmune diseases, allergy (hypersensitivity) and diseases caused by mutations occurring during several developmental steps in the complex process of maturation of immune response, giving rise to immunodeficiency diseases. While dealing with the problems in the life-saving procedure of allogeneic transplantation, a special section is devoted to the development of new biologics such as engineered monoclonal antibodies and fusion proteins, future applications of derivatized stem cells and other genetic engineering applications.

Contents: *Foreword* ◈ *Preface* ◈ *Abbreviations* ◈ Introduction to Immunology ◈ Innate Immunity ◈ Cells of the Immune System ◈ Organs of the Immune System ◈ Antigens ◈ Antibodies ◈ Antigen Presenting Cells, Antigen Processing and Presentation ◈ Major Histocompatibility Complex ◈ B cells: Maturation, Activation, Proliferation and Differentiation ◈ Immunoglobulin Gene Rearrangement ◈ T Cell Maturation, Activation and Differentiation ◈ T Cell Receptor ◈ Cytokines, Chemokines and their Receptors ◈ Cell Signalling and Trafficking ◈ The Complement System ◈ Effector Mechanisms ◈ Principles and Applications of Laboratory Tests in Immunology ◈ Monoclonal Antibodies: Production and Applications ◈ Immunology of Bacterial Diseases ◈ Immunology of Viral Diseases ◈ Immunology of Parasitic Diseases ◈ Transplantation Immunology ◈ Tumour Immunology ◈ Tolerance and Autoimmunity ◈ Hypersensitivity ◈ Acquired and Inherited Immunodeficiency Diseases ◈ Vaccines ◈ *Appendix I Selected markers of human Cluster of Differentiation (CD)* ◈ *Appendix II Cytokines and growth factors: Sources and functions* ◈ *Appendix III Chemokines, receptors and functions*

Cells expressing chemokine receptors ◈ Appendix IV Answers to objective questions and MCQs

Available in print and e-book formats.
For details, visit www.universitiespress.com.

2013	572 pp.	Paperback
978-81-7371-829-8		₹ 1,075.00

CHEMICAL ENGINEERING

Basic Engineering Thermodynamics

A Venkatesh
See page 75

Chemical and Electrochemical Energy Systems

R Narayan
B Viswanathan
National Centre for Catalysis Research, Indian Institute of Technology Madras, Chennai, India

This book addresses the problem of production of energy through chemical energy conversion. It deals with the importance of the need to explore new sources of energy and methods of storage. It includes all forms of chemical energy conversion and deals clearly with the production of energy from petroleum fuel and carbon.

Contents: *Preface* ◈ *Introduction* ◈ Chemical Energy Sources ◈ Electrochemical Energy Systems ◈ Primary Batteries ◈ Secondary Batteries ◈ Reserve Batteries ◈ Lithium Batteries ◈ Solid-state and Molten-solvent Batteries ◈ Fuel Cells ◈ Solar Energy ◈ *Questions and Problems* ◈ *Index*

Available in e-book format only.
For details, visit www.universitiespress.com.

Chemical Engineering Thermodynamics

Y V C Rao
Formerly Professor of Chemical Engineering, Indian Institute of Technology Kanpur, Kanpur, India

This book would serve as a core textbook for the course on chemical engineering thermodynamics for undergraduate students of chemical engineering and chemical technology. The emphasis is on the precise and logical presentation of basic principles. *The book covers a number of concepts that are not found in most books*—the Jacobian method of deriving thermodynamic relations, use of the Bridgman table, stability and phase transition in thermodynamic systems, etc. Another salient feature of the book is the *equation of state (EOS) approach* which is gaining importance with the increasing use of computers.

Contents: *Preface* ◈ *Nomenclature* ◈ *Introduction* ◈ Basic Concept and Definitions ◈ p-v-trelations of Fluids ◈ First Law of Thermodynamics and its Applications ◈ Second Law of Thermodynamics and its Applications ◈ Thermodynamics Potentials ◈ Thermodynamics Property Relations ◈ Thermodynamic Properties of Real Gases ◈ Multicomponent Mixture ◈ Stability and Phase transition in Thermodynamic System ◈ Properties of Solution ◈ Vapor-liquid Equilibrium ◈ Dilute Solution Laws ◈ Chemical Reaction Equilibrium ◈ *Appendices* ◈ *Answers to problems* ◈ *References* ◈ *Index*

1997	624 pp.	Paperback
978-81-7371-048-3		₹ 725.00

Chemical Process Calculations

K Asokan
Formerly Chief Scientist, Central Electro Chemical Research Institute (CECRI), Karaikudi, India

A range of materials like fuels, fertilizers, processed foods, life-saving pharmaceuticals and filtered clean water are being produced today. Several stages and processes are gone through during their production. Different materials or chemicals are added or removed in each step, and energy in the form of heat is also gained or lost. A chemical engineer needs to have a thorough understanding of how much of different materials is needed for the required output, as well as the energy balance of the processes involved. A course in chemical process calculations will help gain such an understanding.

The book provides a simple treatment of the subject matter. *The fundamental principles are explained through 173 worked examples. Exercise problems with answers (154 in number) are also given for practice.*

Contents: Dimensions, Units and Conversions ◈ Basic Concepts ◈ Material Balance in Non-Reaction Systems ◈ Material Balance in Reaction Systems ◈

Material Balance in Unit Operations ◆ Unsteady State Material Balance ◆ Energy Balance ◆ Fuels and Combustion ◆ *Answers to Problems*

Distributed worldwide (except India)
by CRC Press LLC, USA, Taylor and Francis Group

2007	264 pp.	Paperback
978-81-7371-594-5		₹ 575.00

Engineering Optimization: A Modern Approach

Ranjan Ganguli
See page 56

Fuel Cells: Principles and Applications

B Viswanathan
National Centre for Catalysis Research, Indian Institute of Technology Madras, Chennai, India

M Aulice Scibioh
Senior Research Associate, Indian Institute of Technology, Madras, Chennai, India

This book discusses the scientific principles and technology of various types of fuel cells—PEM (polymer membrane fuel cell), PAFC (phosphoric acid fuel cell), MCFC (molten carbonate fuel cell), SOFC (solid oxide fuel cell) and DMFC (direct methanol fuel cells). Fuel cells are power-generating devices with a wide range of applications including stationary power generation (MW), portable power generation (kW) and transportation (kW). The key advantages of the fuel cell are high efficiency, the lack of emissions, modularity, fuel flexibility, and high power density. The only emission from fuel cells is water when hydrogen is fed to the fuel cell. For these reasons, research in the area of fuel cells is of great significance. *This book is a comprehensive work on the state-of-the art findings in this area.*

Contents: *Introduction* ◆ Electrochemistry Basis ◆ Alkaline Fuel Cells ◆ Phosphoric Acid Fuel Cells ◆ Solid Oxide Fuel Cells ◆ Molten Carbonate Fuel Cells ◆ Direct Methanol Fuel Cells ◆ Proton Exchange Membrane Fuel Cells ◆ Fuel Processing ◆ Hydrogen Storage ◆ Energy, Environmentand Development:Future Prospects ◆ *Index*

Distributed worldwide (except India)
by CRC Press LLC, USA, Taylor and Francis Group

2006	504 pp.	Paperback
978-81-7371-557-0		₹ 875.00

Fuels and Combustion
(Third Edition)

Samir Sarkar
Formerly Professor, Department of Chemical Engineering, Indian Institute of Technology Bombay, Mumbai; Bose Institute, Kolkata; Central Fuel Research Institute, Dhanbad, India

Fuels and Combustion, Third Edition is a systematic and comprehensive work on a *subject that forms an integral part of the undergraduate degree courses in chemical, mechanical, metallurgical and aeronautical engineering.* While emphasising the fundamental principles, the book provides a balanced treatment of energy resources, processing of fuels, fundamentals of combustion and combustion appliances. *A special feature of the book is that the topics have been dealt with in the Indian context.* The third edition of the book has a completely new introduction, layout and design; new statistics have been added to provide up-to-date information.

Contents: *Introduction* ◆ Definitions, Units and Measures ◆ Solid Fuels ◆ Processing of Solid Fuels ◆ Liquid Fuels ◆ Gaseous Fuels ◆ Combustion Process (Stoichiometry and Thermodynamics) ◆ Combustion Process (Kinetics) ◆ Combustion Appliances *Appendices* ◆ *Index*

Distributed worldwide (except India)
by CRC Press LLC, USA, Taylor and Francis Group

2009	400 pp.	Paperback
978-81-7371-669-0		₹ 595.00

Industrial Psychology

Dipak Kumar Bhattacharyya & Sutapa Bhattacharya
See page 67

Mass Transfer Concepts

K Asokan
Formerly Chief Scientist, Central Electro Chemical Research Institute (CECRI), Karaikudi, India

- Each chapter starts with an introduction
- Various operations and their fundamental principles are explained
- Text is complemented by *153 worked out examples*
- *169 exercise problems* are provided with solutions

Mass transfer involves the use of various operations to separate a mixture into its individual components—a frequent requirement in chemical industries. The differences in the physical properties of the components to be separated – such as the vapour pressure, solubility or diffusivity – are utilised to transfer material from one homogeneous phase to another. Techniques such as gas absorption, distillation, leaching, extraction, crystallisation, humidification, drying, adsorption and membrane based separation processes involve mass transfer and can be carried out due to the existence of a concentration gradient within the system.

Mass Transfer Concepts equips an engineer with knowledge of all these operations.

Contents: Diffusion ◈ Interphase Mass Transfer ◈ Gas Absorption ◈ Distillation ◈ Leaching and Extraction ◈ Crystallisation ◈ Humidification ◈ Drying ◈ Adsorption ◈ Other Separation Processes ◈ *Answers to Problems*

2011	428 pp.	Paperback
978-81-7371-727-7		₹ 675.00

Textbook of Nanoscience and Nanotechnology

B S Murty, P Shankar, Baldev Raj, B B Rath & James Murday

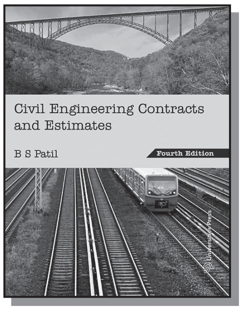
See page 73

CIVIL ENGINEERING

Civil Engineering Contracts and Estimates (Fourth Edition)

B S Patil

Contracts and Arbitration Consultant, Pune, India



Civil Engineering Contracts and Estimates, Fourth Edition, combines in a single book, two important sections of Civil Engineering—Contracts and Estimates. The first edition was designed to serve as a textbook for engineering courses without any need for frequent changes. Improved contract conditions and management techniques were taken care of in the second edition. The use of FIDIC and other similar standard contract forms, particularly Public Private Partnership (PPP), construction of public works on build, operate and transfer (BOT) basis and other developments necessitated the third edition.

In the present edition, the rates and costs have been updated to bring them on par with the rates prevailing in 2014–15. Online tendering has been included to bring the book up to date. The fourth edition contains everything that engineering faculty and students, as well as fresh engineers commencing their career in the field need know about the subject.

Section I (Civil Engineering Contracts) presents an introduction to the legal aspects involved right from the tender stage up to planning. It also discusses project scheduling through management techniques such as PERT and CPM. Further, it furnishes useful information on the law of contracts, specifications and contract management.

Section II (Civil Engineering Estimates) provides the basic framework which enables the reader to accurately estimate the costs of projects by using the method of measurement of works. A variety of projects are included such as residential construction and building of bridges. The new edition incorporates an estimate for a railway track.

This book will prove useful not only for engineering students and faculty, but also to practicing engineers and architects.

Contents: *Foreword* ◈ *Preface to the Fourth Edition* ◈ *Preface to the Third Edition* ◈ *Preface to the Second Edition* ◈ *Section I: Preface to the First Edition* ◈ *Section II: Preface to the First Edition* ◈ **SECTION I Civil Engineering Contracts** ◈ Introduction ◈ The Law of Contract ◈ The Tender ◈ Contract Documents ◈ Contract for Engineering and Architectural Services ◈ Contract between Owner and Contractor ◈ Conditions of Contract ◈ Specifications ◈ Contract Organisation and Management ◈ The PWD Procedure of Executing a Project ◈ *Appendices* ◈ *References* ◈ **SECTION II Civil Engineering Estimates** ◈ Introduction ◈ Approximate Estimates ◈ Valuation ◈ General Principles of Taking out Quantities ◈ Methods of Taking out Quantities ◈ Excavation and Foundation ◈ Concrete ◈ Stone Masonry and Brickwork ◈ Doors and Windows ◈ Roofs ◈ Floors and Pavings ◈ Plastering and Pointing ◈ Stairs ◈ Plumbing, Drains and Sanitary Fittings ◈ Electrical Work ◈ Structural Steelwork ◈ Measurement of Earthwork ◈ Squaring the Dimensions ◈ Abstracting and Bill of Quantities ◈ Factors Affecting Cost of any Work ◈ Analysis of Rates ◈ Estimates I: A Two-Storeyed Residential Building (Drawings included) ◈ Estimates II: A Two Span Arch Bridge (Drawings enclosed) ◈ Estimates III: Estimates of Earthwork and Roads ◈ Estimates IV: Estimates of Canals ◈ Estimates V: Estimates of Railway Track

2015	512 pp.	Paperback
978-81-7371-957-8		₹ 675.00

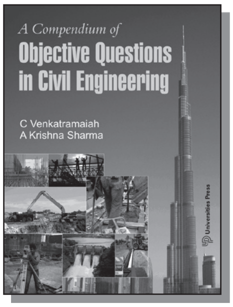
Compendium of Objective Questions in Civil Engineering, A

C Venkatramaiah

Formerly Professor, Department of Civil Engineering, S V University College of Engineering, Tirupati, India

A Krishna Sharma

Professor of Civil Engineering, Brindavan College of Engineering, Bengaluru, India



This book has been designed to meet the needs of students preparing for all kinds of competitive examinations and entrance tests for admission to postgraduate courses and job recruitment. About 4000 objective-type questions of different kinds, especially the multiple choice variety, from the different areas of civil engineering are included. Important definitions and essential formulae including code provisions, where applicable, are given. The accent is on quality rather than on quantity.

Contents: *Foreword* ◈ *Preface* ◈ *Acknowledgements* ◈ *Note Regarding Chapters 17 to 19* ◈ Engineering Mechanics ◈ Strength of Materials and Elements of Structural Analysis ◈ Advanced Structural Analysis ◈ Concrete Technology ◈ Design of RCC Structures ◈ Design of Steel Structures ◈ Geotechnical Engineering ◈ Transportation Engineering ◈ Surveying ◈ Engineering Materials ◈ Building Construction ◈ Estimating, Costing and Valuation ◈ Construction Management ◈ Water Supply Engineering ◈ Sewerage and Sewage Treatment ◈ Environmental Sanitation ◈ Mechanics of Fluids ◈ Hydraulic Machinery ◈ Hydrology and Irrigation Engineering

2014	496 pp.	Paperback
978-81-7371-933-2		₹ 750.00

Disaster Management

Harsh K Gupta (Ed.)

Koteswaram Professor, National Geophysical Research Institute, Hyderabad, India

This book contains seven chapters, each dealing with one major natural disaster encountered in our country. Each of the authors is an expert in that particular field. *The outstanding contribution of this book is that it not only deals with the forecasting and description of the various natural disasters, but also stresses on the management aspect, exhaustively detailing the necessary steps that need to be taken to deal with the fallout in the wake of these disasters.* The book also describes the advances in remote sensing and the state-of-the-art technology available in India for the monitoring and prediction of these phenomena. It also draws up a comprehensive warning system to be implemented, in order to minimise the extensive losses to life and property that occur year after year.

Contents: *Foreword* ◈ Vegetal Cover and Natural Disaster Management in Himalaya ◈ The Spatio-temporal Aspects of Monsoon Floods in India: Implications for Flood Hazard Management ◈ Monitoring and Forecasting of Tropical Cyclones and Their Associated Effects ◈ A New Seismic Hazard Map for the Indian Plate Region under the Global Seismic Hazard Assessment Programme ◈ Major and Great Earthquakes in the Himalayan Region: An Overview ◈ Two Great Landslide Tragedies of India ◈ Droughts ◈ *Index*

Available in print and e-book formats.
For details, visit www.universitiespress.com.

2003	188 pp.	Hardback
978-81-7371-456-6		₹ 595.00

Disaster Management: Global Challenges and Local Solutions

Rajib Shaw
Associate Professor, Graduate School of Global Environmental Studies, Kyoto University,
Kyoto, Japan

R R Krishnamurthy
Head, Department of Applied Geology, University of Madras Guindy Campus, Chennai, India

We are becoming increasingly vulnerable to natural disasters. Disaster management is therefore an important topic for all—from high school students to researchers. *Disaster data in recent years show increasing trends in physical, social and economic impacts. While a global perspective of disaster management is necessary, it is also important to emphasise local solutions.* This book targets some of the key issues of disaster management, focussing on innovative research and application.

The chapters are organised under 5 interrelated themes: • Hazards and disasters, • Risk and vulnerability • Technology • Education and community • Crosscutting issues.

It will serve as an up-to-date reference book for researchers and practitioners in the field of disaster management throughout the world. *This book will be useful for students, teachers, researchers and practitioners in the field of disaster management. It is an invaluable resource for faculty of departments of geology and environmental science and students of geology and environmental science.*

Contents: *Introduction* ◈ Hazards and Disasters ◈ Risk and Vulnerability ◈ Disaster Reduction Technology ◈ Education and Community ◈ Crosscutting Issues ◈ Postscript ◈ *Index*

Available in print and e-book formats.
For details, visit www.universitiespress.com.
Distributed worldwide (except India)
by CRC Press LLC, USA, Taylor and Francis Group

2009	664 pp.	Paperback
978-81-7371-656-0		₹ 1,150.00

Engineering Geology

Vasudev Kanithi
Lecturer, Department of Civil and Environmental Engineering, University of the West Indies,
Kingston, Jamaica

This book provides *comprehensive coverage of all the basic aspects of geology* which a civil or environmental engineer will need to know to adequately recognise, interpret and use geological data while planning, designing and monitoring civil engineering works. *It caters to the undergraduate engineering syllabus of major technical universities in India.* The author uses the approach of presenting facts directly, and wherever possible including illustrations so that readers get a feel of the relevant aspects of geology even while not being directly situated in the environs being discussed. *Several examples* on environmental issues, hazards mitigation and resources engineering in the geological context have been included to highlight the significance of planning for now and for future. The book also presents *several case studies* including problems encountered during the construction of Delhi Metro Rail Project and Mumbai Water Supply Project, and others from around the world that dwell on the failure of civil works due to the ignorance of, or inadequate attention to the implications of geological aspects. These make the study of the subject more interesting and practical-oriented.

Contents: Engineering geology: an introduction ◈ Branches of geology ◈ A peep into the earth ◈ Plate tectonics: a unifying theory ◈ Materials of the earth's crust ◈ Surface processes ◈ Engineering significance of geological formations and soils ◈ Deformational structures in crustal rocks ◈ Engineering properties of rocks ◈ Geology of dams and reservoirs ◈ Geology of tunnels ◈ Geological maps and their interpretation ◈ Geophysical methods for subsurface exploration ◈ Stability of slopes and cuttings ◈ Engineering seismology ◈ Geohydrology ◈ Site improvement for engineering projects ◈ Quarrying or surface mining ◈ Environmental geology ◈ Remote sensing and GIS ◈ Resources engineering

2012	408 pp.	Paperback
978-81-7371-769-7		₹ 575.00

Engineering Mechanics

NEW

PC Dumir, S Sengupta & Srinivas V Veeravalli
See page 78

Engineering Mechanics

M V Seshagiri Rao & D Rama Durgaiah
See page 79

Engineering Optimization: A Modern Approach

Ranjan Ganguli
See page 56

Finite Element Analysis and Procedures in Engineering

H V Lakshminarayana
Professor, Coventry University Postgraduate Centre,
M S Ramaiah School of Advanced Studies,
Bengaluru, India

This textbook has emerged from three decades of experience gained by the author in education, research and practice. The basic concepts, mathematical models and computational algorithms supporting the finite element method (FEM) are clearly and concisely developed. *This complete and self-contained book will help the beginner both understand FEM as a numerical method for engineering analysis and help him or her to learn to use commercial finite element analysis (FEA) software to solve practical problems.* By the time the student completes the study of this book, and runs the test programs, adequate knowledge of FEM and skills to use a commercial FEA program will be on hand. The application problems demonstrate the capability of FEM in general and commercial FEA codes in particular to handle the complexities of practice problems.

Each chapter contains test problems with target solutions, computational problems for home assignments, and practical applications for term projects.

Contents: *Preface* ◈ Introduction to Finite Element Method ◈ Mathematical Preliminaries ◈ One-Dimensional Elements-Analyses of Bars and Trusses ◈ Two-Dimensional Elements-Analyses of Plane Elasticity Problems ◈ Axisymmetric Solid Elements-Analysis of Bodies of Revolution ◈ Three-Dimensional Elements-Applications to Solid Mechanics Problems ◈ Beam Elements-Analysis of Beams and Frames ◈ Finite Elements for Plates ◈ Finite Elements for Shells ◈ Finite Element Analysis Programs ◈ Advanced Applications ◈ *Index*

2004	264 pp.	Paperback
978-81-7371-476-4		₹ 495.00

Finite Element Analysis for Engineering and Technology

With CD-ROM

Tirupathi R Chandrupatla
Professor and Founding Chair, Mechanical
Engineering Department, College of Engineering,
Rowan University, Glassboro, USA

Computer-aided engineering (CAE) tools are finding increasingly wider application in the solution of engineering problems. Finite element analysis (FEA) is an important tool in the CAE toolbox. From a predominantly postgraduate level status, FEA became an integral part of third/fourth year level engineering programs in colleges in the late eighties. The new century brings in the need for introducing *FEA* even earlier in the *second year of engineering and technology programs.* The need for trained personnel will require education at a level that is not catered for by available books. The purpose of this book is to introduce the subject of finite element analysis to fulfill this need.

Web support for instructor resources is provided.

The pedagogical features are:

Direct approach used in the development of FEA ◈ Over 170 illustrations provided to crystallise concepts ◈ Problem formulation and modelling emphasised in all chapters ◈ Examples and problems integrated throughout ◈ Computer program source codes in BASIC, FORTRAN, C, Visual Basic, Visual Basic Excel, MATLAB, and Java included in the CD.

Contents: Basic Concepts ◈ Matrices and Matrix Operations ◈ One-Dimensional Bar Problems ◈ Analogous Problem in One Dimension ◈ Trusses ◈ Two-Dimensional Stress and Deformation Analysis Using Constant Strain Triangles ◈ Two-Dimensional Heat Transfer Using Three Node Triangular Elements ◈ Beams ◈ Plane Frames and Grids ◈ Mesh Generation and Plotting Considerations ◈ Higher Order Elements and Other Topics ◈ *Index*

2003	268 pp.	Paperback
978-81-7371-427-6		₹ 525.00

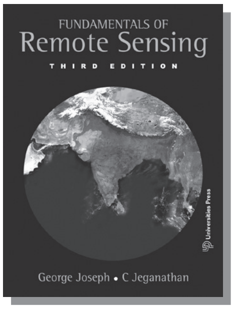
First Course in Fluid Mechanics, A

S Narasimhan
See page 80

Fundamentals of Remote Sensing (Third Edition)

George Joseph
Formerly Satish Dhawan Distinguished Professor, ISRO, Ahmedabad, India

Jeganathan Chockalingam
Professor, Department of Remote Sensing, Birla Institute of Technology (BIT) University, Mesra, India



The Third Edition of this book retains the basic principles of remote sensing, introduced in the earlier editions. It covers all aspects of the subject from electromagnetic radiation, its interaction with objects, various sensors, platforms, data processing, data product generation and end utilisation for earth resource monitoring and management. Apart from material that has retained value since the previous edition, this revised and updated edition presents additional information to keep the readers abreast of the emerging trends. The newer developments in sensor technology, supplementary information on image processing, data product generation, applications of remote sensing in disciplines such as archaeology, desertification and drought assessment are included. A relatively newer theme in remote sensing – GNSS remote sensing – has been introduced.

Since remote sensing is used by professionals from varied disciplines, the book is designed to cater to readers from various backgrounds. For those intending to pursue graduate studies in remote sensing, this book serves as an overview and introduction, so that the basic concepts of all topics – science, technology and applications – of remote sensing are clear. This directs them to delve deeper into their specific field of interest. The book serves as a source of information for professionals who come across remote sensing in their work and would like to learn more about its principles and practical uses to support their professional/research activity. For faculty who want to widen their horizons, the comprehensive bibliography and relevant websites will be extremely helpful. Overall the book serves as a 'single window' source to comprehend the basics of the subject.

Contents: *Foreword* ◈ *Preface to the Third Edition* ◈ *Preface to the Second Edition* ◈ *Preface to the First Edition* ◈ Introduction ◈ Electromagnetic Radiation ◈ Fundamentals of Radiometry ◈ Physical Basis of Signatures ◈ Remote Sensors—An Overview ◈ Optical–Infrared Sensors ◈ Microwave Sensors ◈ Platforms ◈ Data Reception and Data Products ◈ Data Analysis ◈ Applications of Remote Sensing for Earth Resources Management ◈ Geographical Information System (GIS) ◈ *Colour Plates* ◈ *Appendix 1 Influence of Atmosphere on Remote Sensing* ◈ *Appendix 2 Atmospheric Sounding* ◈ *Appendix 3 Decibels* ◈ *Appendix 4 Map Projection* ◈ *Appendix 5 Visual Interpretation* ◈ *Appendix 6 Hyperspectral Image Analysis* ◈ *Appendix 7 GNSS Remote Sensing* ◈ *Appendix 8 Acronyms* ◈ *References* ◈ *Index*

2018	624 pp.	Paperback
978-93-86235-46-6		₹ 695.00

Geographical Information Science

Narayan Panigrahi
Scientist-E, Centre for Artificial Intelligence and Robotics, Defence Research and Development Organisation, Bengaluru, India

This book addresses the GIS user domain encompassing students, users and engineers. Important aspects of geographical information science (GISc), which is the basis of GIS, are explained. The book aims to capture the basics of GIS from the point of view of a student. The requirements of GIS have been explained keeping in mind the general user's level of knowledge. The processing capability of GIS along with the mathematics and formulae involved in arriving at a solution are explained for students and cartographers. The work flow of the whole system, its output and applications are illustrated from an engineer's point of view.

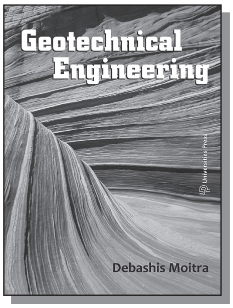
Contents: *Foreword* ◈ *Preface and Acknowledgements* ◈ *Introduction* ◈ Input Domain of GIS ◈ Spatial Data Modeling ◈ Processing Tools of GIS ◈ 3D Processing and Analysis ◈ Coordinate Systems and Referencing Earth Objects ◈ Map Projection ◈ Output Range of GIS ◈ Computational Geometry Used in GIS ◈ Spatial Interpolation ◈ Spatial Data Accuracy ◈ Evolution of Geographical Information Science ◈ Application Domain of GIS ◈ Spatial Decision Support System (SDSS) ◈ GIS: A Developer's Perspective ◈ *Appendix A Analysis of GIS Aspects* ◈ *Appendix B Glossary of Definitions & Terms* ◈ *Appendix C Geo-Spatial Meta-data* ◈ *Appendix D Frequently Asked Questions in GIS* ◈ *Appendix E Expansion of Acronyms* ◈ *Index*

Distributed worldwide (except India)
by CRC Press LLC, USA, Taylor and Francis Group

2008	292 pp.	Paperback
978-81-7371-628-7		₹ 595.00

Geotechnical Engineering

Debashis Moitra
Associate Professor, Indian Institute of Engineering Science and Technology, Shibpur, India



Geotechnical Engineering combines in a single book, the theoretical aspects (Soil Mechanics) as well as the applications (Foundation Engineering). The author, with his long experience of undergraduate teaching, felt the need for a comprehensive textbook on Geotechnical Engineering that would efficiently cater to all the basic requirements of undergraduate students and proceeded to fill the gap. The lucid explanations in the book are strengthened by:

- extensive use of figures and graphs,
- citing of examples, even from fields outside Geotechnical Engineering, for better understanding of the basic ideas and principles,
- solved numerical problems carefully designed to strengthen understanding,
- inclusion of emerging areas of Geotechnical Engineering such as geosynthesis, geotechnical earthquake engineering and environmental geotechniques.

Contents: *Preface* ◈ *Notations and units of measurement* ◈ Origin, Formation and Nature of Soils ◈ Functional Relationships ◈ Index Properties ◈ Effective Stress ◈ Permeability ◈ Seepage and Flownets ◈ Stress Distribution ◈ Consolidation ◈ Compaction ◈ Shear Strength ◈ Earth Pressure ◈ Retaining Walls ◈ Sheet Piles ◈ Stability of Slopes ◈ Site Investigation ◈ Bearing Capacity ◈ Pile Foundation ◈ Ground Improvement ◈ Stone Columns ◈ Geosynthetics ◈ Expansive Soils ◈ Environmental Geotechnology ◈ Introductory Rock Mechanics ◈ Machine Foundations ◈ Geotechnical Earthquake Engineering ◈ *References* ◈ *Index*

2016	912 pp.	Paperback
978-81-7371-990-5		₹ 850.00

Guide to Soil Mechanics, A

Malcolm D Bolton
Chair, Soil Mechanics; Director, Schofield Centrifuge Centre for Geotechnical Processes and Construction, University of Cambridge, UK

The book covers all the soil mechanics and foundation engineering topics that are commonly included in civil engineering degree courses, and provides a number of springboards into related advanced topics. Although it is intended principally to satisfy the needs of civil engineering students, this guide should also prove useful to those practising engineers who are unaware of the powerful and elegant reconstruction of the subject which has been made possible by the recent concepts of plasticity, dilatancy and critical states. The book has been written on the assumption that ideas rather than codes or formulae are the backbone of successful engineering. It has been well received around the world both by new students and experienced engineers.

Contents: *Preface* ◈ *Acknowledgement* ◈ *Introduction* ◈ Constitution of Soil ◈ Groundwater ◈ Friction ◈ Cohesion ◈ Small Strains ◈ Transient Flow ◈ The Deformation of a Soil Element ◈ The Collapse of Soil Construction ◈ Towards Design ◈ *References* ◈ *Index*

2003	452 pp.	Paperback
978-81-7371-425-2		₹ 750.00

Handbook of Fire Technology, A

R S Gupta
Formerly Director, National Fire Service College, Nagpur, India

This is a basic book for fire officers, security and safety officers and all others concerned with the prevention of fires. It deals with the fundamentals of fire engineering. Precautionary measures, extinction and elimination of risks in industrial establishments have been given special importance. Useful data on fire prevention methods for high-rise buildings, storage of certain industrial raw materials and finished products, basic requirements for some commonly used fire appliances, and fire-fighting equipment have been dealt with carefully.

Contents: *Preface of the First Edition* ◈ *Preface of the Second Edition* ◈ *Part 1:* Chemistry of Combustion ◈ Essential Prerequisites ◈ Elements and their Compounds Properties and Hazards ◈ Some Common Salts and their Fire Hazards ◈ Study of a few Gases From the point of Fire Hazards ◈ Common Organic Volatile Liquids of Hazardous Nature ◈ Characteristics of some strong Oxidizing Agents ◈ General Principles of safe storage of some Chemical Compounds ◈ Common Characteristics, Storage, Fire Hazard and Fire –lighting of some commercial Articles ◈ Fire and Explosion Hazards in Plastics ◈ Storage Risk ◈ Liquefied Petroleum Gas – Handing and Storage ◈ *Appendix 1* ◈ *Appendix 2* ◈ *Appendix 3* ◈ *Part 2:* Electricity in Relation to Fire Hazard ◈ Preliminaries ◈ Electric Wiring and Types of Cables ◈ Use of Electricity for Lighting ◈ Generation of Electricity ◈ Motors and starters ◈ Application of Ohm's Law – Series and parallel Connections ◈ Heating Effect of Current Application of Joule's Law ◈ Static Electricity ◈ Fires dues to Electricity ◈ Protective Devices and Safety Requirement ◈ Portable Equipment and safety Requirement ◈ Electrical Accidents and their Causes ◈ Fire Risk at Generating stations – Hints on Safety ◈ *Part 3:* Hydraulics and Water Supplies for Firemen ◈ Introduction ◈ Water Horse power and Efficiency of Pumps ◈ Water Relay ◈ Calculation of Area, Volume and Capacity of Different Types of Containers ◈ Problems Relating to moving Bodies. Force etc. Problems on Thermal Expansion Specific, Heat and Thermal Capacity Problems Relating to Expansion of Gases Problems Relating to Density and Specific Gravity Hydraulics and water supply for Firemen ◈ *Appendix 4* ◈ *Appendix 5* ◈ *Appendix 6* ◈ *Appendix 7* ◈ *Appendix 8* ◈ *Appendix 9* ◈ *Appendix 10* ◈ *Appendix 11* ◈ *Appendix 12* ◈ *Appendix 13* ◈ *Appendix 14* ◈ *Appendix 15* ◈ *Appendix 16* ◈ *Appendix 17* ◈ *Appendix 18* ◈ *Appendix 19* ◈ *Appendix 20* ◈ *Bibliography* ◈ *Index*

2009	355 pp.	Paperback
978-81-7371-686-7		₹ 650.00

Intelligent Transportation Systems

FORTHCOMING

R Srinivasa Kumar
Faculty Member, Department of Civil Engineering, University College of Engineering, Osmania University, Hyderabad, India

This book conforms to the new syllabus of Intelligent Transportation Systems proposed by AICTE for the UG course in Civil Engineering as an Elective/Open Elective subject. This subject is also being offered to PG students (ME/ M.Tech, Transportation Engineering) by all universities, institutions and colleges in India. The book includes the historical background and fundamentals such as detector technology, overview of ITS implementation in developed and developing countries, ITS data collection techniques, application of sensors to traffic management, data fusion at traffic management centres, sensor plan and specification requirements, elements of vehicle location and route navigation and guidance concepts.

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Introduction to Soil Reinforcement and Geosynthetics, An

G L Sivakumar Babu

Professor, Department of Civil Engineering; Chairman, Centre for Continuing Education, Indian Institute of Science, Bengaluru, India

This book introduces the concepts, applications and potential of soil reinforcement and geosynthetics to civil engineering students, academicians, and consultants. The material is lucidly presented with adequate number of solved examples. The theory is enriched by apt illustrations and a comprehensive coverage of all the areas of application.

Contents: *Preface* ◈ *Acknowledgements* ◈ *Introduction* ◈ Design Principle and Influencing Factors ◈ Materials and Material Properties ◈ Improvement of Bearing Capacity ◈ Design of Reinforced Soil Slopes ◈ Design of Reinforced Soil Retaining Walls ◈ Embank on Soft Soil ◈ Soil Nailing ◈ Use of Geosynthetics for Filtration and Drainage ◈ Use of Geosynthetics in Roads ◈ Geosynthetics in Landfills ◈ Natural Geotextiles ◈ *Index*

Available in print and e-book formats.
For details, visit www.universitiespress.com.

2005	208 pp.	Paperback
978-81-7371-481-8		₹ 475.00

Introduction to Strength of Materials

D S Prakash Rao

Formerly Professor, Department of Civil Engineering, University College of Engineering, Osmania University, Hyderabad, India

The book includes the elementary topics of the course on strength of materials for undergraduate programmes in engineering and technology. It is developed in the SI units, adopting international notation and conventions. Several typical example problems are presented systematically, and exercise problems are included to help students understand the concepts better. *The book, written in simple language, explains the theoretical concepts and helps develop problem-solving abilities in students.*

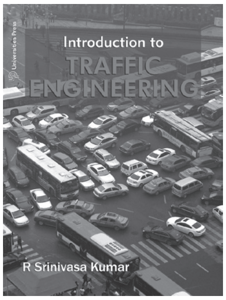
Contents: *Preface* ◈ *Notation* ◈ *Introduction* ◈ Direct Stresses ◈ Impact Loading and Strain Energy ◈ Shear Stresses ◈ Stress Analysis ◈ Analysis of Beams ◈ Flexural Analysis of Beams ◈ Combined Stresses ◈ Torsional Stresses ◈ *Answer to Selected Problems* ◈ *Glossary* ◈ *References* ◈ *Index*

2002	172 pp.	Paperback
978-81-7371-405-4		₹ 475.00

Introduction to
Traffic Engineering

R Srinivasa Kumar

Faculty member, Department of Civil Engineering, University College of Engineering, Osmania University, Hyderabad, India



Traffic Engineering deals with the planning, design and implementation of traffic flow, and road infrastructure and facilities. This book provides in-depth information about road user characteristics and highway geometric design. It explains the collection and analysis of different types of traffic data, obtained as part of various studies. It also describes the design of different types of intersections and illustrates the use of road markings and lighting. Recent advances such as Intelligent Transportation System are also explored. This book will be useful to undergraduate and postgraduate students as well as to researchers and practicing engineers.

Salient Features

- Contains more than 500 detailed figures to help readers visualise concepts
- Features numerous solved examples, particularly those related to IRC, BIS and AASHTO
- Explains global and Indian standards, with emphasis on the Indian scenario
- Includes multiple choice questions and review questions at the end of every chapter
- Contains an exhaustive list of references
- Helps prepare students for state-level engineering examinations and for GATE and IES

Contents: *Preface* ◆ *Acknowledgements* ◆ Introduction to Road Traffic Engineering ◆ Road User and Vehicle Characteristics ◆ Highway Geometric Design ◆ Traffic Volume Studies ◆ Traffic Count Techniques and Analysis of Traffic Volume Data ◆ Spot Speed Studies and Characteristics ◆ Origin and Destination Studies ◆ Travel Time and Delay Studies ◆ Intersection Delay Studies ◆ Traffic Flow Characteristics ◆ Introduction to Intersections and Design Guidelines for At-Grade Intersections ◆ Design and Analysis of Rotary Intersections ◆ Design of Signalised Intersections ◆ Basics of Queuing Theory and Delay Analysis ◆ Design Guidelines for Grade-Separated Intersections and Interchanges ◆ Parking Studies ◆ Road Markings ◆ Road Traffic Signs ◆ Roadway Lighting ◆ Road Traffic Accident Studies and Reconstruction ◆ Analysis of Accident Data and Road Safety ◆ Intelligent Transportation System ◆ *References* ◆ *Appendix* ◆ *Index*

2018	832 pp.	Paperback
978-93-86235-47-3		₹ 825.00

Manual of Tropical Housing and Building: Climatic Design

O H Koenigsberger
Formerly Professor and Head, Development Planning Unit, School of Environmental Studies, University of London, UK

T G Ingersoll
Formerly Deputy Head of the Housing and Research Unit, University of Science and Technology, Kumasi, Ghana

Alan Mayhew
Formerly Director of Development, University College of Cape Coast, Ghana

S V Szokolay
Formerly Department of Architecture, Polytechnic of Central London, London, UK

Designed as a *textbook for students of architecture, housing, environmental design and climate control in tropical countries*, this book deals with the theory of climatic design and shows how practical solutions are derived from theoretical understanding.

Contents: *List of figures* ◆ *List of symbols* ◆ *Preface and acknowledgements* ◆ *Introduction* ◆ Climate: The given conditions ◆ Comfort: The desirable conditions ◆ Principles of thermal design ◆ Means of thermal control ◆ Light and lighting ◆ Noise and noise control ◆ Application ◆ Design aids ◆ *Bibliography* ◆ *Appendices* ◆ *Index*

1975	320 pp.	Paperback
978-81-7371-697-3		₹ 595.00

Mechanics of Composite Materials and Structures

Madhujit Mukhopadhyay
Formerly Professor, Department of Ocean Engineering and Naval Architecture, Indian Institute of Technology Kharagpur, Kharagpur, India

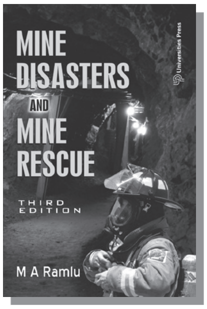
This book is an attempt to present an integrated and unified approach to the analysis of FRP composite materials which have a wide range of applications in various engineering structures—offshore, maritime, aerospace and civil engineering; machine components; chemical engineering applications, and so on. The micromechanics and lamination theory of composite structural elements are discussed in detail. Closed form analytical solutions as well as numerical techniques for solving problems in FRP analysis are presented. Applications of the finite element method for the analysis of FRP structural elements are given considerable emphasis.

Contents: *Preface* ◆ Introduction to Composite Materials ◆ Processing of FRP Composites ◆ Micromechanical Analysis of Composite Strength and Stiffness ◆ Elastic Properties of the Unidirectional Lamina ◆ Analysis of Laminated Composites ◆ Analytical Methods of Laminated Plate ◆ Analysis of Composite Beams ◈ Finite Element Analysis of Composite Structures ◈ Hydrothermal Effects in Laminates ◈ Failure Theories and Strength of a Unidirectional Lamina ◈ Analysis of Laminate Strength ◈ Design of Fiber Reinforced Composite Structures ◈ Composite Joints ◈ *Index*

2004	388 pp.	Paperback
978-81-7371-477-1		₹ 775.00

Mine Disasters and Mine Rescue
(Third Edition)

M A Ramlu
Formerly Head, Department of Mining Engineering, Indian Institute of Technology Kharagpur, Kharagpur, India



This self-contained classic textbook on the subject of mine disasters and mine rescue draws on the author's nearly thirty years of teaching and research experience and his abiding interest in mine safety for the benefit of mining engineering students. It provides a comprehensive view of the hazards constantly posed by fires, explosions, coal and gas outbursts and inundations in mines and the various rescue equipment in use, including the recent ones. Combating the problem of acid mine drainage and the use of explosibility diagrams, including USBM, for predicting flammability of firegases are some of the significant additions to the third edition.

Besides mining engineering students, this book will also be of great value to practising mining engineers, safety enforcement agencies, and rescue organisations.

Contents: *Preface to the Third Edition* ◈ *Preface to the Second Edition* ◈ *Preface to the First Edition* ◈ Mine Fires ◈ Mine Explosions ◈ Mine Gases ◈ Outbursts of Coal and Gas ◈ Sampling of Mine Atmospheres and Interpretation of their Analysis ◈ Reopening of Sealed-off Areas in Mines ◈ Mine Rescue ◈ Water Inundations ◈ *Appendix 1: Coalmines Regulations* ◈ *Appendix 2: Mines Rescue Rules* ◈ *References* ◈ *Index*

2018	464 pp.	Paperback
978-93-86235-58-9		₹ 1,195.00

Numerical Examples, Problems and Objective Questions in Geotechnical Engineering

A V Narasimha Rao
Professor, Department of Civil Engineering, SVU College of Engineering, Tirupati, India

C Venkatramaiah
Formerly Professor, Department of Civil Engineering, S V University College of Engineering, Tirupati, India

This book is a question and problems book in geotechnical engineering, covering soil mechanics and foundation engineering. It has a preamble for each chapter containing an introduction, scope, definitions and relevant formulae. This is followed by a *significant number of worked examples, exercise problems and objective questions. Answers to the objective questions are given at the end of the book.*

Contents: *Foreword* ◈ *Preface* ◈ Solids-water-air relationships in soils ◈ Index properties and classification of soils ◈ Permeability and capillarity of Soils ◈ Seepage through soil ◈ Compressibility and consolidation of soil ◈ Shearing strength of soil ◈ Compaction of soil ◈ Stability of earth slopes ◈ Site investigation and subsoil exploration ◈ Stress distribution in soil ◈ Settlement analysis ◈ Earth pressure and retaining walls ◈ Bearing capacity of soil and shallow foundations ◈ Pile foundations ◈ Drilled piers and caissons ◈ Well foundations ◈ Elements of soil dynamics and machine foundations ◈ *Special topics* ◈ *Index*

2000	600 pp.	Paperback
978-81-7371-145-9		₹ 550.00

Pavement Design

R Srinivasa Kumar
Faculty Member, Department of Civil Engineering, University College of Engineering, Osmania University, Hyderabad, India

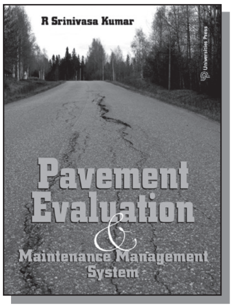
This comprehensive textbook on pavement engineering provides a clear and thorough understanding of the fundamental principles of pavement design. *The book also includes the latest methods/techniques on pavement materials testing, design and evaluation and uses the latest code provisions and design methods of pavements recommended by the Indian Roads Congress (IRC)* and *Bureau of Indian Standards (BIS), which makes it suitable even for an elective or a postgraduate programme in civil engineering.* Included in the book are discussions on vehicle–pavement interaction, investigations by falling weight deflectometer (FWD) and heavy vehicle simulator (HVS), and design aspects of low volume and rural roads, and surface and subsurface drainage considerations for pavements. Innovative developments in pavement technology such as pre-stressed concrete pavements and the use of geotextiles in pavement engineering are also covered. *Solved examples* of varied types are included throughout the book and so are *exercises at the end of all chapters,* which readers will find well suited for reviewing the concepts learnt.

Contents: *Preface* ◆ *Acknowledgements* ◆ Factors Affecting Pavement Design ◆ Stresses in Pavements ◆ Stresses in Flexible Pavements ◆ Stresses in Rigid Pavements ◆ Design of Flexible Pavements ◆ Design of Rigid Pavements ◆ Pavement Design for Low Volume Roads ◆ *References* ◆ *Index*

2013	360 pp.	Paperback
978-81-7371-885-4		₹ 575.00

Pavement Evaluation and Maintenance Management System

R Srinivasa Kumar
Faculty Member, Department of Civil Engineering, University College of Engineering, Osmania University, Hyderabad, India



The role of properly timed and qualitatively controlled rehabilitation and maintenance measures in preserving a pavement's surface quality and ensuring that the structure lasts in serviceable condition through its design life and beyond is well recognized. This book explores the methods of structural and functional evaluation of flexible and rigid pavements for gathering critical data on the condition of pavements to enable strategic decision making with regard to rehabilitation/maintenance measures under budgetary constraints. It provides detailed descriptions of the state-of-the-art equipment/devices/techniques used in these evaluations for determining parameters of relevance such as road roughness, skid resistance and existing strength of pavements. Several solved examples are included in the book to give readers a hands-on approach on the various techniques of measurements and evaluation of pavement condition. The significance of a pavement management system in providing a systematic, efficient, consistent and cost-effective decision making mechanism for optimising the maintenance of road networks is explored in detail along with implementation aspects.

Some of the salient features of the book are: Concise introduction to various contact and non-contact type equipment for pavement evaluation; standards and models for assessing road roughness and frictional properties of pavements ◆ Inclusion of labelled photographs of various models of equipment giving details of their components, mode of operation and output data ◆ Categorisation of pavement distresses and pavement condition rating methods, providing an overview of methods of pavement condition assessment ◆ Maintenance and rehabilitation measures mapped to the pavement condition ◆ Structural evaluation of pavements using ground penetrating radar ◆ Detailed introduction to pavement management system (PMS), which includes life cycle cost analysis, ranking of maintenance and rehabilitation projects, various approaches to PMS, PMS software and PMS implementation

Contents: *Preface* ◆ *Acknowledgements* ◆ Pavement Types and Their Functional Aspects ◆ Introduction to Pavement Evaluation ◆ Introduction to Functional Evaluation of Pavements ◆ Pavement Roughness Measurement Systems ◆ Contact Type Equipment (Part 1) ◆ Contact-type Equipment (Part 2): Response-type Road Roughness Measuring System

(RTRRMS) ◈ Introduction to Non-contact Type Profilers (Part 1) ◈ Non-contact Profilers (Part 2): High-speed Profilers ◈ Non-contact Profilers (Part 3): Lightweight Profilers ◈ Statistical Considerations ◈ Introduction to Frictional Evaluation of Pavements ◈ Pavement Surface Texture ◈ Friction Measurement Methods (Part 1) ◈ Friction Measurement Methods (Part 2) ◈ Wet Pavement Friction Models ◈ Pavement Friction Management System (PFMS) ◈ Methodology for Design and Maintenance of Pavement Friction Courses ◈ Distress Surveys and Maintenance Alternatives for Asphalt Concrete Pavement ◈ Distress Surveys and Maintenance Alternatives for Portland Cement Concrete Pavement ◈ Structural Evaluation of Pavements Using Benkelman Beam and Falling Weight Deflectometer ◈ Structural Evaluation of Unbound Granular and Sub-grade Layers Using Dynamic Cone Penetrometer (DCP) ◈ Structural Evalution of Pavements Using Heavy Vehicle Simulator (HVS) ◈ Ground Penetrating Radar (GPR): An Effective NDT Tool for Pavement Evaluation ◈ Pavement Drainage Design ◈ Pavement Condition Rating Methods ◈ Pavement Maintenance Management System (PMS) ◈ *References* ◈ *Appendix* ◈ *Index*

2014	588 pp.	Paperback
978-81-7371-922-6		₹ 1,450.00

Principles of Fluid Mechanics and Fluid Machines

(Third Edition)

N Narayana Pillai

See page 84

Recent Advances in Structural Engineering

K S Jagadish (Ed.)

Professor, Department of Civil Engineering, Indian Institute of Science, Bengaluru, India

R N Iyengar (Ed.)

Director, Centre for Disaster Mitigation, Jain University, Bengaluru; formerly KSIIDC Chair Professor, Department of Civil Engineering and Professor, Centre for Atmospheric and Oceanic Sciences, Indian Institute of Science, Bengaluru, India

This book contains state-of-the-art review articles on specific research areas in the civil engineering discipline—the areas include geotechnical engineering, hydraulics and water resources engineering, and structural engineering. The articles are written by invited authors who are currently active at the international level in their respective research fields. Each of the articles comprises an informed assessment of the specific field of specialisation, with a critical appraisal of recent advances and perspectives for future research directions and would thus highlight the needs for R&D in the Indian context in specific areas of civil engineering. *The editorial board for this publication consists of distinguished members of the faculty of the Department of Civil Engineering, Indian Institute of Science, Bangalore.*

Contents: *Preface* ◈ Advance in the Design of Concrete Structural Members ◈ State-of-the-art Report on Ferrocement and Fiber Reinforced Concrete ◈ A Review of Recent Advances in Layout Optimization of Skeletal Structures ◈ Modeling and Evaluation of Structural Reliability: Current Status and Future Directions ◈ Recent Advances in the Study of Chaos in Engineering Dynamics ◈ Neural Networks Applications to Structural Identification: An Overview ◈ Continuum Damage Mechanics: Recent Advances and Research Needs ◈ Fracture Mechanics of Concrete Structures: A State-of-the-art with A Historical Review ◈ Interface Fracture: A State of the Art Recapitulation ◈ Developments in Modeling and Analysis of Railway Tracks ◈ *List of Contributors* ◈ *Index*

2005	408 pp.	Paperback
978-81-7371-493-1		₹ 1,150.00

Remote Sensing and Its Applications

L R A Narayan

Formerly Head of Applications, National Remote Sensing Agency, Hyderabad, India

This compilation of articles published in *The Hindu* provides a clear understanding of Remote Sensing, the amazing technology which is opening up new vistas for the mapping, management, and monitoring of our natural resources. Richly illustrated and easy to read, the book will be of interest to students, teachers, scientists and non-specialists.

Contents: The Eye in the Sky ◈ Keeping Track of the Satellite ◈ Applications of Remote Sensing Data ◈ Remote Sensing over Fishing Zones ◈ Impact of Mining Activities on Environment-I ◆ Impact of Mining Activities on Environment-I! ◆ Remote Sensing and Biodiversity ◆ Satellites and Coastal Zones ◆ Monitoring Forest Cover ◆ Microwave Remote Sensing ◆ Information and the Space Age ◆ Remote Sensing for Route Alignment ◆ Remote Sensing for Flood Management ◆ Remote Sensing for Geographical Information Systems ◆ Monitoring Urban Growth using Remote Sensing ◆ Specialised Application of Remote Sensing ◆ Mapping Wastelands through Remote Sensing ◆ Digital Forest Management ◆ Remote Sensing: Sky's the Limit ◆ The Impact of Multi-Purpose River Projects ◆ What Space Technology has to Offer ◆ Preventing Natural Disasters ◆ Opportunities OpenUp ◆ Careers in Remote Sensing ◆ Remote Sensing for the Military ◆ Remote Sensing for Managing Water Resources ◆ Satellites and Aquaculture ◆ Using Land through Remote Sensing ◆ Watersheds and Remote Sensing ◆ Resolutions in Remote Sensing ◆ Gaining Ground Rapidly ◆ Valuable Aid for Crop Production ◆ Valuable Information Tool ◆ Geoinformatics and Human Resources ◆ Satellite Surveillance for Drought Conditions ◆ Crop Forecast from Satellite Data ◆ Sentinel in the Sky ◆ Remote Sensing by RadarSat ◆ Remote Sensing to Help Boost Tourism ◆ Education in Space Science ◆ Planning out Infrastructure ◆ An Application of Geotechnology ◆ Estimating Forest Cover ◆ Tapping Potential ◆ Understanding Oceans ◆ Managing Groundwater ◆ Databases for Geographic Systems

Available in print and e-book formats.
For details, visit www.universitiespress.com.

1999	236 pp.	Paperback
978-81-7371-268-5		₹ 725.00

Strength of Materials
(Third Edition)

B S Basavarajaiah
Formerly Professor and Head, Department of Civil Engineering, National Institute of Technology, Karnataka (formerly Karnataka Regional Engineering College), Surathkal, India

P Mahadevappa
Formerly Professor, Department of Civil Engineering, National Institute of Technology, Karnataka (formerly Karnataka Regional Engineering College), Surathkal, India

The behaviour of materials when subjected to different types of loads is of basic interest to engineers. *This book, developed for an introductory course on strength of materials for engineering and architecture courses*, provides a comprehensive coverage of the concepts and principles of mechanics of materials in clear and easy-to-understand language. Students will appreciate the large number of worked-out examples and exercises that have been included to give them an exposure to a variety of situations requiring analysis of systems for their strength under stress.

Special Features: The subject matter is presented in a simple and lucid language ◆ Each chapter deals precisely with definitions, analysis, derivations and applications ◆ A large number of worked-out examples incorporating a variety of problems and exercises.

Contents: Simple Stresses and Strains ◆ Compound Stresses and Strains ◆ Bending Moments and Shearing Forces ◆ Bending Stresses in Beams ◆ Deflection of Beams ◆ Torsion ◆ Fixed and Continuous Beams ◆ Columns and Struts ◆ Thin and Thick Cylinders ◆ Theories of Elastic Failure ◆ *Appendix* ◆ *Index*

Distributed worldwide (except India)
by CRC Press LLC, USA, Taylor and Francis Group

2010	768 pp.	Paperback
978-81-7371-458-0		₹ 750.00

Strength of Materials: A Practical Approach
(Volume 1)

D S Prakash Rao
Formerly Professor, Department of Civil Engineering, University College of Engineering, Osmania University, Hyderabad, India

The theoretical as well as practical aspects of the strength of materials are presented in this book in a systematic way to enable students to understand the basic principles and subsequently prepare themselves for the tasks of designing large structures. The system of units, notation and conventions are explained clearly, along with a brief historical review of the developments in structural mechanics. Advanced techniques such as non-linear elasticity, three-dimensional stress analysis, Fourier series (and its application), the finite difference method (and its application) and theory of plasticity are covered in this book, which presents a gradual transition to the theory of structural analysis besides developing elementary theories of solid mechanics.

Contents: *Preface* ◈ *Notation* ◈ *Introduction* ◈ Direct stresses ◈ Impact loading and strain energy ◈ Shear stresses ◈ Stress and strain analysis ◈ Analysis of beams ◈ Flexural analysis of beams ◈ Combined stresses ◈ Torsional tresses ◈ Deflections in beams ◈ Statically indeterminate beams ◈ Determinate arches and frames ◈ Trusses ◈ Cylinders and spherical shells ◈ Columns and struts ◈ Springs ◈ *Appendix A* ◈ *Appendix B Short questions answers to selected problems* ◈ *Glossary* ◈ *References* ◈ *Index*

1999	664 pp.	Paperback
978-81-7371-125-1		₹ 695.00

Structural Analysis: A Unified Approach

D S Prakash Rao
Formerly Professor, Department of Civil Engineering, University College of Engineering, Osmania University, Hyderabad, India

This book presents a unified approach to the analysis of structures by combining classical and matrix methods of analysis. It is designed to provide a thorough understanding of the basic concepts of structural analysis and to develop intuitive perception in students. Several simplifying analytical techniques taught in European schools are discussed here. The advantages and limitations of various methods, and the differences in their approaches are discussed in detail.

Contents: Structural indeterminacy ◈ Energy principles ◈ Deflections in statically determinate beams ◈ Deflections in statically determinate trusses ◈ Statically indeterminate beams ◈ Statically indeterminate trusses ◈ Statically indeterminate frames ◈ Iterative methods ◈ Approximate methods ◈ Symmetry and antimetry ◈ Deflections in indeterminate structures ◈ Cables and arches ◈ Influence lines for determinate structures ◈ Influence lines for statically indeterminate structures ◈ Rolling loads ◈ Space trusses ◈ Column analogy ◈ Matrix methods ◈ Matrix analysis of indeterminate trusses ◈ Matrix analysis of indeterminate beams ◈ Matrix analysis of frames ◈ *Appendices*

1996	672 pp.	Paperback
978-81-7371-027-8		₹ 825.00

Structural Design and Drawing
(Third Edition)

N Krishna Raju
Emeritus Professor of Civil Engineering, M S Ramaiah Institute of Technology, Bengaluru, India

Structural Design and Drawing: Reinforced Concrete and Steel provides, in SI units, an integrated text catering to the needs of civil and structural engineering students and practising engineers. The various design examples presented conform to the latest Indian Standard Codes dealing with reinforced concrete and steel structures. Detailed drawings along with carefully chosen examples, many of them from examination papers, greatly facilitate the understanding of the subject.

The third edition incorporates the various changes required in the design of steel structures to conform to the recently revised *Indian Standard Code IS: 800–2007*.

Contents: *Preface to the third edition* ◈ *Preface to the second edition* ◈ *Preface to the first edition* ◈ *Acknowledgements* ◈ *List of symbols* ◈ *List of abbreviations* ◈ *Part I:* Reinforced Concrete Structures (IS:456-2000) ◈ Design principles of reinforced concrete structures ◈ Reinforced concrete T-beam and slab-floor system ◈ Flat-slab floor system ◈ Columns and footing ◈ Water tanks ◈ Retaining walls ◈ Staircases ◈ Portal frames ◈ Grid or coffered floor system ◈ Design of bridge deck systems ◈ *Part II:* Steel Structures ◈ Design principles ◈ Structural connections ◈ Flexural members ◈ Plate girders ◈ Steel Columns ◈ Column base and foundations ◈ Roof trusses ◈ Beam-columns ◈ Mill bents ◈ Composite bridge deck systems ◈ *Part III: Appendix* ◈ *References* ◈ *Index*

2009	428 pp.	Paperback
978-81-7371-670-6		₹ 595.00

Textbook of Highway Engineering

R Srinivasa Kumar
Faculty Member, Department of Civil Engineering, University College of Engineering, Osmania University, Hyderabad, India

This comprehensive text on highway engineering designed primarily for civil engineering students incorporates existing and latest techniques on pavement materials testing, design and evaluation.

The text comprising *ten chapters* explains the fundamental concepts and principles of highway engineering in a simple manner. Different types of *solved example problems* with neat sketches, along with *typical exercise problems* at end of each chapter help students to develop a sound understanding of the concepts covered.

Contents: *Preface* ◈ *Acknowledgements* ◈ Organisation of Text ◈ Highway Development Programmes and Surveys ◈ Highway Geometric Design ◈ Characterisation of Sub-Grade Soil and Mineral Aggregate ◈ Bituminous Materials ◈ Design of Cement Concrete Mixes for Pavements ◈ Factors Affecting Pavement Design ◈ Analysis and Design of Flexible Pavements ◈ Analysis and Design of Rigid Pavements ◈ Structural Evaluation of Pavements ◈ Structural Evaluation of Unbound Granular and Sub-grade Layers Using Dynamic Cone Penetrometer (DCP) ◈ *Annexure* ◈ *References* ◈ *Index*

2011	616 pp.	Paperback
978-81-7371-681-2		₹ 625.00

Textbook of Surveying
(Second Edition)

C Venkatramaiah
Formerly Professor, Department of Civil Engineering, S V University College of Engineering, Tirupati, India

The revised edition of the *Textbook of Surveying* incorporates the topics that were needed for making the book totally *sufficient for meeting the curriculum needs at the undergraduate level.* The new topics are: trilateration, methods of determination of azimuth of a survey line, methods of determination of latitude of a place, Total Station (an advanced and modern surveying instrument), geographic information systems. With this, *the book can serve as a comprehensive textbook for core course on the subject, usually offered over two semesters in technical universities.*

Contents: *Foreword* ◈ *Preface to the Second Edition* ◈ *Preface to the First Edition* ◈ *Introduction* ◈ Survey Measurements and Errors ◈ Angles, Bearings and Azimuths ◈ Chain Surveying ◈ Compass Surveying ◈ Plane Table Surveying ◈ Levelling and Contouring ◈ Minor Instruments ◈ Theodolite Surveying ◈ Areas and Volumes ◈ Tacheometry ◈ Curve Ranging ◈ Triangulation and Baseline Measurement ◈ Trigonometric Levelling ◈ Hydrographic Surveying ◈ Construction Surveys

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For details, visit www.universitiespress.com.

2011	752 pp.	Paperback
978-81-7371-740-6		₹ 795.00

Theory of Plates

K Chandrashekhara
Emeritus Fellow, Department of Civil Engineering, Indian Institute of Science, Bengaluru; Fellow, Indian National Academy of Engineering and the Institution of Engineers (India), India

This book is self-contained and the coverage assumes an elementary knowledge of mechanics of materials, and mathematics. It *provides a simple, comprehensive and mathematical presentation of plate theories, with their application to plate bending problems.* A balance between theory and numerical problems has been maintained throughout the book. Both analytical and numerical methods have been addressed, with *a large number of solved examples* to illustrate the application of these methods to various plate problems of practical interest. Wherever possible, *formulae and tabulation of plate problem solutions have been provided* to help the practising engineer carry out design calculations with ease. *Exercises* at the end of each chapter help the student to test his/her understanding of the subject thus far.

Contents: *Preface* ◈ Basic Equations of Theory of Elasticity ◈ Basic Equations of Thin Plate Theory ◈ Bending of Isotropic Rectangular Plates ◈ Bending of Orthotropic Rectangular Plates ◈ Bending of Circular Plates ◈ Approximate Methods ◈ Numerical Methods ◈ Shear Deformation Theories ◈ Bending Analysis of Laminated Composite Plates ◈ Analysis of Thick Plates ◈ *Appendix* ◈ *References* ◈ *Index*

2000	256 pp.	Paperback
978-81-7371-253-1		₹ 995.00

Thin Shells: Theory and Problems

J Raamachandran
Professor, Department of Applied Mechanics, Indian Institute of Technology Madras, Chennai, India

This comprehensive textbook on thin shells meets the requirements of Indian universities. It covers *the theory of shells and concrete shell structures for advanced undergraduate and postgraduate courses as well as for practicing engineers.*

The material is presented in the form of questions and answers and includes solved problems as well as supplementary problems which students have to tackle. This calls for constant application of what has been learnt, thereby training students to answer questions within an allotted time.

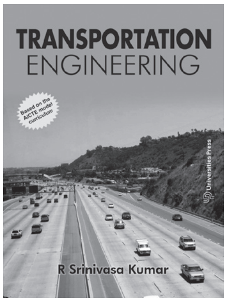
Starting from differential geometry, the book develops the basic equations using both conventional (differential element approach) and variational formulations. Equations are developed in the general curvilinear coordinate system and particularised in later chapters for shells of special shape. Their limitations while particularising for shells with rectangular plan form are explicitly brought out. The numerical methods that play a very significant role today have been dealt with elaborately, with a complete listing of programs, which can be used straightaway to solve problems. They will serve as useful models on which students can develop new programs.

Contents: *Preface* ◆ *List of Symbols* ◆ Introduction to the theory of surfaces ◆ Constitutive equations of the theory of thin elastic shells ◆ Membrane theory of shells ◆ Bending theory of cyclindrical shells ◆ Bending theory of shells of revolution ◆ Shells of general shape

1993	504 pp.	Paperback
978-81-7371-890-8		₹ 825.00

Transportation Engineering NEW

R Srinivasa Kumar
Faculty Member, Department of Civil Engineering, University College of Engineering, Osmania University, Hyderabad, India



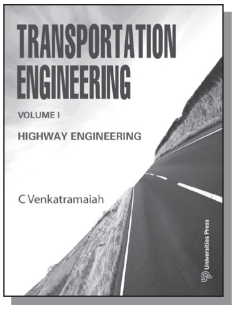
Transportation Engineering covers the design and functional aspects of highway engineering and design. Concise and thorough in its treatment of topics, the book elucidates the methods of highway development and planning, while also examining the choice of pavement materials based on usage criteria. Conforming to the AICTE syllabus and designed for undergraduate students of civil engineering, this book is spread across eleven chapters and includes the latest IRC codes in its discussion of the topics.

Contents: *Preface* ◆ *Acknowledgements* ◆ Highway Development Planning, Programs and Surveys ◆ Highway Geometric Design ◆ Design Guidelines of Intersections ◆ Traffic Engineering and Control ◆ Traffic Regulation, Control and Devices ◆ Pavement Materials: Soils and Stone Aggregate ◆ Pavement Materials: Bituminous Binders and Bituminous Paving Mixes ◆ Pavement Materials: Portland Cement and Cement Concrete ◆ Factors Affecting Pavement Design and Performance ◆ Analysis and Design of Flexible Pavements ◆ Analysis and Design of Rigid Pavements ◆ *References* ◆ *Index*

2020	428 pp.	Paperback
978-93-89211-16-0		₹ 550.00

Transportation Engineering, Volume I

C Venkatramaiah
Formerly Professor, Department of Civil Engineering, S V University College of Engineering, Tirupati, India



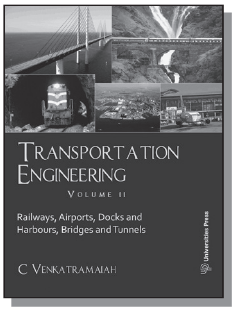
Transportation Engineering, Volume I covers the undergraduate curriculum in Highway Engineering and caters to the needs of civil engineering courses offered by technical universities across India. The book cites and specifies the latest IRC and IS codes, including the special publications, in its discussion of current highway engineering practices and testing specifications used in India while guiding the student through all the prescribed topics with clarity and academic rigour. With several fully solved problems and chapter-end exercises for practice, the book focuses on enabling the student to perform well in examinations, while also going into the details to drive home core concepts.

Contents: *Preface* ◆ Introduction ◆ Historical Aspects of Highway Development and Planning ◆ Highway Alignment and Surveys ◆ Geometric Design of Highways ◆ Traffic Engineering and Traffic Regulation ◆ Highway Intersections ◆ Highway Materials ◆ Highway Pavement Design ◆ Highway Construction and Drainage ◆ Hill Roads and Special Roads ◆ Highway Maintenance ◆ Roadside Development and Arboriculture ◆ Highway Economics, Financing and Administration ◆ *Appendices* ◆ *Index*

2015 684 pp. Paperback
978-81-7371-959-2 ₹ 725.00

Transportation Engineering, Volume II: Railways, Airports, Docks and Harbours, Bridges and Tunnels

C Venkatramaiah
Formerly, Professor of Civil Engineering,
S V University College of Engineering, Tirupati, India



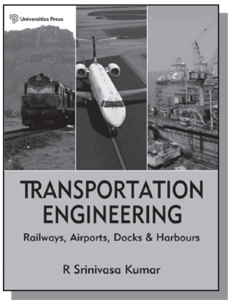
Transportation Engineering, Volume II deals at length, in five distinct parts, with the engineering aspects of Railways, Airports, Docks and Harbours and Bridges and Tunnels that form part of the undergraduate curriculum in Transportation Engineering and caters to the needs of civil engineering courses offered by technical universities across India. While the first three parts, along with Volume I, elaborate on the primary modes of transportation, the fourth and fifth parts are essential links to these modes. The book cites and specifies the latest IRS, IRC and IS codes, including the special publications, in its discussion of current engineering practices and testing specifications used in India while guiding the student through all the prescribed topics with clarity and academic rigour. With several fully solved problems and chapter-end exercises for practice, the book focuses on enabling the student to perform well in examinations, while also going into the details to drive home core concepts.

Contents: *Preface* ◆ *Part I:* Railway Engineering ◆ Introduction and Historical Aspects ◆ Railway Planning, Alignment and Surveys ◆ Railway Track and its Components ◆ Geometric Design of Railway Track ◆ Points and Crossings ◆ Stations and Yards – Layout and Equipment ◆ Signalling, Interlocking, and Train Control ◆ Track Construction and Maintenance ◆ Modernisation of Railways and Urban Railway Systems ◆ *Part II:* Airport Engineering ◆ General Considerations and Airport Planning ◆ Airport Layout, Geometrics and Design ◆ Design and Maintenance of Airport Pavements ◆ Airport Drainage ◆ Visual Aids and Air-traffic Control ◆ Heliports ◆ *Part III:* Dock and Harbour Engineering ◆ Introduction ◆ Planning and Layout of Harbours and Ports ◆ Natural Phenomena Affecting Harbour Design ◆ Facilities for Ports and Harbours ◆ Docks and Repair Facilities ◆ Maintenance and Dredging of Harbours ◆ *Part IV:* Bridge Engineering ◆ General Considerations and Classification ◆ Design Aspects of Bridges ◆ Construction of Foundations and Substructures ◆ Construction of Superstructures ◆ Maintenance, Testing and Strengthening of Bridges ◆ *Part V:* Tunnel Engineering ◆ General Considerations in Tunnelling ◆ Alignment and Surveying of Tunnels ◆ Tunnelling in Rock ◆ Tunnelling in Soft Soil ◆ Ventilation, Lighting and Drainage of Tunnels ◆ Operation and Maintenance of Tunnels ◆ *Appendices* ◆ *Index*

2016 980 pp. Paperback
978- 81-7371-998-1 ₹ 950.00

Transportation Engineering: Railways, Airports, Docks and Harbours

R Srinivasa Kumar
Faculty Member, Department of Civil Engineering,
University College of Engineering, Osmania University, Hyderabad, India


Universities Press
TRANSPORTATION ENGINEERING
Railways, Airports, Docks & Harbours
R Srinivasa Kumar

In a first course in transportation engineering at the undergraduate level, the various aspects of road transportation, particularly highway engineering, are generally covered in detail. This book extends the discussion to other critical components of the transportation system, namely railways, airways and waterways, by emphasizing the basic infrastructural components, principles of planning, functional design, operation and management of the infrastructure in each case. It dwells on the latest approaches/methodologies in the design and evaluation of railways, airports and docks & harbours, and includes a large number of illustrations, images and worked-out examples to enhance the understanding of the design elements and components of the system in a practical way.

Salient features of the book: *Railways:* Details of Indian Railway routes ◈ features of permanent way components ◈ geometric design of railway tracks ◈ functional aspects of points and crossings with solved examples on design of turnout components ◈ signals used in Indian Railways, their aspect form ◈ working principle of axle counter and track circuit ◈ particulars of automatic signalling system; types of interlocking systems and their merits and demerits

Airports: Airport master plan and runway orientation ◈ aircraft characteristics, design and orientation of runways using Wind Rose diagrams ◈ FAA design standard for minimum wind coverage ◈ classification of airports and estimation of design runway length (FAA and ICAO standards) ◈ standards for geometric components of runway and taxiway system as per FAA, ICAI and CASA ◈ description of instrument landing system (ILS), approach lighting system, VASI, precision approach path indicator lighting system and visual aids ◈ air traffic control (ATC) with the terminal component facilities ◈ design of runway pavements based on UFC, FAA, PCA, US Army and Air Force systems ◈ ACN-PCN system of rating aerodrome pavements ◈ airport pavement drainage system, failures-evaluation and the maintenance aspects

Docks & Harbours: Planning, layout, construction and maintenance of docks and harbours

Contents: *Preface* ◈ *Acknowledgements* ◈ Introduction to Railway Engineering ◈ Components of a Permanent Way ◈ Geometric Design of a Railway Track ◈ Points and Crossings of Railway Tracks ◈ Signalling and Interlocking of Railway Tracks ◈ Introduction to Airport Planning and Design ◈ Classification of Airports ◈ Orientation of Runways ◈ Design of Runway Length ◈ Geometric Components of the Runway and Taxiway System ◈ Airport Visual Aids ◈ Design of Runway Pavements ◈ ACN—PCN System of Rating Aerodrome Pavements ◈ Airport Pavement Drainage Systems ◈ Failures and Evaluation of Airport Pavements ◈ Maintenance of Airport Pavements ◈ Planning and Layout of Docks and Harbours ◈ Construction and Maintenance of Docks and Harbours ◈ *Index* ◈ *Appendix*

2014	348 pp.	Paperback
978-81-7371-924-0		₹ 525.00

ELECTRICAL ENGINEERING

Analysis of Thyristor Power-Conditioned Motors

S K Pillai

Formerly Professor, Department of Electrical Engineering, Indian Institute of Technology Bombay, Mumbai, India

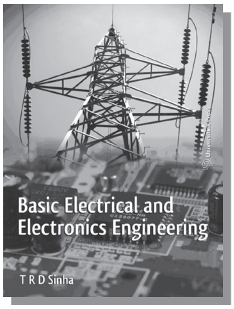
This book presents, systematically, the basic methods of analysis of both DC and AC motors fed from elementary configurations of commonly used power converters. The methods of determining both steady state and transient performance have been discussed.

Contents: Phase-controlled converter-fed d.c. motors ◈ Chopper-controlled d.c. motors ◈ Stator voltage-controlled induction motors ◈ Stator frequency-controlled induction motors ◈ Slip power-controlled induction motor ◈ Variable-speed synchronous motors ◈ Commutatorless d.c. motors ◈ Switched-reluctance motors

1996	196 pp.	Paperback
978-81-7371-014-8		₹ 475.00

Basic Electrical and Electronics Engineering

T R D Sinha
Formerly Professor and Head, Department of Electrical Engineering, NIT Jamshedpur, India



This book covers the topics prescribed in the first-year syllabus of undergraduate engineering courses in the subject. Precise in detail and replete with solved examples, the book provides an overview of the fundamental aspects of electrical and electronics engineering before examining the core concepts in lucid language for the benefit of new learners as well as those appearing for GATE and other competitive examinations.

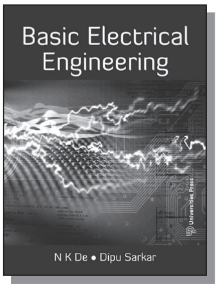
Contents: *Preface* ◈ Preparatory Concepts: An Overview ◈ Direct Current Circuits ◈ Alternating Current Circuits ◈ Electromagnetism and Magnetic Circuits ◈ Transformers ◈ Rotating Electrical Machines ◈ Basic Electronic Components ◈ Basic Digital Electronics ◈ Transducers ◈ *Appendices* ◈ *Index*

2018	548 pp.	Paperback
978-93-86235-51-0		₹ 650.00

Basic Electrical Engineering

(Late) N K De
Former Professor, Department of Electrical Engineering, Narula Institute of Technology, Kolkata, India

Dipu Sarkar
Assistant Professor, Electrical and Electronics Engineering Department, National Institute of Technology Nagaland, India



This introductory textbook on basic electrical engineering provides a firm foundation to the basic concepts of electrical circuits and systems. The material in the book can be considered in three parts—electric circuits (DC and AC), field parts (magnetic and electric), and electrical machines. Beginning with the fundamental concepts of electricity and electrical elements, it provides a balanced coverage of DC and AC electric circuits and electrical machines. The principles of operation of transformers, DC machines, both generator and motor including three-phase induction motors, as well as synchronous AC machines, both generator and motor, are covered in great detail. The book includes a fair number of solved illustrative examples and exercises, carefully designed to give the reader sufficient help in assimilating concepts and applying them to practical situations. The contents of the book meet the curriculum requirements of the first year undergraduate engineering programme prescribed in India.

Additional support for the book will be made available at www.universitiespress.com/BEEbookinfo

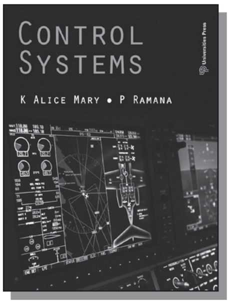
Contents: *Preface* ◈ Introduction ◈ DC Circuits ◈ DC Transients ◈ Alternating Quantities and Phasor Algebra ◈ AC (Single-phase) Series Circuits ◈ Single Phase AC Parallel and Series–Parallel Circuits ◈ Three-Phase Balanced Supply ◈ Electro-Magnetism and Magnetic Circuits ◈ Inductance ◈ Eletrostatics and Capacitance ◈ Transformers ◈ DC Machines ◈ Three-phase Induction Motors ◈ Synchronous Machines ◈ Electrical Measuring Instruments ◈ *Appendix* ◈ *Index*

2015	484 pp.	Paperback
978-81-7371-944-8		₹ 495.00

Control Systems

K Alice Mary
Professor and Principal, Vignan Institute of Information Technology, Visakhapatnam, India

P Ramana
Associate Professor, GMR Institute of Technology, Rajam, India



Control Systems describes the essential elements of control system engineering in simple language that can be understood by students at the undergraduate level. With a rich assortment of solved problems, exercise problems, review questions and objective type questions across 15 chapters, the book is designed to provide the student an exposure to the key functionalities of the concept in real-time applications. In addition, there is an elaborate appendix on the applications of MATLAB as a computational tool in nearly all fields of science and engineering. PowerPoint slides that encapsulate the essential points of each chapter, as also the solutions to chapter-end problems, are available as online supplements that can be accessed at www.universitiespress.com/kalicemary/controlsystems

Contents: *Preface* ◈ Fundamentals of Control Systems ◈ Mathematical Preliminaries ◈ Mathematical Modelling of Physical Systems ◈ Block Diagrams ◈ Signal-flow Graphs ◈ Control System and Its Components ◈ Time Domain Analysis ◈ Feedback Characteristics of Control Systems ◈ Stability of Systems ◈ Root Locus Method ◈ Frequency Domain Analysis—Bode Plot ◈ Stability Analysis of Nyquist Plot Method ◈ State-space Analysis ◈ Basic Compensation Techniques ◈ Digital Control Systems ◈ *Appendix: MATLAB Fundamentals* ◈ *Bibliography* ◈ *Index*

2016 632 pp. Paperback
978- 81-7371-985-1 ₹ 750.00

Digital Communications and Signal Processing

(Second Edition)

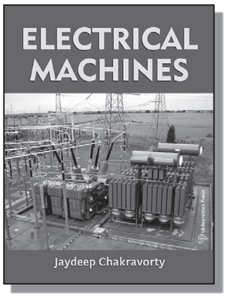
K Vasudevan
See page 42

Digital Electronics and Logic Design

Jaydeep Chakravorty
See page 42

Electrical Machines

Jaydeep Chakravorty
Head, Department of Electrical Engineering, Indus University, Ahmedabad, India



Electrical Machines is designed to help students understand the basic concepts of the subject with ease, catering to the needs of electrical, electronics and communications, instrumentation and other undergraduate engineering courses. It deals at length with the application and control of electromagnetic devices, presenting a comprehensive account of the working of transformers, generators and motors. Spread across 11 chapters, the text lays emphasis on the fundamentals, physical concepts and development of circuit models and analysis of transformers and machines, while reiterating theory with numerous solved problems and following them up with exercises for practice.

Contents: *Preface* ◈ *Acknowledgements* ◈ Electromechanical Energy Conversion ◈ DC Generator ◈ DC Motor ◈ Single-phase Transformer ◈ Three-phase Transformer ◈ Special Transformers ◈ Three-phase Induction Motor ◈ Single-phase Induction Motor ◈ Synchronous Generator ◈ Synchronous Motor ◈ Special Machines ◈ *Appendix-A:* Multiple Choice Questions ◈ *Appendix-B: Short Questions and Answers* ◈ *Appendix-C: MATLAB Codes* ◈ *Appendix-D: GATE Questions and Solutions* ◈ *Index*

2017	480 pp.	Paperback
978-93-86235-18-3		₹ 625.00

Electromagnetic Fields

Y Mallikarjuna Reddy
Principal and Professor, ECE Department, Vasireddy Venkatadri Institute of Technology, Nambur, Guntur, India

This introductory book on electromagnetic fields theory focuses on undergraduate engineering curriculum using a simple and straightforward approach of presenting the theoretical aspects briefly and providing further understanding of the concepts through worked out examples of varied kinds. It will be particularly *useful to the disciplines of electronics and communication engineering as well as electrical engineering courses in technical universities in India, as many of the examples and problems are drawn from the communications engineering domain.* It covers the theory and principles of static electric and magnetic fields and time-varying electromagnetic fields, and is supported with a useful review of elements of vector calculus included as an appendix.

Salient Features: Contents in accordance with undergraduate engineering curriculum ◈ Clear and concise explanations ◈ Plenty of worked-out problems ◈ Variety in exercises and inclusion of problems drawn from previous question papers of technical universities

Contents: Electrostatics ◈ Conductors and dipole ◈ Dielectric and capacitance ◈ Magnetostatics ◈ Ampere's circuital law and its applications ◈ Force in magnetic fields ◈ Magnetic Potential and Inductance ◈ Time-varying fields ◈ *Appendix A: Review of vector algebra* ◈ *Appendix B: Symbols of Quantities* ◈ *Index*

2013	436 pp.	Paperback
978-81-7371-886-1		₹ 525.00

Electromagnetic Waves and Transmission Lines

Y Mallikarjuna Reddy

See page 44

Electromagnetic Waves and Transmission Lines
(Based on JNTU Syllabus)

Y Mallikarjuna Reddy
See page 44

Embedded Systems Engineering

C R Sarma
See page 45

Engineering Electromagnetics Essentials

B N Basu
See page 46

Engineering Optimization: A Modern Approach

Ranjan Ganguli
See page 56

FORTHCOMING

Generalised Electrical Machine Theory

(Late) K Venkataratnam
Faculty Member, Department of Electrical Engineering, Indian Institute of Technology Kharagpur, Kharagpur, India

This book deals with the fundamentals of generalised electrical machine analysis for the present-day student who is interested not only in the conventional applications of the theory but would also like to apply it to modern drives. It provides a useful study of transients of dc, synchronous and induction machines including single phase and two phase machines. The approach is based on Kron's primitive machine and the generalized machine equations. The various machines are treated using connecting matrices and transformation matrices, and small perturbation theory is applied to study analytically the transients in the machines. Each major section is followed by a set of solved and unsolved problems.

Available in e-book format only.
For details, visit www.universitiespress.com.

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Handbook of Electrical Power Distribution
(Second Edition)

Gorti Ramamurthy
Technical Director, Elmech Enterprises, Hyderabad; formerly Senior Electrical Engineer, Ministry of Finance and Small Scale Industries, Government of Libya; (currently residing in) Hyderabad, India

Handbook of Electrical Power Distribution is a comprehensive reference work that covers aspects of electrical distribution engineering—theory, design philosophy, data and standards—essential for a practising engineer to design electrification schemes for small-to-large-scale projects. It makes available ready-to-use information and data that are otherwise scattered in technical literature and product specifications of manufacturers, which are essential for practically executing a job. *The second edition of the Handbook has four new appendixes. Appendix 1* contains a worked-out design example, that of an electrical scheme of a power transformer manufacturing unit, which cites the section and entry number in the book pertaining to the detail that is being worked out, e.g., the basic building structure, soil resistivity, earthing requirement, lumen level, equipment details, power loads for existing and future expansion needs, etc. This is expected to serve as a practical guide on how to use the book effectively in an actual project design. *Appendix 2* includes the definition of per unit quantities, information on selection of circuit breakers and protection relays, power distribution solutions for bus duct systems along with some worked-out examples. *Appendix 3* provides a quick reference to some of the frequently-used fundamental theorems and mathematical techniques in ac circuit analysis. It includes an introduction to complex numbers, Kirchoff's law, potential divider theorem, current divider theorem, superimposition theorem, Thevenin's theorem, Norton's theorem, maximum power transfer theorem and the star–mesh transformation. *Appendix 4* covers the essentials of matrix operations. All the above inclusions add to the utility of the book as a handbook, particularly the worked-out example in Appendix 1, which, besides being a guide on how to use the book, is a step-by-step instruction on designing a typical electrification scheme. *This is an easy-to-use handy reference for all practicing engineers in electrical distribution field.* All the available handbooks in this area are heavily loaded with theory and have less of actual data from the execution point of view. The illustrative example provided in Appendix 1 is a step-by-step guide to designing and implementing a plan for a large electrification project. The cue provided here on how to effectively use the data and theory in the handbook will be an added help to users in their tasks of planning, designing, implementing and maintaining power distribution setups.

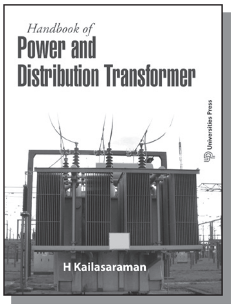
Contents: *Section 1:* Standard values, international units, conversions, standard clearances, extracts from IE regulations, useful information on transformers, DG sets, circuit breakers, current transformers, voltage transformers, cable capacity of conduits and trunking, degree of protection for electrical equipment and insulating materials ◆ *Section 2:* Earthing extracts of IS: 3043, electrical shocks, electrical fire hazards, do's and don't as per IS: 5216 ◆ *Section 3:* Illumination of roads and electrical installations in medical establishments (extracts from National Electric Code) ◆ *Section 4:* Electrical installations in hazardous areas (abstract of national Electric Code – 1985 and STEC 7 recommendations) ◆ *Section 5:* Protection of buildings and allied structures against lighting (extracts from IS: 2309 and STEC 7 recommendations) ◆ *Section 6:* Power factors for electrical equipments illumination, ventilation, air-conditioning and lifts ◆ *Section 7:* ◆ Power distribution, materials for overhead and underground cables, cable terminations, information on hardware materials generally used in distribution works ◆ *Section 8:* ◆ Electrical installation design, explanations with worked-out examples, basic functions of low tention switchgear, high tention switchgear, protective relays, UPS, inspection and testing of installation, maintenance of electrical distribution system, useful information on selection of suitable single-phase and three-phase cables with worked-out examples ◆ *Appendices* ◆ *Bibliography* ◆ *Index*

2009	520 pp.	Paperback
978-81-7371-684-3		₹ 1,250.00

Handbook of Power and Distribution Transformer Practices

H Kailasaraman

Guest Faculty, Transmission and Distribution Training Institute, Tamil Nadu Electricity Board; formerly Executive Engineer, Tamil Nadu Electricity Board, Chennai, India



Although many textbooks cover transformers as required of the curriculum, engineers after graduation generally learn about the practical applications of transformers either by trial and error or under the guidance of senior experienced engineers. The need for practical usage information is generally felt in power system utilities by professionals, budding consultants, electrical contractors and, to a larger extent, by manufacturers too. This book fulfils the need of a handbook, and provides a complete solution to the practical aspects of power transformers—construction, erection, and maintenance—to augment curriculum learning and make budding engineers ready for the field.

The book covers the following:

- Basic functions of transformers; information on core, windings, design, types of winding interconnections, connections in practice, tap operations, changing methods with on-load and off-load tap changers
- Procedure and precautions to be observed in transportation, erection and commissioning of power transformers at site; pre-commissioning tests; checklist for commissioning power transformers. Maintenance aspects including that of external accessories; use of oil in transformers
- Various tests to be conducted; reclamation process using filters; oil handling systems; troubleshooting and remedial measures
- Various protection schemes; the use of auto transformers in grid network; operation of transformers—loading, tap and parallel operation, emergency operation
- Inferences from practical phenomenon: magnetic balance tests, observations made on voltages during Horn Gap fuse failures, sheared-delta connection; two-phasing phenomenon
- Measures for enhancing performance by design case studies along with their analyses

Contents: *Foreword* ◆ *Preface* ◆ Power and Distribution Transformers: Theory, Conventional Features and Design ◆ Transportation, Erection and Commissioning of Power Transformers ◆ Maintenance of Power Transformers ◆ Operation of Power Transformers ◆ Inferences from Observed Phenomena and Some Case Studies ◆ *Index*

2015	224 pp.	Paperback
978-81-7371-984-4		₹ 825.00

Introduction to MATLAB Programming, Toolbox and Simulink

Jaydeep Chakravorty

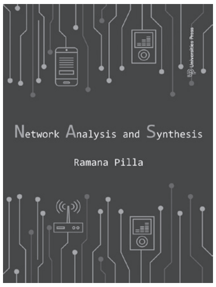
See page 103

Network Analysis and Synthesis (A Simplified Approach)

NEW

Ramana Pilla

Associate Professor, Department of Electrical and Electronics Engineering, GMR Institute of Technology, Rajam, India



This textbook is designed especially for undergraduate students of the following branches of engineering—Electrical and Electronics,

Electronics and Communication, Electronics and Instrumentation, and Instrumentation and Control. It covers the syllabi of the core subjects—Electrical Circuits, Network Theory, Circuit Theory, Network Analysis, and Networks and Synthesis. The primary goal of this textbook is to establish a firm understanding of the basic laws of electric circuits which help in developing a working knowledge of the methods of analysis used most frequently. With a rich assortment of solved problems, exercise problems, review questions and multiple choice questions across 15 chapters, the book is designed to provide the student an exposure to the key functionalities of the concepts in real-time applications.

Salient features:

- Carefully chosen, well-placed examples help the students master the subject.
- Learning outcomes, based on Revised Bloom's taxonomy (RBT), are provided at the beginning of each chapter to inculcate Outcome-Based Education (OBE).
- Compelling pedagogy that includes 483 solved examples, 232 review questions, 230 exercise problems and 455 multiple choice questions.

Online resources:
www.universitiespress.com/networkanalysisandsynthesis

For students: An elaborate appendix showcasing MATLAB/SIMULINK examples

For faculty: Solutions manual and chapter-wise PowerPoint presentations

Contents: Introduction to Electrical Circuits ◆ AC Fundamentals ◆ Steady State Analysis of AC Circuits ◆ Magnetic and Coupled Circuits ◆ Resonance and Locus Diagrams ◆ Three Phase Circuits ◆ Network Theorems ◆ Network Topology ◆ Transient Analysis ◆ Network Analysis Using Laplace Transforms ◆ Two-port Networks ◆ Network Functions ◆ Fourier Analysis ◆ Filters and Attenuators ◆ Network Synthesis

2019	668 pp.	Paperback
978-93-86235-66-4		₹ 725.00

Physics of Semiconductor Devices
(Second Edition)

Dilip K Roy
See page 48

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Power Electronics
NEW

Biswanath Paul
Head, Department of Electrical Engineering, Acharya Prafulla Chandra Roy Polytechnic, Jadavpur, Kolkata, India

Power Electronics is an up-to-date and authoritative text that focuses on the fundamental principles and requirements needed for setting up practical power electronic systems. The book deals at length with several power semiconductor devices, providing rigorous coverage of phase-controlled rectifiers, inverters, AC switching controllers / AC voltage controllers, dual converters with cycloconverters, choppers, power supplies with AC power conditioners and resonant converters. It also elaborates on modern developments in the field of HVDC transmission, and the schemes for control of DC and AC motors with drives. Replete with examples, illustrations and chapter-end exercises, the book is ideal for B.Tech. students who study Power Electronics as part of their curriculum. The book is also useful for professionals working in power electronics, power conversion, and analog and digital electronics.

Contents: Foreword ◆ *Preface* ◆ *About the Author* ◆ Basics of Power Electronics and PSpice ◆ Power Diodes ◆ Power Transistors (Power BJTs) ◆ Thyristors ◆ Power MOSFETs ◆ Insulated Gate Bipolar Transistor (IGBT) ◆ Gate Turn-OFF and Gate Commutated Turn-OFF Thyristors ◆ Power Devices – MCT, ETO, SIT and SITh ◆ Protection of Semiconductor Devices ◆ Cooling and Mounting of Semiconductor Devices ◆ Phase-controlled Rectifiers ◆ Inverters ◆ AC Switching Controllers / AC Voltage Controllers ◆ Dual Converters and Cycloconverters ◆ Choppers ◆ Power Supplies and AC Power Conditioners ◆ Resonant Converters and HVDC Transmission ◆ Control of DC and AC Motors with Drives ◆ *Index*

2019	820 pp.	Paperback
978-93-86235-73-2		₹ 750.00

Principles of Electronic Communication: Analog and Digital (Second Edition)

Pradip Kumar Ghosh
See page 49

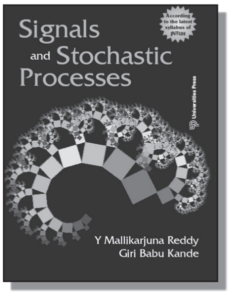
Robotics Primer, The

Maja J Mataric
See page 112

Signals and Stochastic Processes

Y Mallikarjuna Reddy
Principal, Vasireddy Venkatadri Institute of Technology (VVIT), Nambur, Guntur, India

Giri Babu Kande
Professor and Head, Department of Electronics and Communication Engineering, Vasireddy Venkatadri Institute of Technology (VVIT), Nambur, Guntur, India



This book, covering the fundamentals of the theory of signals, systems and stochastic process, is intended to provide a firm understanding of the concepts, theories, processes and mathematical tools necessary for dealing with various kinds of signals and their interaction with systems. This knowledge forms the basis for the study of other engineering subjects such as circuit design, power systems, automatic control, communications, and signal processing. Although the contents have been structured keeping in view the requirements of JNTU's electronics and communication engineering undergraduate programme, it will also meet the requirements of the curriculum of most other technical universities in India.

Salient points A firm understanding of continuous- and discrete-time signals, linear time-invariant systems and signal–system interaction ◈ Mathematical tools such as Fourier, Laplace and Z-transforms developed and applied in many problems to provide a clear understanding of their application in signal analysis and synthesis. ◈ The notion of a random signals or stochastic process, their characterisation and response of systems to such signals explained in detail ◈ Simulations of the solutions to many problems developed using MATLAB included as an appendix ◈ Emphasis on problem solving with the inclusion of a large number of worked-out examples and exercises of the kind commonly featured in university examinations

Contents: Introduction to Signals and Systems ◈ Signal Analysis ◈ Fourier Series ◈ Fourier Transforms ◈ Signal Transmission through Linear Systems ◈ Sampling ◈ Laplace Transforms ◈ Z–Transforms ◈ Random Processes – Temporal Characteristics ◈ Stochastic Processes – Spectral Characteristics ◈ *Appendixes* ◈ *A: Simulation with MATLAB* ◈ *B: Review of Random Process* ◈ *C: Some Useful Mathematical Expressions*

2017 640 pp. Paperback
978-93-86235-31-2 ₹ 595.00

Solid State Microelectronic and Optoelectronic Devices

Angsuman Sarkar & Chandan Kumar Sarkar
See page 51

Special Electrical Machines

K Venkataratnam
Formerly Professor, Department of Electrical Engineering, Indian Institute of Technology Kharagpur, Kharagpur, India

This book contains, under one cover, the *theory, construction, design, control electronics and in-depth analysis of several non-traditional machines* such as stepper motors, switched reluctance motors, permanent magnet DC machines, brushless DC machines and linear induction machines. These machines are finding ever-increasing applications, typically in position control systems, robotics and mechatronics, electric vehicles and high speed transportation. A particular feature of this book is that it does not stop at the basic principles of these complex machines but offers the recent developments and current research information as well, making it *useful for senior graduate students and research scholars in the field of electrical machines and drives.*

Contents: *Foreword* ◆ *Preface* ◆ *Acknowledgement* ◆ Introduction to Special Electrical Motors ◆ Stepper Motors ◆ Mathematical Analysis of Step Motor ◆ Switched Reluctance Motor ◆ Permanent Magnet Materials and Motors ◆ Brushless DC Motor ◆ Linear Induction Motor ◆ *Appendix A* ◆ *Appendix B* ◆ *Appendix C* ◆ *References* ◆ *Bibliography* ◆ *Index*

Distributed worldwide (except India)
by CRC Press LLC, USA, Taylor and Francis Group

2008	280 pp.	Paperback
978-81-7371-631-7		₹ 575.00

Switched Mode Power Supplies: Design and Construction
(Second Edition)

H W Whittington
University of Edinburgh, UK

B W Flynn
University of Edinburgh, UK

D E Macpherson
University of Edinburgh, UK

This is the second edition of *Switched Mode Power Supplies: Design and Construction*. The rapid world-wide expansion of the consumer electronics industry has brought about a requirement for manufacturers of switched mode power supplies to design and fabricate to new specifications which are both more onerous and more tightly framed. *This book extends the coverage of the first edition from basic design and manufacture to new techniques such as computer-aided design.*

Contents: *Section 1: Introduction and Basic Circuits: Introduction* ◆ Specification of SMPS ◆ Rectifier Circuits ◆ Basic Converter Circuits ◆ Isolated Switched Mode Power Supplies ◆ Circuit Design Consideration ◆ Other Switching Converters ◆ Simulation of SMPS Using Spice

Section 2: Wound Component Design and Production: Magnetics; Definitions and Equations ◆ Wound Component Production ◆ Wound Component Design Examples ◆ Wound Component Safety Considerations

Section 3: Semiconductors Devices and SMPS *Control:* Semiconductors Devices ◆ Drive Circuits ◆ Control Requirements & Techniques ◆ Bode Diagrams ◆ Error Amplifier Compensation Techniques

Section 4: Practical Smps Design Considerations: Electromagnetic Interference (EMI) And Screening ◆ EMI Suppression INSMPS ◆ EMI Measurement And Specifications ◆ Input Rectifiers With Unity Power Factor ◆ Protection And Management of SMPS ◆ Reliability and Cooling ◆ *Bibliography* ◆ *Index*

2009	248 pp.	Paperback
978-81-7371-664-5		₹ 750.00

Utilisation of Electric Energy in SI Units

E Openshaw Taylor

This book covers the whole range of the more useful applications of electrical energy refrigeration and air conditioning, electrolytic processes, in a single volume including industrial heating and welding, illumination and electric fraction. *It is suitable for the student or for the general engineer who has not had the occasion to specialise in any particular branch of the subject.*

Contents: *Editor's Introduction* ◆ *Prefaces* ◆ *Preface to SI Edition* ◆ *Introductory Chapter on SI Units* ◆ *Tables-SI Units-Names and Symbols* ◆ *Symbols and Abbreviations* ◆ Electric Drive (Excluding Tractions) ◆ Electric Traction ◆ Heating and Welding ◆ Electrolyting Processes ◆ Illuminating Engineering ◆ Economic Aspects of Utilising Electrical Energy ◆ *Appendix-Regulation and Specifications* ◆ *Bibliography* ◆ *Answers to Questions* ◆ *Index*

2009	392 pp.	Paperback
978-81-7371-700-0		₹ 575.00

Utilisation of Electric Energy in SI Units
FORTHCOMING

(Second Edition)

E Openshaw Taylor, V V L Rao & Vivek Agarwal

While the fundamental concepts and philosophy of the first edition of this book, published more than eight decades ago, continue to be relevant even today, there have been phenomenal changes in the hardware and processes described therein due to developments in technology, notably in the fields of material science, semiconductor technology, power electronics and control engineering. This new edition attempts to build upon the original book by incorporating a significant body of fresh inputs pertaining to these vast technological developments. This has been done, however, without disturbing the original style and organisation of the book for a seamless reading experience. Indeed, applications such as electric drives, electric traction, electrolytic processes, electric heating, cooling, welding and illumination covered in the first edition continue to be the major consumers of electric energy even today. The new material is supported by numerical examples and illustrations, wherever possible, and the gap between the past and the present has been bridged skilfully with the aid of supplementary chapters that provide the reader with a quick reference on the basics of the underlying technology.

The **salient additions/changes** in this edition include:

- Energy efficient power electronic drives along with special motors
- The latest electric traction systems
- Cooling and refrigeration, non-polluting heating techniques based on renewable energy and newer techniques such as laser and robotic welding
- Modern electrolytic technologies/processes, fuel cells and electrolytic power supplies
- Solid state lighting technology and computer-aided lighting design
- Modern perspective on the economics of utilisation of electric energy, including the role of energy audit

Available in e-book format only.
For details, visit www.universitiespress.com.

ELECTRONICS AND COMMUNICATION ENGINEERING

Analog Communications Systems: Principles and Practices

K C Raveendranathan

Principal and Professor, L B S Institute of Technology for Women Poojappura, Thiruvananthapuram, India

Analog Communications Systems: Principles and Practices caters to the syllabus of undergraduate engineering programmes in ECE, EEE and IT streams of Indian universities. It can also serve as a primary textbook for BSc Electronics/Computer Science/IT.

The methodology adopted in this book is to:

(i) illustrate concepts in modulation and signal processing using MATLAB (R)
(ii) provide a simple and lucid approach to analysis without compromising mathematical rigour and
(iii) include a fair number of worked-out examples and chapter-end-exercises.

This book introduces recent and most promising developments in the domain of analog communications.

Contents: *List of Figures* ◈ *List of Tables* ◈ *Foreword* ◈ *Preface* ◈ The Analog World ◈ Telephone Systems ◈ Amplitude Modulation ◈ AM Transmitters and Receivers ◈ Angle Modulation ◈ Probability, Random Variables, and Stochastic Processes ◈ The Effect of Noise on Carrier Wave Modulation ◈ Electrical Noise in Electronic Systems ◈ *Appendix: Question Papers* ◈ *Bibliography* ◈ *Index*

2008	256 pp.	Paperback
978-81-7371-620-1		₹ 475.00

Analysis of Thyristor Power-Conditioned Motors

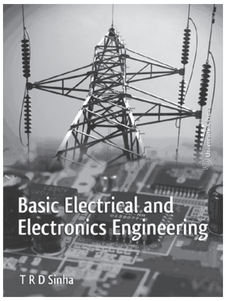
S K Pillai

See page 31

Basic Electrical and Electronics Engineering

T R D Sinha

Formerly Professor and Head, Department of Electrical Engineering, NIT Jamshedpur, India



This book covers the topics prescribed in the first-year syllabus of undergraduate engineering courses in the subject. Precise in detail and replete with solved examples, the book provides an overview of the fundamental aspects of electrical and electronics engineering before examining the core concepts in lucid language for the benefit of new learners as well as those appearing for GATE and other competitive examinations.

Contents: *Preface* ⟡ Preparatory Concepts: An Overview ⟡ Direct Current Circuits ⟡ Alternating Current Circuits ⟡ Electromagnetism and Magnetic Circuits ⟡ Transformers ⟡ Rotating Electrical Machines ⟡ Basic Electronic Components ⟡ Basic Digital Electronics ⟡ Transducers ⟡ *Appendices* ⟡ *Index*

2018 548 pp. Paperback
978-93-86235-51-0 ₹ 650.00

Basic Electrical Engineering

N K De & Dipu Sarkar
See page 32

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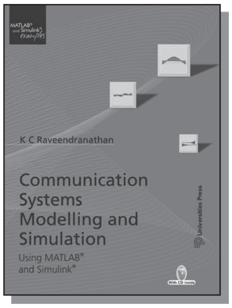
Communications System Modelling and Simulation Using MATLAB and Simulink

K C Raveendranathan
Principal and Professor, L B S Institute of Technology for Women Poojappura, Thiruvananthapuram, India


MATLAB and Simulink examples
K C Raveendranathan
Communication Systems Modelling and Simulation
Using MATLAB and Simulink
Universities Press
With CD inside

This book employs the technique of simulation experiments as a means of reinforcing the basic concepts of communication theory. Undergraduate students are generally exposed to a mathematically rigorous treatment of communications theory but seldom to modelling and simulation as an approach to better understanding of the practical aspects. This book addresses this significant lacuna in the learning methodology with simulations in MATLAB/Simulink, the language of the technical computing fraternity. It begins with an overview of computer simulation and MATLAB programming concepts, following which communications concepts are presented along with simulation experiments. *All the MATLAB programs given in the text have been tested on MATLAB kernel version 7.9 (Release R2009b) and are available in the accompanying CD.*

Contents: *Preface* ⟡ Introduction to Systems, Models and Simulations ⟡ Introduction to Programming in MATLAB ⟡ Simulink ⟡ Simulation of Signals and Systems ⟡ Simulation of Analog ⟡ Modulation Systems ⟡ Simulation of Angle Modulation Systems ⟡ Simulation of Digital Modulation Systems ⟡ Probability and Random Processes ⟡ *Index*

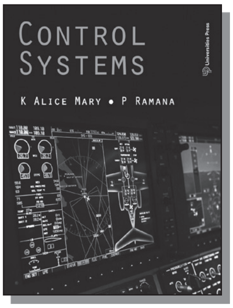
Distributed worldwide (except India)
by CRC Press LLC, USA, Taylor and Francis Group

2011 448 pp. Paperback
978-81-7371-722-2 ₹ 725.00

Control Systems

K Alice Mary
Professor and Principal, Vignan Institute of Information Technology, Visakhapatnam, India

P Ramana
Associate Professor, GMR Institute of Technology, Rajam, India



Control Systems describes the essential elements of control system engineering in simple language that can be understood by students at the undergraduate level. With a rich assortment of solved problems, exercise problems, review questions and objective type questions across 15 chapters, the book is designed to provide the student an exposure to the key functionalities of the concept in real-time applications. In addition, there is an elaborate appendix on the applications of MATLAB as a computational tool in nearly all fields of science and engineering. PowerPoint slides that encapsulate the essential points of each chapter, as also the solutions to chapter-end problems, are available as online supplements that can be accessed at www.universitiespress.com/kalicemary/controlsystems

Contents: *Preface* ◆ Fundamentals of Control Systems ◆ Mathematical Preliminaries ◆ Mathematical Modelling of Physical Systems ◆ Block Diagrams ◆ Signal-flow Graphs ◆ Control System and Its Components ◆ Time Domain Analysis ◆ Feedback Characteristics of Control Systems ◆ Stability of Systems ◆ Root Locus Method ◆ Frequency Domain Analysis—Bode Plot ◆ Stability Analysis of Nyquist Plot Method ◆ State-space Analysis ◆ Basic Compensation Techniques ◆ Digital Control Systems ◆ *Appendix:* MATLAB Fundamentals ◆ *Bibliography* ◆ *Index*

2016 632 pp. Paperback
978- 81-7371-985-1 ₹ 750.00

Digital Communications and Signal Processing

(Second Edition)

K Vasudevan
Principal, L B S Institute of Technology for Women, Poojappura, Thiruvananthapuram, India

Digital Communications and Signal Processing covers a wide variety of topics of digital communications from a theoretical as well as practical perspective. The subject matter is well laid out and the purpose of study of each topic made clear. Some of the notable features of the book include expression of the probability of error in terms of the Euclidean distance instead f the usual Eb/N0, adoption of a new approach to the Viterbi algorithm that does not assume any knowledge of the encoder starting and ending states, discussions on constellation shaping, shell mapping algorithm and root-raised cosine pulse shaping, and a unified approach to continuous phase frequency modulation where M-ary FSK and MSK are special cases. For the ease of understanding, the turbo decoding algorithm is described using the classical MAP detection rule instead of the log-MAP and max log-MAP procedures that are widely adopted in the literature. *The second edition of the book, which has several new examples and C programs, is a result of the continuing efforts by the author to unify the areas of discrete-time signal processing and communications. The use of discrete-time techniques allows implementation of the transmitter and receiver algorithms in software.*

The book is well suited for a senior undergraduate to a graduate level course in communications theory.

Contents: *Introduction* ◆ Communicating with Points ◆ Channel Coding ◆ Transmission of Signals through Distortionless Channels ◆ Transmission of Signals Through Distorting Channels ◆ *Appendix A:* Complex Differentiation ◆ *Appendix B:* The Cher off Bound ◆ *Appendix C:* On Groups and Finite Fields ◆ *Appendix D:* Properties of the Autocorrelation Matrix ◆ *Appendix E:* Some Aspects of Discrete-Time Signal Processing ◆ *Appendix F:* Time Domain Response for the Root-Raised Cosine Spectrum ◆ *Appendix G:* Parseval's Energy Theorem ◆ *Appendix H:* Transmission of a Random Process Through a Filter ◆ *Appendix I:* Lowpass Equivalent Representation of Passband Systems ◆ *Appendix J:* Linear Prediction ◆ *Appendix K:* Eigen decomposition of a Circulant ◆ *Matrix References* ◆ *Index*

2010 344 pp. Paperback
978-81-7371-710-9 ₹ 625.00

Digital Electronics and Logic Design

Jaydeep Chakravorty
Associate Professor and Head, Department of Electrical Engineering, Baddi University, Solan, India

In this book the concepts of digital electronics and digital logic are presented in a simple, easy-to-understand manner. *The learning of the design principles is supported with large number of worked-out-examples and exercise problems. Undergraduate students of engineering as well as students of polytechnic institutes will find the book suitable as an introductory textbook.* The book has

- more than 300 solved problems and design examples.
- around 150 exercise problems and an equal number of multiple choice questions.

Contents: *Preface* ◈ Number Systems ◈ *Exercises* ◈ Digital Codes ◈ *Exercises* ◈ Digital Arithmetic ◈ Complement Method ◈ *Exercises* ◈ Boolean Algebra ◈ *Exercises* ◈ Simplification Methods in Boolean Algebra ◈ *Exercises* ◈ Logic Gates ◈ *Exercises* ◈ Combinational Circuits ◈ *Exercises* ◈ Flip-Flops or Bistable Multivibrators ◈ *Exercises* ◈ Counters ◈ Exercises ◈ Shift Registers ◈ *Exercises* ◈ Memory Devices ◈ *Exercises* ◈ Logic Families ◈ *Exercises* ◈ Data Converters ◈ *Exercises* ◈ *Appendix I: 8-BIT ASCII Codes* ◈ *Appendix II: 74XX Series* ◈ *Appendix III: 40XX Series* ◈ *Appendix IV: Answers to Multiple-Choice Questions* ◈ *Index*

2012	428 pp.	Paperback
978-81-7371-761-1		₹ 495.00

Digital Microwave Communication Systems with Selected Topics in Mobile Communications

P V Sreekanth

Railtel Corporation of India Ltd, Southern Region, Secunderabad, India

This book provides a hands-on approach to digital microwave communications. Students of communications engineering often find a wide gap between the theory they have learnt and the skills required for the implementation of the communications system. *The book provides the necessary theoretical inputs for understanding the basic concepts (keeping mathematical analysis to a minimum), and follows it up with the practical details of the systems and their interfaces.*

Contents: *Preface* ◈ *Acknowledgements* ◈ *Introduction* ◈ *Part I:* Digital Transmission Systems- ◈ Pulse Code Modulation ◈ Hierarchy of Digital Transmission Systems ◈ Digital Microwave Communications System 34+2 Mb Digital Microwave Radio Equipment ◈ 30 Channel Primary MUX ◈ III-Order Multiplexing Equipment ◈ *Part II:* Synchronization in Passband Digital Transmission ◈ Control of Intersymbol Interference: Application of Duo-binary Techniques to Digital MW Radio ◈ Equalization Techniques in DMR-770 Digital MW Radio ◈ Bit Stream Integration in Digital Transmission Systems ◈ Line Codes ◈ Sources of Jitter in Digital Transmission Systems ◈ Reliabilty Considerations for Long Haul Digital MW Link ◈ Control of Jitter in Long Haul Digital Networks ◈ Transmultiplexer ◈ Common Problems in the Working of Transmux ◈ Some Experimental Results ◈ *Part III:* Guided Waves and Waveguides ◈ Waveguide Components and Accessories ◈ Branching Circuit in DMR 770 Digital MW Radio Equipment ◈ Antenna Mounting Techniques ◈ Waveguide Matching Techniques ◈ *Part IV:* Global System for Mobile Communications ◈ New Data Services in Digital Cellular Networks ◈ Terrestrial Trunked Radio (TETRA) ◈ Satellite System for Mobile Communication ◈ Synchronous Digital Hierarchy (SDH) ◈ *Appendix* ◈ *Abbreviations* ◈ *Index*

2003	400 pp.	Paperback
978-81-7371-395-8		₹ 1,095.00

Digital Transmission Hierarchies and Networks: PDH, SDH and OTH

P V Sreekanth

Railtel Corporation of India Ltd, Southern Region, Secunderabad, India

Digital Transmission Hierarchies and Networks is one of the very few books dealing with all the three generations of digital multiplexing hierarchies, namely plesiochronous digital hierarchy (PDH), synchronous digital hierarchy (SDH) and optical transport hierarchy (OTH) in a full-fledged manner. Perhaps it is the only book demystifying the complex processes of justification and frame formation in PDH, pointer operations, concatenation and synchronisation in SDH and management overhead structures for digital wrapper and optical channel layers in OTH. The book covers the reliability and survivability aspects of the networks, applications like Ethernet, multi-protocol label switching (MPLS), VoIP over SDH, multi-protocol wavelength switching (MPλS), gigabit MPLS over OTN, passive optical network (PON), GPON and next generation switching network (NGN).

The depth of coverage of topics in the book is such that it offers a thorough understanding of digital transmission hierarchies, which students of communications engineering as well as practising engineers and professionals dealing with OFC projects will find useful for the insight it provides on both the practical and the conceptual aspects of networking.

Contents: *List of Abbreviations* ◈ *Preface* ◈ *Acknowledgements* ◈ *Prologue* ◈ *Part I:* PDH Systems ◈ The Three Theorems of IT and Their Outcome ◈

The Multiplexing Process and Its Evolution ◆ PCM – The Entry Point ◆ PDH Mux-Demux Process ◆ PDH Network Reliability Issues ◆ *Part II:* SDH Systems ◆ Evolution of SDH ◆ Multiplexing Process in SDH ◆ SDH Network Elements and Network ◆ Applications of SDH Network ◆ Reliability Issues in SDH Networks ◆ *Part III:* OTH systems ◆ WDM Essentials ◆ Essentials of OTH ◆ Mapping Client Signals in OTH ◆ Optical Transport Networks and Applications ◆ Reliability and Survivability Issues ◆ *Appendix A* ◆ *Appendix B* ◆ *Appendix C* ◆ *Index*

2010 560 pp. Paperback
978-81-7371-699-7 ₹ 1,095.00

Effective E-learning: Design, Development and Delivery

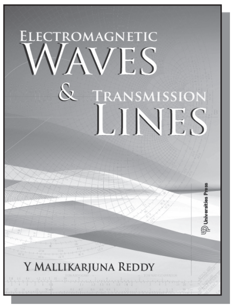
Madhuri Dubey
See page 99

Electromagnetic Fields

Y Mallikarjuna Reddy
See page 34

Electromagnetic Waves and Transmission Lines

Y Mallikarjuna Reddy
Principal and Professor, ECE Department, Vasireddy Venkatadri Institute of Technology, Nambur, Guntur, India



Designed according to the syllabus of the undergraduate electrical engineering programme in India, this book adopts a straightforward approach of presenting theoretical concepts and several worked-out examples in their support. The discussions begin with a review of vector calculus, the essential mathematical tool for analysis in electromagnetic theory. Elements of electrostatics, magnetostatics, time-varying electric and magnetic fields, wave propagation through unbounded and bounded mediums and the transmission lines theory are covered concisely to give readers a sound introduction to the subject and its engineering applications.

Salient Features:

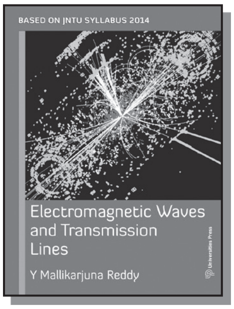
- Clear and concise explanations of fundamental concepts
- Includes a chapter on guided waves
- Emphasis on problem solving and review of core concepts with the help of
- 350 Solved examples
- Over 200 practice problems and an equal number of review questions
- Nearly 400 multiple-choice questions

Contents: *Preface* ◆ Introduction to Vector Fields ◆ Electrostatics ◆ Electric Fields in Conductors and Dielectrics ◆ Magnetostatics ◆ Magnetic Force and Inductance ◆ Time-Varying Fields ◆ Electromagnetic Waves ◆ Electromagnetic Wave Characteristics ◆ Transmission Lines - I ◆ Transmission Lines - II ◆ Guided Waves ◆ *Appendix-A* ◆ *Appendix-B* ◆ *Index*

2015 714 pp. Paperback
978-81-7371-977-6 ₹ 650.00

Electromagnetic Waves and Transmission Lines
(Based on JNTU Syllabus)

Y Mallikarjuna Reddy
Principal and Professor, ECE Department, Vasireddy Venkatadri Institute of Technology, Nambur, Guntur, India


BASED ON JNTU SYLLABUS 2014
Electromagnetic Waves and Transmission Lines
Y Mallikarjuna Reddy
Universities Press

Electromagnetic Waves and Transmission Lines, prepared according to the latest syllabus of the undergraduate electronics and communication engineering programme of JNTU, also conforms to the syllabus of major technical universities in India. It adopts a straightforward approach of presenting theoretical concepts and supporting their understanding with several worked out examples.

The book begins with a review of vector analysis, the essential mathematical tool for working with electromagnetic fields. It covers static and time-varying electromagnetic fields and analyses the transmission line approach for conveying electromagnetic energy. The book aims at making mathematical analyses unambiguous with clear explanations, useful analogies, worked-out examples and illustrations.

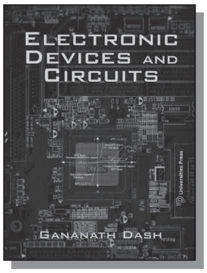
Salient features Clear and concise explanations, which facilitate independent learning ◈ A large number of worked-out examples and an equal variety in exercises ◈ JNTU syllabus compliance and the inclusion of several problems drawn from previous JNTU question papers ◈ Stress on fundamental concepts and problem solving

Contents: Introduction to Vector Fields ◈ Electrostatics ◈ Electric Fields in Conductors and Dielectrics ◈ Magnetostatics ◈ Magnetic Force and Inductance ◈ Time-varying Fields ◈ Electromagnetic Waves ◈ Electromagnetic Wave Characteristics ◈ Transmission Lines-I ◈ Transmission Lines-II

2015	648 pp.	Paperback
978-81-7371-948-6		₹ 595.00

Electronic Devices and Circuits

Gananath Dash
Formerly Professor and Head, Electronic Devices Group, Sambalpur University, Odisha, India



Electronic Devices and Circuits analyses the working of fundamental electronic devices and examines their functional aspects and applications. Systematic and thorough in its approach, the book lays a firm foundation on the laws of quantum mechanics and explores their influence on the operation of electronic devices. It discusses the subject in two parts. The first part covers electronic devices, discussing at length semiconductors, bipolar junction transistors, field effect transistors and optoelectronic devices. The second part deals with electronic circuits based on the devices discussed in Part I. Replete with numerical examples, numerical exercises, MCQs and short- and long-answer questions, the book is ideal for undergraduate and postgraduate courses in electronics.

Contents: *Preface* ◈ *About the Author* ◈ *Part I: Analysis of Electronic Devices* ◈ Elements of Quantum Physics ◈ Fundamentals of Semiconductors ◈ The p-n Junction ◈ Heterojunctions ◈ Bipolar Junction Transistor ◈ Field Effect Transistor ◈ Optoelectronic Devices ◈ Negative Resistance Microwave Devices ◈ Thyristors and Switches ◈ *PART II: Circuits for Electronic Devices* ◈ *p-n* Diode Circuits ◈ BJT Circuits ◈ FET Circuits ◈ Feedback Circuits ◈ Positive Feedback and Oscillators ◈ Large-Signal BJT Amplifiers ◈ Operational Amplifiers ◈ *Appendices* ◈ *Answers to Chapter-end Exercises* ◈ *Index*

2018	836 pp.	Paperback
978-93-86235-30-5		₹ 850.00

Embedded Systems Engineering

C R Sarma
Consultant for Open Brick Systems on 3D Printer Firmware; Vice Chairman, Institution of Electronics & Telecommunication Engineers, Hyderabad, India

This introductory book on embedded systems focuses on the basic concepts of embedded computing. The reader is familiarised with the 8051 processor architecture and assembly-level programming concepts before being introduced to application-level embedded programming and issues related to design—resource management, real-time operating constraints, RTOS, interfacing of embedded processors with networks and other electronic devices, among others. The book also looks at the architectures of advanced processors like ARM and SHARC for embedded systems. The examples included in the book are well thought-out and help to ground the theory of the embedded design process. This, together with the plentiful self-evaluation questions at the close of each chapter, makes the book an *ideal introductory text for a course on embedded systems engineering.*

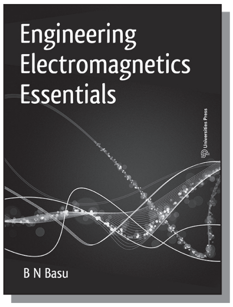
Contents: *Preface* ◈ Embedded Computing ◈ The 8051 Architecture ◈ Concepts in Assembly Language ◈ Arithmetic Transfer Control Instructions ◈ Application Programming ◈ Real-Time Operating Systems ◈ Basic Design Using a Real-Time Operating System ◈ Introduction to AdvancedArchitectures ◈ *Appendix A: Instruction Set of 8051* ◈ *Appendix B: 8051 Timer Programming* ◈ *Appendix C: 8051 Counter Programming* ◈ *Appendix D: 8051 Serial Programming* ◈ *Appendix E: 8051 Interrupt Progra-mming* ◈ *Appendix F: Keil IDE Project, Build, Debug* ◈ *Index*

*Distributed worldwide (except India)
by CRC Press LLC, USA, Taylor and Francis Group*

2011	208 pp.	Paperback
978-81-7371-676-8		₹ 475.00

Engineering Electromagnetics Essentials

B N Basu
Professor Emeritus, Sir J C Bose School of Engineering, Mankundu, India



This book deals with the fundamentals of electromagnetics of relevance to engineering. It begins with a concise and clear introduction to vector calculus, essential for the development of em theory concepts from first principles. The topics in the book are chosen with care to ensure that readers are able to grasp the essence of engineering electromagnetics within a reasonable time; the approach adopted attempts to make the learning both enjoyable and meaningful. Interesting illustrative examples and thought-provoking chapter-end problems are included to inspire students to take up more challenging problems of practical relevance.

Help is available in the book in the form of complete solutions/hints, with due references to the concepts developed in the book.

Salient Features Covers all the elementary concepts required to appreciate the engineering applications of the subject ◈ Derivations and explanation of all essential mathematical treatments elaborated to make the learning enjoyable ◈ Carefully chosen illustrative problems that lead to new learnings ◈ Challenging exercises that invite readers to develop interesting concepts of relevance to engineering disciplines

Further help for teachers is available at www.universitiespress.com/eeebasubook.info

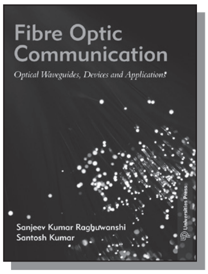
Contents: *Foreword* ◈ *Preface* ◈ *Acknowledgements* ◈ Timeline of Progress in Electromagnetic Theory and Related Areas ◈ Introduction ◈ Vector Calculus Expressions for Gradient, Divergence and Curl Why curvilinear coordinate system? ◈ Basic Concepts of Static Electric Fields ◈ Basic Concepts of Static Magnetic Fields ◈ Basic Concepts of Time-varying Electric and Magnetic Fields ◈ Wave Equation and Its Solution for a Wave Propagating through an Unbounded Medium ◈ Electromagnetic Boundary Conditions ◈ Electromagnetic Power Flow ◈ Waveguides: Solution of the Wave Equation for a Wave in a Bounded Medium ◈ Waveguide Resonator: Analytic Appreciation by Equivalent Transmission Line Approach ◈ *Summary* ◈ *Bibliography* ◈ *Index*

2015	688 pp.	Paperback
978-81-7371-956-1		₹ 675.00

Fibre Optic Communication: Optical Waveguides, Devices and Applications

Sanjeev Kumar Raghuwanshi
Assistant Professor, Department of Electronics Engineering, Indian Institute of Technology (Indian School of Mines)/IIT(ISM), Dhanbad, India

Santosh Kumar
Assistant Professor, Department of Electronics and Communication Engineering, DIT University, Dehradun, India


Fibre Optic Communication
Optical Waveguides, Devices and Applications
Sanjeev Kumar Raghuwanshi
Santosh Kumar
Universities Press

Fibre Optic Communication – Optical Waveguides, Devices and Applications provides an insight into the general characteristics of optical fibres, their types and applications in various fields such as data transmission and optical communication system. The book caters to the requirements of electronics engineering, electronics and communication engineering, applied electronics and instrumentation courses at undergraduate and postgraduate levels offered by universities across the country. Coherent in theory and replete with pedagogical features that include MATLAB programs for practice problems, the book is ideal for students who wish to understand the requirement and real-time applications of fibre optic technology as well as the associated pitfalls and remedies.

Contents: *Preface* ◆ *About the Authors* ◆ Overview of Fibre Optics ◆ Optical Waveguide Analysis ◆ Laser Optics and Related Devices ◆ Coupled-mode Theory for Optical Fibre ◆ Overview of Optical Signal Processing and Optical Filter Design ◆ Nonlinear Optics and Its Applications ◆ Study of Electro-optic Modulators ◆ Introduction to Microwave Photonics ◆ Application of Fibre Optics ◆ *Appendix* ◆ *Index*

2017	620 pp.	Paperback
978-93-86235-21-3		₹ 725.00

Industrial Psychology

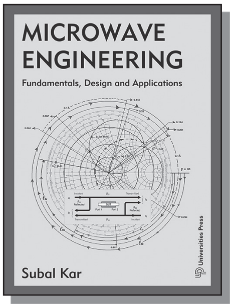
Dipak Kumar Bhattacharyya & Sutapa Bhattacharya
See page 67

Introduction to MATLAB Programming, Toolbox and Simulink

Jaydeep Chakravorty
See page 103

Microwave Engineering: Fundamentals, Design and Applications

Subal Kar
Professor and Ex-Head of the Institute of Radio Physics and Electronics, University of Calcutta, Kolkata, India



Microwave Engineering: Fundamentals, Design and Applications emphasises the basic concepts of microwave engineering, design techniques and applications of microwave engineering in a markedly different way. This inclusive approach covers the undergraduate syllabus of almost all Indian institutions where microwave engineering is taught and to some extent a part of the postgraduate curriculum too.

The student-friendly nature of the book is strengthened by:

- CAD solutions with standard simulators used for optimal design of matching networks and filters
- An exclusive chapter on Waveguides and Resonators
- Simulation based design of microwave oscillators and amplifiers
- Basics of microwave measurement techniques and fundamentals of spectrum analyser and network analyser
- A chapter on Radar Principle and Systems
- Concise coverage of EMI-EMC and microwave antennae
- Electronic Design Automation (EDA) tools and 3D electromagnetic field simulators used to solve a number of design problems
- Use of MATLAB in generating characteristic curves and solving problems
- Coverage of an emerging topic of microwave engineering—metamaterials
- Review questions that help in self-assessment

- 'Recapitulation' that serves to reinforce the fundamentals contained in the chapter

Contents: *Foreword* ◆ *Foreword* ◆ *Preface* ◆ Introduction ◆ Electromagnetics Revisited ◆ High Frequency Behaviour of Transmission Lines ◆ Guided Structures: Waveguides and Cavity Resonators ◆ Microwave Network and Scattering Matrix ◆ Microwave Passive Circuit Components ◆ Impedance Matching in Transmission Lines and Waveguides ◆ Microwave Filters ◆ Microwave Active Devices: Oscillators, Amplifiers and Power Combiners ◆ Microwave Antennae and Wave Propagation ◆ Radar Principle and Systems ◆ Microwave Measurement Techniques ◆ Microwave Integrated Circuit ◆ Electromagnetic Interference (EMI) and Electromagnetic Compatibility (EMC) ◆ An Emerging Topic of Microwave Engineering: Metamaterials/ Left-Handed Material (LHM) ◆ Applications of Microwave Engineering ◆ *Appendix I:* Z, Y, ABCD and S-parameters and their Interrelations ◆ *Appendix II:* Ferrites and Electromagnetic Wave Propagation in Magnetised Ferrite Medium ◆ *Appendix III:* MATLAB Programs ◆ *Appendix IV*: Computational Electromagnetics (CEM) and Simulators ◆ *Appendix V:* Useful Formulae and Tables for Microwave Engineering ◆ *Bibliography* ◆ *Further Reading* ◆ *Index*

2016	856 pp.	Paperback
978-81-7371-989-9		₹ 875.00

Optical Communication

M Mukunda Rao
Research Professor, Biomedical Sciences,
Ramachandra Medical College and Research Institute,
Chennai, India

This book deals with optical electronics and communication, and is intended as a core textbook for use both at the undergraduate and postgraduate levels in engineering colleges. The author discusses a number of important aspects like optical sources, transmission mediums, optical fibres, photodetectors, optical receivers, and modulation and remodulation systems. Each concept is systematically presented starting with the historical background and subsequent developments.

Contents: *Preface* ◆ *Introduction* ◆ Optical Sources: The LASER ◆ Optical Sources: The Semiconductors Laser Diode and Light Emitting Diode ◆ Transmission Medium: Atmospheric Propagation ◆ Transmission Medium: Fiber Optics ◆ Optical Fiber Characterization and Fabrication ◆ Photodetectors and Optical Receivers ◆ Modulation and Demodulation Schemes in Optical Communication ◆ Optical Communication Systems ◆ *Bibliography* ◆ *Physical Constants* ◆ *Index*

2000	208 pp.	Paperback
978-81-7371-090-2		₹ 450.00

Physics of Semiconductor Devices
(Second Edition)

Dilip K Roy
Institute of PG Studies and Research, University of Malaya, Malaysia

This book is a comprehensive and up-to-date text providing a lucid perspective of the important concepts and applications of semiconductor devices. It discusses the quantum mechanical tunnel effect on the principles of quantum measurement and observations, and its application in the analysis of *I–V* characteristics of tunnel devices. In this edition, the basic outline of the book and its underlying philosophy remain unchanged. The discussions on 'quantum mechanical tunnelling' have been updated. *Most of the problems in the first edition have been retained and a large number of problems have been added, both as solved examples and as unsolved exercises.* It also contains appendices on amorphous semiconductors and the technology involved in the preparation of semiconductor devices.

Contents: *Preface to the Second Edition* ◆ *Preface* ◆ *Acknowledgements* ◆ *List of Symbols* ◆ Semiconductor Physics: Energy bands ◆ Electrons and holes ◆ Mobility and diffusivity ◆ Intrinsic semiconductor ◆ Doped semiconductor ◆ Temperature dependence of the semiconductor conductivity ◆ Carrier lifetime ◆ Recombination of electrons and holes through traps ◆ Shockely-Read-Hall theory ◆ Optical properties of semiconductors ◆ Gunn effect ◆ Low dimensional quantum phenomena ◆ Physics of PN Junctions: PN homojunctions ◆ Semiconductor heterojunctions ◆ PN Diode equation ◆ A. C. behaviour of PN diodes ◆ Transient response of a PN diode ◆ Solar cells ◆ Light emitting diodes (LEDs) ◆ Laser diodes ◆ Impact avalanche and transit time (IMPATT) diodes ◆ Other configuration of PN diodes ◆ Circuit applications of PN diodes ◆ Transistors Physics: Basic functions of a transistor ◈ Early effect and transistor characteristics ◈ Low-frequency transistor equivalent circuiting ◈ High-frequency transistor behaviour ◈ Graded base transistors ◈ Field-effect transistors ◈ Phototransistor ◈ Unijunction transistor ◈ The four layer PN device ◈ Typical transistor application applications ◈ Metal-semiconductor Devices: Metal-vacuum boundary ◈ Schottky effect ◈ Metal-semiconductor boundary ◈ Ohmic contact ◈ Current transport across a metal-semiconductor boundary ◈ Metal-insulator-semiconductor (MIS) system ◈ Metal-semiconductor field-effect transistor (MESFET) ◈ Metal-oxide-semiconductor field-effect transistor (MOSFET) ◈ Charge coupled devices (CCDs) ◈ Semiconductor Tunnel Devices: Tunnelling from the point of view of quantum measurement ◈ Analysis of the tunnel effect ◈ Heavy-doping effects ◈ Tunnel diodes; Backward and Zener diodes ◈ Metal-insulator-semiconductor-switch (MISS) diode ◈ Tunnel devices of different types ◈ Tunnel diode application ◈ *Appendices* ◈ *Index*

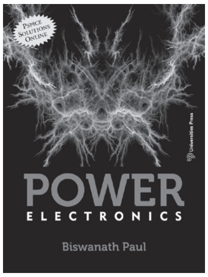
2004	488 pp.	Paperback
978-81-7371-494-8		₹ 695.00

Power Electronics

NEW

Biswanath Paul

Head, Department of Electrical Engineering, Acharya Prafulla Chandra Roy Polytechnic, Jadavpur, Kolkata, India



Power Electronics is an up-to-date and authoritative text that focuses on the fundamental principles and requirements needed for setting up practical power electronic systems. The book deals at length with several power semiconductor devices, providing rigorous coverage of phase-controlled rectifiers, inverters, AC switching controllers / AC voltage controllers, dual converters with cycloconverters, choppers, power supplies with AC power conditioners and resonant converters. It also elaborates on modern developments in the field of HVDC transmission, and the schemes for control of DC and AC motors with drives. Replete with examples, illustrations and chapter-end exercises, the book is ideal for B.Tech. students who study Power Electronics as part of their curriculum. The book is also useful for professionals working in power electronics, power conversion, and analog and digital electronics.

Contents: *Foreword* ◈ *Preface* ◈ *About the Author* ◈ Basics of Power Electronics and PSpice d Power Diodes ◈ Power Transistors (Power BJTs) ◈ Thyristors ◈ Power MOSFETs ◈ Insulated Gate Bipolar Transistor (IGBT) ◈ Gate Turn-OFF and Gate Commutated Turn-OFF Thyristors ◈ Power Devices – MCT, ETO, SIT and SITh ◈ Protection of Semiconductor Devices ◈ Cooling and Mounting of Semiconductor Devices ◈ Phase-controlled Rectifiers ◈ Inverters ◈ AC Switching Controllers / AC Voltage Controllers ◈ Dual Converters and Cycloconverters d Choppers ◈ Power Supplies and AC Power Conditioners ◈ Resonant Converters and HVDC Transmission ◈ Control of DC and AC Motors with Drives ◈ *Index*

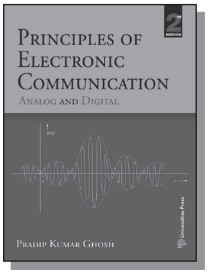
2019	820pp.	Paperback
978-93-86235-73-2		₹ 750.00

Principles of Electronic Communication: Analog and Digital

(Second Edition)

Pradip Kumar Ghosh

Professor and Head, Department of ECE, Mody University of Science and Technology, Jaipur, India



Principles of Electronic Communication: Analog and Digital, Second Edition builds on the chapters of the first edition, revising the topics effectively to reflect current developments in the subject. It has been made more comprehensive and student-friendly, providing adequate coverage of topics associated with analog and digital communication commonly taught to graduate-level students. The book is replete with pedagogical elements that help the student to assimilate the concepts effortlessly and appreciate their functional relevance

PowerPoint slides that encapsulate the essential points of each chapter, and solutions to chapter-end exercises are available as online supplements that can be accessed at www.universitiespress.com/pkghosh/principlesofelectroniccommunication

Contents: *Preface to the Second Edition* ◆ *Preface to the First Edition* ◆ Signal Analysis ◆ Signal Transmission through Linear Systems and Filters ◆ Continuous-Wave Modulation ◆ Exponential CW Modulation ◆ Theory of Probability and Random Process ◆ An Outline of the Theory of Noise ◆ Noise in AM and FM Systems ◆ Pulse Modulation ◆ Information Theory and Coding ◆ Digital Modulation Techniques and Data Transmission ◆ Data Encryption and Decryption ◆ Spread-Spectrum Modulation ◆ Equalisation and Pulse Shaping ◆ *Appendix: Error Functions* ◆ *Bibliography* ◆ *Index*

2017 776 pp. Paperback
978-93-86235-10-7 ₹ 795.00

Probability Theory and Stochastic Processes
(Fourth Edition)

Y Mallikarjuna Reddy
Principal and Professor, ECE Department, Vasireddy Venkatadri Institute of Technology, Nambur, Guntur, India

This book provides an introduction into the mathematical concepts and tools necessary for understanding the theory of probability and the dynamics of stochastic processes central to a number of application areas in engineering sciences, biology medicine and finance. *The material covered in the book is particularly suited to an undergraduate programme in electronics and communications engineering*, for it focuses on probability and the random variable, on random processes, linear systems and probabilistic tools for modelling of noise, which are of direct relevance to this branch of engineering. Each topic is introduced with the fundamental concepts and underlying theories in a concise manner, and is then followed up with several worked-out examples for developing problem-solving skills in the learner. Many of the problems have been drawn from ***previous years' examination papers*** to give students an exposure to the variety and kinds typically encountered in exam situations; the focus of the selection is to train them in the use of explicit probability distributions for solving engineering and physics problems.

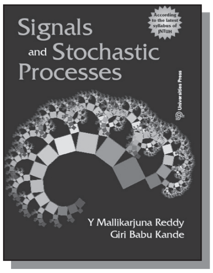
Contents: *Preface* ◆ Introduction to Probability ◆ The Random Variable ◆ Operations on One Random Variable ◆ Multiple Random Variables ◆ Operations on Multiple Random Variables ◆ *Random Processes* ◆ Random Processes: Spectral Characteristics ◆ Linear Systems with Random Processes ◆ *Solved JNTU Question Papers for the Year 1-2* ◆ *Appendix A: Indefinite Integrals, Definite Integrals and Finite Series* ◆ *Appendix B: Fourier Transform Pairs* ◆ *Bibliography* ◆ *Index*

2013 674 pp. Paperback
978-81-7371-887-8 ₹ 595.00

Signals and Stochastic Processes

Y Mallikarjuna Reddy
Principal, Vasireddy Venkatadri Institute of Technology (VVIT), Nambur, Guntur, India

Giri Babu Kande
Professor and Head, Department of Electronics and Communication Engineering, Vasireddy Venkatadri Institute of Technology (VVIT), Nambur, Guntur, India


Signals and Stochastic Processes
According to the latest syllabus of JNTU
Universities Press
Y Mallikarjuna Reddy
Giri Babu Kande

This book, covering the fundamentals of the theory of signals, systems and stochastic process, is intended to provide a firm understanding of the concepts, theories, processes and mathematical tools necessary for dealing with various kinds of signals and their interaction with systems. This knowledge forms the basis for the study of other engineering subjects such as circuit design, power systems, automatic control, communications, and signal processing. Although the contents have been structured keeping in view the requirements of JNTU's electronics and communication engineering undergraduate programme, it will also meet the requirements of the curriculum of most other technical universities in India.

Salient points A firm understanding of continuous- and discrete-time signals, linear time-invariant systems and signal–system interaction ◈ Mathematical tools such as Fourier, Laplace and Z-transforms developed and applied in many problems to provide a clear understanding of their application in signal analysis and synthesis. ◈ The notion of a random signals or stochastic process, their characterisation and response of systems to such signals explained in detail ◈ Simulations of the solutions to many problems developed using MATLAB included as an appendix ◈ Emphasis on problem solving with the inclusion of a large number of worked-out examples and exercises of the kind commonly featured in university examinations

Contents: Introduction To Signals and Systems ◈ Signal Analysis ◈ Fourier Series ◈ Fourier Transforms ◈ Signal Transmission through Linear Systems ◈ Sampling ◈ Laplace Transforms ◈ Z–Transforms ◈ Random Processes – Temporal Characteristics ◈ Stochastic Processes – Spectral Characteristics ◈ *Appendixes* ◈ *A: Simulation with MATLAB* ◈ *B: Review of Random Process* ◈ *C: Some Useful Mathematical Expressions*

2017	640 pp.	Paperback
978-93-86235-31-2		₹ 595.00

Solid State Microelectronic and Optoelectronic Devices

Angsuman Sarkar
Professor, Kalyani Government Engineering College, Solan, India

Chandan Kumar Sarkar
Professor, Department of Electronics and Telecommunication Engineering, Jadavpur University, Kolkata, India

This book deals with the physics of electronic devices, device operation and techniques for modelling devices. The approach is contemporary, for it integrates developments in device design, VLSI and microelectronics with device physics *to serve as a modern textbook on solid state devices, microelectronics and optoelectronics for undergraduate studies, particularly engineering.* It provides a neat overview of the evolution of the more advanced features from basic concepts, which *will be of interest to students of science as well*. Numerous worked-out examples included in the book help to bring further clarity to various concepts covered in the book.

Salient Features: Suitable for a two-semester undergraduate level course in solid state devices, microelectronics and optoelectronic devices ◈ Covers fundamental concepts of semiconductor physics ◈ Includes detailed explanation of discrete semiconductor devices like diodes, bipolar transistors, field effect transistors, sub micron MOSFETs, optoelectronic devices, negative resistance devices, MEMS, semiconductor heterojunctions, CCD, and the basics of IC fabrication ◈ Clear explanations supported by many illustrations ◈ Variety of worked out examples ◈ Additional solved problems and multiple-choice questions at the end of every chapter

Contents: *Preface* ◈ Physics of Semiconductors Diodes ◈ Bipolar Junction Transistors ◈ Junction Field Effect Transistors (JFETs) ◈ Metal Oxide Semiconductor Field Effect Transistors (MOSFETs) ◈ Charge Coupled Devices Elements of Fabrication Technology ◈ Sub-micron MOSFETs Heterostructure Semiconductor Devices Power Electronic Devices Negative Resistance Devices ◈ MEMS Optoelectronic Devices ◈ *Index*

Available in print and e-book formats.
For more details, visit www.universitiespress.com.

2012	664 pp.	Paperback
978-81-7371-770-3		₹ 575.00

Theory of Probability and Stochastic Processes

Pradip Kumar Ghosh
Professor, Department of ECE, Mody University of Science and Technology, Laxmangarh, India

The theory of probability, applied extensively in all fields of engineering and physical sciences to model situations and outcomes, finds usage in fields as varied as social and behavioural sciences, biology, economics, management and business studies as well. This book, written to cater to an undergraduate engineering curriculum, explains the concepts and the mathematics of probability and stochastic processes to enable a student to solve practical problems with confidence. It covers probability axioms, conditional probability, special distributions, random variables, expectations, generating functions, operations on random variables, random processes and their temporal and structural characteristics and response of linear systems to random signals. Several solved examples illustrating the application of key concepts have been included in each chapter. This, together with the generous number of chapter-end exercises of varied levels of difficulty makes this book invaluable as a textbook on the subject.

Contents: Theory of Probability ◆ Theory of Random Variables ◆ Functional Transformation of One Random Variable ◆ Statistical Characteristics of Two or More Random Variables ◆ Operations on Multivariate Random Variables ◆ Correlation Theory of Random Process ◆ Spectral Representation of Random Processes ◆ Response of Linear System to Random Signals ◆ *Bibliography* ◆ *Index*

2010	284 pp.	Paperback
978-81-7371-673-7		₹ 475.00

APPLIED MATHEMATICS

Advanced Modern Algebra
(Second Edition)

Joseph J Rotman
University of Illinois at Urbana-Champaign, USA

Series: Indian Editions of AMS Titles

This book is designed as a text for the first year of graduate algebra, but it can also serve as a reference since it contains more advanced topics as well. This second edition has a different organization than the first. It begins with a discussion of the cubic and quartic equations, which leads into permutations, group theory, and Galois theory (for finite extensions; infinite Galois theory is discussed later in the book). The study of groups continues with finite abelian groups (finitely generated groups are discussed later, in the context of module theory), Sylow theorems, simplicity of projective unimodular groups, free groups and presentations, and the Nielsen-Schreier theorem (subgroups of free groups are free).

The study of commutative rings continues with prime and maximal ideals, unique factorization, noetherian rings, Zorn's lemma and applications, varieties, and Gröbner bases. Next, noncommutative rings and modules are discussed, treating tensor product, projective, injective, and flat modules, categories, functors, and natural transformations, categorical constructions (including direct and inverse limits), and adjoint functors. Then follow group representations: Wedderburn-Artin theorems, character theory, theorems of Burnside and Frobenius, division rings, Brauer groups, and abelian categories. Advanced linear algebra treats canonical forms for matrices and the structure of modules over PIDs, followed by multilinear algebra.

Homology is introduced, first for simplicial complexes, then as derived functors, with applications to Ext, Tor, and cohomology of groups, crossed products, and an introduction to algebraic K-theory. Finally, the author treats localization, Dedekind rings and algebraic number theory, and homological dimensions. The book ends with the proof that regular local rings have unique factorization.

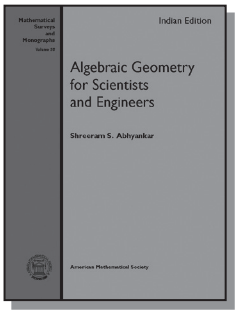
Contents: *Preface to Second Edition* ◆ Special Notation ◆ Groups I ◆ Classical Formulas ◆ Permutations ◆ Groups ◆ Lagrange's Theorem ◆ Homomorphisms ◆ Quotient Groups ◆ Group Actions ◆ Counting ◆ Commutative Rings I ◆ First Properties ◆ Polynomials ◆ Homomorphisms ◆ From Arithmetic to Polynomials ◆ Irreducibility ◆ Euclidean Rings and Principal Ideal Domains ◆ Vector Spaces ◆ Linear Transformations and Matrices ◆ Quotient Rings and Finite Fields ◆ Galois Theory ◆ Insolvability of the Quintic ◆ Classical Formulas and Solvability by Radicals ◆ Translation into Group Theory ◆ Fundamental Theorem of Galois Theory ◆ Calculations of Galois Groups ◆ Groups II ◆ Finite Abelian Groups ◆ Direct Sums ◆ Basis Theorem ◆ Fundamental Theorem ◆ Sylow Theorems ◆ Solvable Groups ◆ Projective Unimodular Groups ◆ Free Groups and Presentations ◆ Nielsen–Schreier Theorem ◆ Commutative Rings II ◆ Prime Ideals and Maximal Ideals ◆ Unique Factorization Domains ◆ Noetherian Rings ◆ Zorn's Lemma and Applications ◆ Zorn's Lemma ◆ Vector Spaces ◆ Algebraic Closure ◆ Lüroth's Theorem ◆ Transcendence ◆ Separability ◆ Varieties ◆ Varieties and Ideals ◆ Nullstellensatz ◆ Irreducible Varieties ◆ Primary Decomposition ◆ Algorithms in k[x, . . ., xn] ◆ Monomial Orders ◆ Division Algorithm ◆ Gröbner Bases ◆ Buchberger's

Algorithm ◈ Rings ◈ Modules ◈ Categories ◈ Functors ◈ Free and Projective Modules

2014	1024 pp.	Paperback
978-1-4704-1916-5		₹ 2,040.00

Algebraic Geometry for Scientists and Engineers

Shreeram S Abhyankar
Purdue University, West Lafayette, USA


Mathematical Surveys and Monographs
Indian Edition
Algebraic Geometry for Scientists and Engineers
Shreeram S. Abhyankar
American Mathematical Society

This book, based on lectures presented in courses on algebraic geometry taught by the author at Purdue University, *is intended for engineers and scientists (especially computer scientists)*, as well as graduate students and advanced undergraduates in mathematics. In addition to providing a concrete or algorithmic approach to algebraic geometry, the author also attempts to motivate and explain its link to more modern algebraic geometry based on abstract algebra. The book covers various topics in the theory of algebraic curves and surfaces, such as rational and polynomial parametrization, functions and differentials on a curve, branches and valuations, and resolution of singularities. The emphasis is on presenting heuristic ideas and suggestive arguments rather than formal proofs. *Readers will gain new insight into the subject of algebraic geometry in a way that should increase appreciation of modern treatments of the subject, as well as enhance its utility in applications in science and industry.*

Contents: Rational and polynomial parametrizations Fractional linear transformations ◈ Cubic curves ◈ Cubic surfaces and general hypersurfaces ◈ Outline of the theory of plane curves ◈ Affine plane and projective plane ◈ Sphere with handles ◈ Functions and differentials on a curve ◈ Polynomials and power series ◈ Review of abstract algebra ◈ Some commutative algebra ◈ Hensel's lemma and Newton's theorem ◈ More about Newton's theorem ◈ Branches and valuations ◈ Divisors of functions and differentials ◈ Weierstrass preparation theorem Intersection multiplicity ◈ Resolution of singularities of plane curves Infinitely near singularities ◈ Parametrizing a quartic with three double points ◈ Characteristic pairs ◈ Criterion for one place and Jacobian problem ◈ Inversion formula and Jacobian problem Surfaces ◈ Hypersurfaces ◈ Resolution of singularities of algebraic surfaces ◈ Birational and polyrational transformations ◈ Valuations and birational correspondence ◈ Rational cylinders through a variety Resultants ◈ *Bibliography* ◈ *Index*

2011	312 pp.	Paperback
978-0-8218-6894-2		₹ 1,075.00

Computer Arithmetic Algorithms
(Second Edition)

Israel Koren
Professor of Electrical and Computer Engineering,
University of Massachusetts, Amherst, USA

Explains the principles of algorithms used in arithmetic operations on digital computers: Basic arithmetic operations like addition, subtraction, multiplication, and division in fixed-point and floating-point number systems.

More complex operations such as square root extraction and evaluation of exponential, logarithmic, and trigonometric functions.

New sections on floating-point adders, floating-point exceptions, general carry-look-ahead adders, prefix adders, Ling adders, and fused multiply-add units.

New algorithms and implementations have been added to almost all chapters. An on-line JavaScript-based simulator for many of the algorithms contained in the book is available at *www.ecs.umass.edu/ece/koren/arith/simulator.*

Contents: *Forward to the Second Edition* ◈ *Preface* ◈ Conventional Number Systems ◈ Unconventional Fixed-Radix Number Systems ◈ Sequential Algorithms for Multiplication and Division ◈ Binary Floating-Point Numbers ◈ Fast Addition ◈ High-Speed Multiplication ◈ Fast Division ◈ Division through Multiplication ◈ Evaluation of Elementary Function ◈ Logarithmic Number System ◈ The Residue Number System ◈ *Index*

2005	300 pp.	Paperback
978-81-7371-533-4		₹ 695.00

Computer Programming and Numerical Analysis: An Integrated Approach
(Revised Edition with C)

N Datta
Head, Department of Mathematics, Heritage Institute of Technology, Kolkata; formerly Senior Professor, Department of Mathematics, Indian Institute of Technology Kharagpur, Kharapur, India

The availability of high-speed digital computers has led to the widespread study of computer programming and numerical analysis in Indian universities and technolo-gical institutes. *This book presents the theory and applications of numerical methods for the solution of various types of computational problems in Science and Engineering.*

Contents: *Preface* ◈ Introduction to Computer Systems ◈ Problem Solving on a Computer ◈ FORTRAN Language Fundamentals ◈ Expression and Assignment Statements ◈ Simple Input/output Statements ◈ Control Statements ◈ Subscripted Variables ◈ Subprograms ◈ Files and General Input/output Statements ◈ Programming ◈ Errors in Numerical Computation ◈ Interpolation ◈ Numerical Differentiation and Integration ◈ Solution of Algebraic and Transcendental Equations ◈ Solution of Systems of Linear Equations ◈ Numerical Solution of Ordinary Differential Equations ◈ Matrix Eigen value Problem ◈ Finite Difference Methods for Solving BVP Associated with Partial Differential Equations ◈ Miscellaneous topics ◈ Programs ◈ *Appendix A: The Programming Language C* ◈ *Appendix B: Some Selected Programs* ◈ *Index*

2003	516 pp.	Paperback
978-81-7371-451-1		₹ 650.00

Cryptography: An Introduction

V V Yaschenko
Moscow Center for Continuous Mathematics Education, Russia

Series: Indian Editions of AMS Titles

Learning about cryptography requires examining fundamental issues about information security. Questions abound, ranging from 'From whom are we protecting ourselves?' and 'How can we measure levels of security?' to 'what are our opponent's capabilities?' and 'What are their goals?' Answering these questions requires and understanding of basic cryptography. This book, written by Russian cryptographers, explains those basics. Chapters are independent and can be read in any order. The introduction gives a general description of all the main notions of modern cryptography: a cipher, a key, security, and electronic digital signature, a cryptographic protocol, etc. Other chapters delve more deeply into this material. The final chapter presents problems and selected solutions form "Cryptography Olympiads for (Russian) High School Students".

This is an English translation of a Russian textbook. It is *suitable for advanced high school students and undergraduates studying information security. It is also appropriate for a general Mathematical audience interested in cryptography.*

Also on cryptography and available from the AMS is *Codebreakers: Arne Beurling and the Swedish Crypto Program during World War II.*

Contents: Main notions ◈ Cryptograpy and complexity theory ◈ Cryptographic protocols ◈ Algorithmic problems of number theory ◈ Mathematics of secret sharing ◈ Cryptography olympiads for high school students ◈ *Bibliography*

2009	240 pp.	Paperback
978-0-8218-4850-0		₹ 870.00

Differential Equations with Applications and Programs

S Balachandra Rao
Formerly Head, Department of Mathematics, National College, Bengaluru, India

H R Anuradha
Lecturer in Mathematics, V V S Firstgrade College for Women, Bengaluru, India

This book is designed to serve as a *textbook for undergraduate students of mathematics, physics, physical chemistry, engineering, etc.*

It also contains a *large number of worked examples besides exercises and answers*. A whole chapter is devoted to numerical techniques to solve differential equations in which computer programs and printouts of worked examples are included.

Contents: *Preface* ◆ Basic Concepts ◆ Differential Equation of First Order and First Degree ◆ Differential Equations of First Order and Higher Degree ◆ Orthogonal Trajectories ◆ Higher Order Linear Differential Equations (with constant coefficients) ◆ Cauchy-Euler Differential Equations ◆ Simultaneous Differential Equations (in two variables with constant coefficients) ◆ Second Order Differential Equations with Variable Coefficients ◆ Power Series Solutions of Different Equations ◆ Legendre's Equation and Polynomials ◆ Bessel's Differential Equation ◆ Total Differential Equations ◆ Simulation Total Differential Equations ◆ Laplace Transforms ◆ Fourier Series ◆ Numerical Solution of Differential Equations ◆ Answers to Exercises ◆ *Bibliography* ◆ *Index*

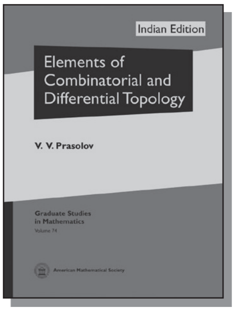
1996	416 pp.	Paperback
978-81-7371-023-0		₹ 595.00

Elements of Combinatorial and Differential Topology

V V Prasolov

Independent University of Moscow, Russia

Series: Indian Editions of AMS Titles



Modern topology uses very diverse methods. This book is devoted largely to methods of combinatorial topology, which reduce the study of topological spaces to investigations of their partitions into elementary sets, and to methods of differential topology, which deal with smooth manifolds and smooth maps. Many topological problems can be solved by using either of these two kinds of methods, combinatorial or differential. In such cases, both approaches are discussed.

One of the main goals of this book is to advance as far as possible in the study of the properties of topological spaces (especially manifolds) without employing complicated techniques. This distinguishes it from the majority of other books on topology.

The book contains many problems; almost all of them are supplied with hints or complete solutions.

Contents: *Preface* ◆ *Notation* ◆ *Basic Definitions* ◆ ◆ Graphs ◆ Topological and Geometric Properties of Graphs ◆ Homotopy Properties of Graphs ◆ Graph Invariants ◆ Topology in Euclidean Space ◆ Topology of Subsets of Euclidean Space ◆ Curves in the Plane ◆ The Brouwer Fixed Point Theorem and Sperner's Lemma ◆ Topological Spaces ◆ Elements of General Topology ◆ Simplicial Complexes ◆ CW-Complexes ◆ Constructions ◆ Two-Dimensional Surfaces, Coverings, Bundles, and Homotopy Groups ◆ Two-Dimensional Surfaces ◆ Coverings ◆ Graphs on Surfaces and Deleted Products of Graphs ◆ Fibrations and Homotopy Groups ◆ Manifolds ◆ Definition and Basic Properties ◆ Tangent Spaces ◆ Embeddings and Immersions ◆ The Degree of a Map ◆ Morse Theory ◆ Fundamental Groups ◆ CW-Complexes ◆ The Seifert–van Kampen Theorem ◆ Fundamental Groups of Complements of Algebraic Curves ◆ Hints and Solutions ◆ *Bibliography* ◆ *Index*

2014	348 pp.	Paperback
978-1-4704-1915-8		₹ 1,020.00

Engineering Mathematics

(Second Edition)

Koneru Sarveswara Rao

Formerly Professor, Department of Mathematics,
Indian Institute of Technology Bombay, Mumbai,
India

This book deals with the branches of mathematics required by engineers in their various fields of study. The topics covered include sequences and series, mean value theorems, evolutes, functions of several variables, solutions of ordinary and partial differential equations, Laplace, Fourier and Z-transforms, along with their applications. In the revised edition, solutions of differential equations in series, beta and gamma functions, analytical geometry in three dimensions and complex analysis have been added. In addition, there are chapters on vector calculus, matrices, Fourier series and numerical algorithms, and together, the above provide a fairly comprehensive coverage of mathematics for engineering. *The book can serve as a textbook for undergraduate programmes in engineering as well science.*

Contents: Sequences and infinite series ◆ Mean value theorems, envelopes and evolutes ◆ Ordinary differential equations of first order ◆ Linear differential equations of second and higher order ◆ Laplace transforms ◆ Solution of differential equations in series ◆ Legendre polynomials and Bessel functions ◆ Beta and Gamma functions ◆ Analytical Geometry in three dimensions ◆ Functions of several variables ◆ Curve tracing and some properties of polar curves ◆ Lengths, volumes, surface areas and multiple integrals ◆ Vector calculus; Matrices and linear systems ◆ Eigen values and eigen vectors ◆ Fourier series ◆ Complex analysis ◆ Partial differential equations ◆ Applications of partial differential equations ◆ Fourier and Z-Transforms ◆ Probability ◆ Random variables and probability distributions ◆ Joint distributions ◆ Sampling distributions ◆ Statistical estimation and inference ◆ Curve fitting, regression and correlation ◆ Numerical methods ◆ *Epilogue*

Available in print and e-book formats.
For details, visit www.universitiespress.com.

2012	704 pp.	Paperback
978-81-7371-772-7		₹ 650.00

Engineering Optimization: A Modern Approach

Ranjan Ganguli
Professor, Department of Aerospace Engineering,
Indian Institute of Science, Bengaluru, India

The deployment of optimization techniques at the conceptual design stage of complex technical systems is today no longer a desirable trait but an absolute necessity.

This *book aims to make the optimization technique pervasive in engineering design* by moving the problem from an academic setting to an industrial platform. It provides a thorough understanding of the concepts of optimization necessary for a robust design of technical systems. The approach is from a modern perspective-it dwells on surrogate modelling and non-gradient-based algorithms and at the same time emphasizes classical methods for pedagogical reasons. Nonlinear optimization, response-surface method and genetic-algorithm approaches have been focussed upon to bridge the gap between nonlinear programming and engineering optimization techniques.

The best way to learn optimization methods is undoubtedly by solving problems and following it up with *exercises in computer programming*. To enable this experience, the book has *several solved examples*, some of them non-trivial, besides many unsolved problems for the student to work out.

Contents: *Preface* ◆ Basic concepts ◆ Direct one-dimensional search ◆ Gradient-based methods ◆ Newtonian methods ◆ Constrained optimization methods ◆ Response surface method ◆ Genetic algorithm ◆ *Bibliography* ◆ *Index*

Distributed worldwide (except India)
by CRC Press LLC, USA, Taylor and Francis Group

2011	268 pp.	Paperback
978-81-7371-739-0		₹ 595.00

Fourier Analysis

Javier Duoandikoetxea
Universidad del País Vasco/Euskal Herriko
Unibertsitatea, Bilbao, Spain

Series: Indian Editions of AMS Titles

Fourier analysis encompasses a variety of perspectives and techniques. This volume presents the real variable methods of Fourier analysis introduced by *Calderón and Zygmund*. The *text was born from a graduate course taught at the Universidad Autónoma de Madrid and incorporates lecture notes from a course taught by José Luis Rubio de Francia at the same university.*

Motivated by the study of Fourier series and integrals, classical topics are introduced, such as the Hardy-Littlewood maximal function and the Hilbert transform. The remaining portions of the text are devoted to the study of singular integral operators and multipliers. Both classical aspects of the theory and more recent developments, such as weighted inequalities, H_1, *BMO* spaces, and the T1 theorem, are discussed.

Chapter 1 presents a review of Fourier series and integrals; *Chapters 2* and *3* introduce two operators that are basic to the field: the Hardy-Littlewood maximal function and the Hilbert transform. *Chapters 4* and *5* discuss singular integrals, including modern generalizations. *Chapter 6* studies the relationship between H_1, *BMO*, and singular integrals; *Chapter 7* presents the elementary theory of weighted norm inequalities. *Chapter 8* discusses Littlewood-Paley theory, which had developments that resulted in a number of applications. The final chapter concludes with an important result, the T1 theorem, which has been of crucial importance in the field.

This volume has been updated and translated from the Spanish edition that was published in 1995. Minor changes have been made to the core of the book; however, the sections, "Notes and Further Results" have been considerably expanded and incorporate new topics, results, and references. It is geared toward *graduate students seeking a concise introduction to the main aspects of the classical theory of singular operators and multipliers.* Prerequisites include basic knowledge in Lebesgue integrals and functional analysis.

Contents: Fourier series and integrals ◈ The Hardy-Littlewood maximal function ◈ The Hilbert transform ◈ Singular integrals (I) ◈ Singular integrals (II) ◈ H_1 and *BMO* ◈ Weighted inequalities ◈ Littlewood-Paley theory and multipliers ◈ The T1 theorem ◈ *Bibliography* ◈ *Index*

2013	240 pp.	Paperback
978-1-4704-0926-5		₹ 900.00

Fourier Analysis and Its Applications

Gerald B Folland
University of Washington, Seattle, USA

Series: Indian Editions of AMS Titles

This book presents the theory and applications of Fourier series and integrals, eigenfunction expansions, and related topics, on a level suitable for advanced undergraduates. It includes material on Bessel functions, orthogonal polynomials, and Laplace transforms, and it concludes with chapters on generalized functions and Green's functions for ordinary and partial differential equations. The book deals almost exclusively with aspects of these subjects that are useful in physics and engineering, and includes a wide variety of applications. On the theoretical side, it uses ideas from modern analysis to develop the concepts and reasoning behind the techniques without getting bogged down in the technicalities of rigorous proofs.

Contents: Overture ◈ Fourier Series ◈ Orthogonal Sets of Functions ◈ Some Boundary Value Problems ◈ Bessel Functions ◈ Orthogonal Polynomials ◈ The Fourier Transform ◈ The Laplace Transform ◈ Generalized Functions ◈ Green's Functions ◈ *Appendices* ◈ *Answers to the Exercises* ◈ *References* ◈ *Index of Symbols* ◈ *Index*

2010	433 pp.	Paperback
978-0-8218-5208-8		₹ 1,395.00

Fundamentals of Computational Fluid Dynamics

Tapan K Sengupta
Professor, Department of Aerospace Engineering,
Indian Institute of Technology Kanpur, Kanpur, India

This book aims to provide a foundation to CFD which finds application in solving cutting-edge research problems. It includes both classical and recent methods of solving high Reynolds number incompressible flows. The first four chapters deal with the governing equations and discussions on ranges of temporal and spatial scales. This is followed by classical methods for PDEs, coordinate transformations and grid generation. A full chapter is devoted to spectral analysis tools developed by the author, and aliasing error which is least understood but important for DNS/LES. The last three chapters provide higher order methods, discussions on higher accuracy finite volume methods and their comparion to finite element methods. In the last chater, applications of some of the methods highlighting the issues of unsteady and transitional/turbulent flows are presented.

Contents: *Preface* ◈ Basic Ideas of Computational Fluid Mechanics ◈ Governing Equations of Fluid Mechanics ◈ Classification of Quasi-Linear PDEs ◈ Additional Issues of CFD: Space-Time Resolution of Flows ◈ Discretization of Partial Differential Equations ◈ Solution Methods for Parabolic PDEs and their Analysis ◈ Solution Method for Elliptic PDEs ◈ Solution of Hyperbolic PDEs ◈ Curvilinear Coordinates and Grid Generation ◈ Spectral Analysis of Numerical Schemes and Aliasing Error ◈ High Order Methods ◈ Introduction to Finite Volume and Finite Element Methods ◈ Solution of Navier-Stokes Equation ◈ *Appendices* ◈ *Index*

2004	364 pp.	Paperback
978-81-7371-478-8		₹ 1,095.00

Introduction to Differential Equations

Michael E Taylor
University of North Carolina, Chapel Hill, USA

Series: Indian Editions of AMS Titles

The mathematical formulations of problems in physics, economics, biology, and other sciences are usually embodied in differential equations. The analysis of the resulting equations then provides new insight into the original problems. This book describes the tools for performing that analysis.

The *first chapter* treats single differential equations, emphasizing linear and nonlinear first order equations, linear second order equations, and a class of nonlinear second order equations arising from Newton's laws. The first order linear theory starts with a self-contained presentation of the exponential and trigonometric functions, which plays a central role in the subsequent development of this chapter. *Chapter 2* provides a mini-course on linear algebra, giving detailed treatments of linear transformations, determinants and invertibility, eigenvalues and eigenvectors, and generalized eigenvectors. This treatment is more detailed than that in most differential equations texts, and provides a solid foundation for the next two chapters. *Chapter 3* studies linear systems of differential equations. It starts with the matrix exponential, melding material from Chapters 1 and 2, and uses this exponential as a key tool in the linear theory. *Chapter 4* deals with nonlinear systems of differential equations. This uses all the material developed in the first three chapters and moves it to a deeper level. The chapter includes theoretical studies, such as the fundamental existence and uniqueness theorem, but also has numerous examples, arising from Newtonian physics, mathematical biology, electrical circuits, and geometrical problems. These studies bring in variational methods, a fertile source of nonlinear systems of differential equations. *The reader who works through this book will be well prepared for advanced studies in dynamical systems, mathematical physics, and partial differential equations.*

Contents: *Preface* ◈ Single Differential Equations ◈ Linear Algebra ◈ Linear Systems of Differential Equations ◈ Nonlinear Systems of Differential Equations ◈ *Bibliography* ◈ *Index*

2013	424 pp.	Paperback
978-1-4704-0913-5		₹ 1,140.00

Introduction to Fourier Analysis and Wavelets

Mark A Pinsky
Northwestern University, Evanston, USA

Series: Indian Editions of AMS Titles

This book provides a concrete introduction to a number of topics in harmonic analysis, accessible at the early graduate level or, in some cases, at an upper undergraduate level. Necessary prerequisites to using the text are rudiments of the Lebesgue measure and integration on the real line. It begins with a thorough treatment of Fourier series on the circle and their applications to approximation theory, probability, and plane geometry (the isoperimetric theorem). Frequently, more than one proof is offered for a given theorem to illustrate the multiplicity of approaches.

The *second chapter* treats the Fourier transform on Euclidean spaces, especially the author's results in the three-dimensional piecewise smooth case, which is distinct from the classical Gibbs-Wilbraham phenomenon of one-dimensional Fourier analysis. The Poisson summation formula treated in *Chapter 3* provides an elegant connection between Fourier series on the circle and Fourier transforms on the real line, culminating in Landau's asymptotic formulas for lattice points on a large sphere.

Much of modern harmonic analysis is concerned with the behavior of various linear operators on the Lebesgue spaces Lp(Rn). *Chapter 4* gives a gentle introduction to these results, using the Riesz-Thorin theorem and the Marcinkiewicz interpolation formula. One of the long-time users of Fourier analysis is probability theory. In *Chapter 5* the central limit theorem, iterated log theorem, and Berry-Esseen theorems are developed using the suitable Fourier-analytic tools.

The final chapter furnishes a gentle introduction to wavelet theory, depending only on the L2 theory of the Fourier transform (the Plancherel theorem). The basic notions of scale and location parameters demonstrate the flexibility of the wavelet approach to harmonic analysis.

The *text contains numerous examples and more than 200 exercises*, each located in close proximity to the related theoretical material.

Contents: Fourier series on the circle ◈ Fourier transforms on the line and space ◈ Fourier analysis in Lp spaces ◈ Poisson summation formula and multiple Fourier series ◈ Applications to probability theory ◈ Introduction to wavelets ◈ *References* ◈ *Notations* ◈ *Index*

2012	376 pp.	Paperback
978-0-8218-8712-7		₹ 1,080.00

Introduction to MATLAB Programming, Toolbox and Simulink

Jaydeep Chakravorty
See page 103

Introduction to Probability
(Second Edition)

Charles M Grinstead
Swarthmore College, USA

J Laurie Snell
Dartmouth College, Hanover, USA

Series: Indian Editions of AMS Titles

This text is designed for an introductory probability course at the university level for sophomores, juniors, and seniors in mathematics, physical and social sciences, engineering, and computer science. It presents a thorough treatment of ideas and techniques necessary for a firm understanding of the subject.

The text is also recommended for use in discrete probability courses. The material is organized so that the discrete and continuous probability discussions are presented in a separate, but parallel, manner. This organization does not emphasize an overly rigorous or formal view of probability and therefore offers some strong pedagogical value. Hence, the discrete discussions can sometimes serve to motivate the more abstract continuous probability discussions.

Salient Features: Key ideas are developed in a somewhat leisurely style, providing a variety of interesting applications to probability and showing some nonintuitive ideas. ◈ Over *600 exercises* provide the opportunity for practicing skills and developing a sound understanding of ideas. ◈ Numerous historical comments deal with the development of discrete probability.

Contents: *Reprint of entire volume* ◈ Discrete probability distributions ◈ Continuous probability densities ◈ Combinatorics ◈ Conditional probability ◈ Important distributions and densities ◈ Expected value and variance ◈ Sums of independent random variables ◈ Law of large numbers ◈ Central limit theorem ◈ Generating functions ◈ Markov chains ◈ Random walks ◈ *Appendices* ◈ *Index*

2009	528 pp.	Paperback
978-0-8218-4857-9		₹ 1,470.00

Linear Optimization and Extensions: Problems and Solutions

Dimitris Alevras & Manfred W Padberg

Series: Low Priced Edition of Springer Mathematics Titles

This book offers a *comprehensive treatment of the exercises and case studies* as well as summaries of the chapters of the book Linear Optimization and Extensions by Manfred Padberg. It covers the areas of linear programming and the optimisation of linear functions over polyhedra infinite dimensional Euclidean vector spaces.

The main topics treated in the book are: Simplex algorithms and their derivatives including the duality theory of linear programming; Polyhedral theory, pointwise and linear descriptions of polyhedra, double description algorithms, Gaussian elimination with and without division, the complexity of simplex steps; Projective algorithms, the geometry of projective algorithms, Newtonian barrier methods; Ellipsoids algorithms in perfect and infinite precision arithmetic, the equivalence of linear optimisation and polyhedral separation; The foundations of mixed-integer programming and combinatorial optimisation.

Contents: *Introduction* ◆ The Linear Programming Problem ◆ Basic Concepts ◆ Five Preliminaries ◆ Simplex Algorithms ◆ Primal-Dual Pairs ◆ Analytical Geometry ◆ Projective Algorithms ◆ Ellipsoid Algorithms ◆ Combinatorial Optimization: An Introduction ◆ *Appendix A: Short-Term Financial Management* ◆ *Appendix B: Operations Management in a Refinery* ◆ *Appendix C: Automatized Production: PCBs and lliysses’ Problem* ◆ *Bibliography* ◆ *Index*

2010	558 pp.	Paperback
978-81-8489-524-7		₹ 825.00

Numerical Analysis: Mathematics of Scientific Computing
(Third Edition)

David Kincaid
University of Texas at Austin, USA

Ward Cheney
University of Texas at Austin, USA

Series: Indian Editions of AMS Titles

This book introduces students with diverse backgrounds to various types of mathematical analysis that are commonly needed in scientific computing. The subject of numerical analysis is treated from a mathematical point of view, offering *a complete analysis of methods for scientific computing* with appropriate motivations and careful proofs.

In an engaging and informal style, the authors demonstrate that many computational procedures and intriguing questions of computer science arise from theorems and proofs. Algorithms are presented in pseudocode, so that *students can immediately write computer programs in standard languages* or use interactive mathematical software packages.

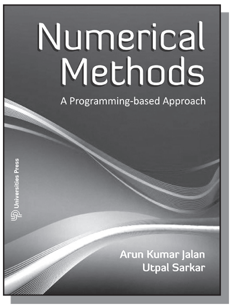
Contents: Mathematical Preliminaries ◆ Computer Arithmetic ◆ Solution of Nonlinear Equations ◆ Solving Systems of Linear Equations ◆ Selected Topics in Numerical Linear Algebra ◆ Approximating Functions ◆ Numerical Differentiation and Integration ◆ Numerical Solution of Ordinary Differential Equations ◆ Numerical Solution of Partial Differential Equations ◆ Linear Programming and Related Topics ◆ Optimization ◆ *Appendix A: An Overview of Mathematical Software* ◆ *Bibliography* ◆ *Index*

2010	788 pp.	Paperback
978-0-8218-5207-1		₹ 2,005.00

Numerical Methods: A Programming-based Approach

Arun Kumar Jalan
Professor in Mathematics, Dean of Students’ Affairs, M C K V Institute of Engineering, Howrah, India

Utpal Sarkar
Assistant Professor in Mathematics, M C K V Institute of Engineering, Howrah, India



This textbook presents the frequently used numerical methods in a simple, well-structured and logical manner to enable students to easily grasp the pertinent concepts. All the concepts are accompanied by numerous solved problems of varying levels of difficulty to further strengthen and consolidate the students’ understanding. From a software perspective, algorithms as well as C programs are included to enable the student to optimise their usage of the techniques. The text is well supported with problems, illustrations, assignments, MCQs and long and short answer questions, thereby providing an exam-oriented approach.

Online teacher resources such as solutions manual and PowerPoint slides are available at www.universitiespress.com

Contents: *Preface and Acknowledgements* ◆ Approximation in Numerical Computations ◆ Calculus of Finite Differences ◆ Interpolation ◆

Numerical Integration ◈ Numerical Solutions of Ordinary Differential Equations ◈ Numerical Solutions of Algebraic and Transcendental Equations ◈ Numerical Solution of a System of Linear Equations ◈ Curve Fitting and Spline Interpolation ◈ Algorithms and Programs in C Language ◈ Introduction to Software Packages ◈ *Appendix: Fourier Series and Fourier Transforms* ◈ *Index*

2015	432 pp.	Paperback
978-81-7371-958-5		₹ 550.00

Numerical Methods with Programs in BASIC, FORTRAN, Pascal and C++

(Revised Edition)

S Balachandra Rao
Formerly Head, Department of Mathematics, National College, Bengaluru, India

C K Shantha
Head, Department of Mathematics, Mount Carmel College, Bengaluru, India

The book discusses the important numerical methods which are frequently used in mathematical, physical, engineering and even biological sciences. It will serve as an *ideal textbook for the undergraduate and diploma courses*.

The revised edition has a section on C++ and programs in C++.

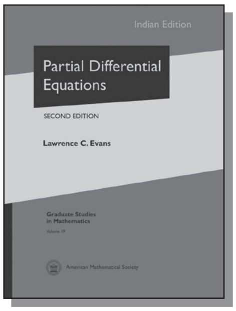
Contents: *List of Programs* ◈ *Preface* ◈ *Acknowledgements* ◈ Numbers, Errors and Accuracy ◈ Iterative Process ◈ Solution of Nonlinear Equations ◈ Finite Differences and Interpolation ◈ Numerical Differentiation ◈ Numerical Integration ◈ System of Linear Equations ◈ Eigenvalues and eigenvectors ◈ Differential Equations ◈ A Primer to Computer Programming ◈ Appendix: C++ Programs ◈ *Answers to Problems* ◈ *Bibliography* ◈ *Index*

2004	504 pp.	Paperback
978-81-7371-472-6		₹ 650.00

Partial Differential Equations

(Second Edition)

Lawrence C Evans
Department of Mathematics, University of California, Berkeley, USA


Indian Edition
Partial Differential Equations
SECOND EDITION
Lawrence C. Evans
Graduate Studies in Mathematics
American Mathematical Society

This is the second edition of the now definitive text on partial differential equations (PDE). It offers a comprehensive survey of modern techniques in the theoretical study of PDE with particular emphasis on nonlinear equations. Its wide scope and clear exposition make it a great text for a graduate course in PDE. For this edition, the author has made numerous changes, including

- a new chapter on nonlinear wave equations
- more than 80 new exercises
- several new sections
- a significantly expanded bibliography

Contents: *Preface to second edition* ◈ *Preface to first edition* ◈ Introduction ◈ Four Important Linear PDE ◈ Nonlinear First-Order PDE ◈ Other Ways to Represent Solutions ◈ Sobolev Spaces ◈ Second-Order Elliptic Equations ◈ Linear Evolution Equations ◈ The Calculus of Variations ◈ Nonvariational Techniques ◈ Hamilton–Jacobi Equations ◈ Systems of Conservation Laws ◈ Nonlinear Wave Equations ◈ Appendix A: Notation ◈ Appendix B: Inequalities ◈ Appendix C: Calculus ◈ Appendix D: Functional Analysis ◈ Appendix E: Measure Theory ◈ *Bibliography* ◈ *Index*

2014	776 pp.	Paperback
978-1-4704-1497-9		₹ 1,625.00

Probability

Davar Khoshnevisan
University of Utah, Salt Lake City, USA

Series: Indian Editions of AMS Titles

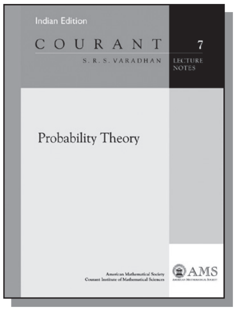
This is a textbook for a one-semester graduate course in measure-theoretic probability theory, but with ample material to cover an ordinary year-long course at a more leisurely pace. *Khoshnevisan's* approach is to develop the ideas that are absolutely central to modern probability theory, and to showcase them by presenting their various applications. As a result, a few of the familiar topics are replaced by interesting non-standard ones. The topics range from undergraduate probability and classical limit theorems to Brownian motion and elements of stochastic calculus. *Throughout, the reader will find many exciting applications of probability theory and probabilistic reasoning. There are numerous exercises, ranging from the routine to the very difficult. Each chapter concludes with historical notes.*

Contents: *Preface* ◈ General Notation ◈ Classical Probability ◈ Bernoulli Trials ◈ Measure Theory ◈ Integration ◈ Product Spaces ◈ Independence ◈ The Central Limit Theorem ◈ Martingales ◈ Brownian Motion ◈ Terminus: Stochastic Integration ◈ *Appendix* ◈ *Bibliography* ◈ *Index*

2012	224 pp.	Paperback
978-0-8218-9181-0		₹ 1,020.00

Probability Theory

S R S Varadhan
New York University - Courant Institute of Mathematical Sciences, New York, USA



S R S Varadhan is recognized as a top expert in probability theory. This volume presents topics in probability theory covered during a first-year graduate course given by Varadhan at the Courant Institute of Mathematical Sciences. The necessary background material in measure theory is developed, including the standard topics, such as extension theorem, construction of measures, integration, product spaces, Radon-Nikodym theorem, and conditional expectation.

In the first part of the book, characteristic functions are introduced, followed by the study of weak convergence of probability distributions. Then both the weak and strong limit theorems for sums of independent random variables are proved, including the weak and strong laws of large numbers, central limit theorems, laws of the iterated logarithm, and the Kolmogorov three series theorem. The first part concludes with infinitely divisible distributions and limit theorems for sums of uniformly infinitesimal independent random variables.

The second part of the book mainly deals with dependent random variables, particularly martingales and Markov chains. Topics include standard results regarding discrete parameter martingales and Doob's inequalities. The standard topics in Markov chains are treated, i.e., transience, and null and positive recurrence. A varied collection of examples is given to demonstrate the connection between martingales and Markov chains.

Additional topics covered in the book include stationary Gaussian processes, ergodic theorems, dynamic programming, optimal stopping, and filtering. A large number of examples and exercises is included. The book is a suitable text for a first-year graduate course in probability.

S R S Varadhan is the winner of the 2007 Abel Prize. Varadhan was awarded the prize "for his fundamental contributions to probability theory and in particular for creating a unified theory of large deviations".

Contents: Measure theory ◈ Weak convergence ◈ Independent sums ◈ Dependent random variables ◈ Martingales ◈ Stationary stochastic processes ◈ Dynamic programming and filtering ◈ *Bibliography* ◈ *Index*

2014	176 pp.	Paperback
978-1-4704-1914-1		₹ 900.00

Probability: The Science of Uncertainty: with Applications to Investments, Insurance, and Engineering

Michael A Bean
Formerly Professor of Mathematics and Actuarial Science; Fellow of the Society of the Casualty Actuarial Society; Fellow of the Society of the Actuaries; Fellow of the Canadian Institute of Actuaries, Canada

Series: Indian Editions of AMS Titles

This book covers the basic probability of distributions with an emphasis on applications from the areas of investments, insurance, and engineering. *Written by a Fellow of the Casualty Actuarial Society and the Society of Actuaries with many years of experience as a university professor and industry practitioner, the book is suitable as a text for senior undergraduate and beginning graduate students in mathematics, statistics, actuarial science, finance, or engineering as well as a reference for practitioners in these fields. The book is particularly well suited for students preparing for professional exams, and for several years it has been recommended as a textbook on the syllabus of examinations for the Casualty Actuarial Society and the Society of Actuaries.* In addition to covering the standard topics and probability distributions, this book includes separate sections on more specialized topics such as mixtures and compound distributions, distributions of transformations, and the application of specialized distributions such as the Pareto, beta, and Weibull. The *book also has a number of unique features* such as a detailed description of the celebrated Markowitz investment portfolio selection model. A separate section contains information on how graphs of the specific distributions studied in the book can be created using *Mathematica TM*. The book includes a large number of problems of varying difficulty. *A student manual with solutions to selected problems is available electronically from the 'Solutions Manual' link above. An instructor's manual for this title is available in an electronic format. Please email textbooks@ams.org for more information.*

Contents: *Introduction* ◆ A Survey of Some Basic Concepts Through Examples ◆ Classical Probability ◆ Random Variables and Probability Distributions ◆ Special Discrete Distributions ◆ Special Continuous Distributions ◆ Transformations of Random Variables ◆ Sums and Products of Random Variables ◆ Mixtures and Compound Distributions ◆ The Markowitz Investment Portfolio Selection Model ◆ *Appendixes* ◆ *Answers to Selected Exercises* ◆ *Index*

2012	448 pp.	Paperback
978-0-8218-9177-3		₹ 1,140.00

Probability and Statistics for Science and Engineering

G Shankar Rao
Faculty Member, Department of Mathematics, University College of Engineering, Osmania University, Hyderabad, India

A firm understanding of the concepts of probability and statistics is essential for the quantitative analysis of risk, uncertainty and reliability in engineering problems. This introductory textbook, rich in solved problems, provides a *comprehensive coverage of the topics of probability and statistics for an undergraduate course in science and engineering.* The theoretical concepts are dealt with in a straightforward manner, with emphasis on their applications to real-world problems. Exercises of varied levels of difficulty have been included so as to give the student an exposure to wide variety of practical situations where the applications of the concepts learnt play a role in decision making.

Contents: *Preface* ◆ Probability ◆ Random Variables ◆ Probability Distributions ◆ Sampling Distributions ◆ Theory of Estimation ◆ Hypothesis Testing ◆ Distribution ◆ Test of Significance: Small Samples ◆ Curve Fitting ◆ Correlation and Regression ◆ Queueing Theory ◆ Stochastic Process ◆ *Appendix* ◆ *Bibliography* ◆ *Index*

2011	524 pp.	Paperback
978-81-7371-744-4		₹ 650.00

Probability Theory and Stochastic Processes

(Fourth Edition)

Y Mallikarjuna Reddy
See page 50

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Statistical Mechanics: An Elementary Outline

(Second Edition)

Avijit Lahiri
See page 4

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Tensors: Geometry and Applications

J M Landsberg
Texas A&M University, College Station, USA

Series: Indian Editions of AMS Titles

Tensors are ubiquitous in the sciences. The geometry of tensors is both a powerful tool for extracting information from data sets, and a beautiful subject in its own right. *This book has three intended uses: a classroom textbook, a reference work for researchers in the sciences, and an account of classical and modern results in (aspects of) the theory that will be of interest to researchers in geometry. For classroom use, there is a modern introduction to multilinear algebra and to the geometry and representation theory needed to study tensors, including a large number of exercises. For researchers in the sciences, there is information on tensors in table format for easy reference and a summary of the state of the art in elementary language.*

This is the first book containing many classical results regarding tensors. Particular applications treated in the book include the complexity of matrix multiplication, P versus NP, signal processing, phylogenetics, and algebraic statistics. For geometers, there is material on secant varieties, G-varieties, spaces with finitely many orbits and how these objects arise in applications, discussions of numerous open questions in geometry arising in applications, and expositions of advanced topics such as the proof of the Alexander-Hirschowitz theorem and of the Weyman-Kempf method for computing syzygies.

Contents: *Preface* ◆ *Part 1*: Motivation from applications, multilinear algebra, and elementary results: Introduction ◆ Multilinear algebra: Elementary results on rank and border rank ◆ *Part 2*: Geometry and representation theory: Algebraic geometry for spaces of tensors ◆ Secant varieties ◆ Exploiting symmetry: Representation theory for spaces of tensors ◆ Tests for border rank: Equations for secant varieties ◆ Additional varieties useful for spaces of tensors ◆ Rank ◆ Normal forms for small tensors ◆ *Part 3*: Applications: The complexity of matrix multiplication ◆ Tensor decomposition ◆ P v. NP ◆ Varieties of tensors in phylogenetics and quantum mechanics ◆ *Part 4:* Advanced topics: Overview of the proof of the Alexander-Hirschowitz theorem ◆ Representation theory ◆ Weyman's method ◆ *Bibliography* ◆ *Index*

2013	464 pp.	Paperback
978-1-4704-0923-4		₹ 1,140.00

Topics in Applied Abstract Algebra

S R Nagpaul
Ohio University, Athens, USA

S K Jain
Ohio University, Athens, USA

Series: Indian Editions of AMS Titles

This book presents interesting applications of abstract algebra to practical real-world problems. The book is appropriate *as either a text for an applied abstract algebra course or as a supplemental text for a standard course in abstract algebra*. While fully developed, the algebraic theory presented is just what is required for the applications discussed in the book.

Contents: Preliminary Algebraic Concepts ◆ Boolean Algebras and Switching Circuits ◆ Balanced Incomplete Block Designs ◆ Algebraic Cryptography ◆ Coding Theory ◆ Symmetry Groups and Color Patterns ◆ Wallpaper Pattern Groups ◆ *Answers and Hints for Selected Exercises* ◆ *Index*

2010	336 pp.	Paperback
978-0-8218-5213-2		₹ 1,105.00

ENVIRONMENTAL ENGINEERING

Dimensions of Environmental and Ecological Economics

Amita Kumari Choudhury (Ed.)
Reader, P G Department of Economics, Berhampur University, Ganjam, India

Nirmal Chandra Sahu (Ed.)
Reader, Department of Economics, Berhampur University, Ganjam, India

Environmental and ecological economics is a transdisciplinary branch of knowledge. It covers the study of the processess of simultaneity involved in the functioning of the economy and the environmental/ecological system, with a view to promoting human well-being sustainably. During the last three decades numerous difficult environmental problems of humanity have been explored and analysed which have enlarged its frontiers. Yet the vast mass of literature on the subject remain diffused in a variety of study materials not easily accessible to students. *Besides covering the paradigmatic bases of environmental, ecological and natural resource economics, this book discusses the economic dimensions of and approaches to pollution, environmental and ecosystem management, biodiversity, global warming, energy and resource use, environmental evaluation and sustainable development.*

Available in e-book format only.
For details, visit www.universitiespress.com.

Environmental Science and Engineering
(Second Edition)

Aloka Debi
Formerly Professor of Chemistry, Kingston Engineering College, Kolkata; formerly Senior Lecturer in Chemistry and Environmental Science, Government Polytechnic, Kolkata, India

Environmental Science and Engineering has been specially designed to explain what the environment is, how it is polluted and destroyed, the effects of pollution, and how effectively the damage to the environment can be controlled. The second edition of the book incorporates more insights into prevention against pollution, new case studies, as well as a chapter on 'Recent Sources of Pollution' that includes marine, thermal and nuclear pollution.

Contents: Environment ◆ Resources ◆ Population ◆ Ecology ◆ Biodiversity ◆ Air pollution ◆ Water pollution ◆ Land pollution ◆ Noise pollution ◆ Recent sources of pollution ◆ Environmental legislation (Acts) ◆ Social issues and the environment

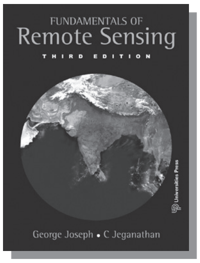
Available in print and e-book formats.
For details, visit www.universitiespress.com.

2012	268 pp.	Paperback
978-81-7371-811-3		₹ 425.00

Fundamentals of Remote Sensing
(Third Edition)

George Joseph
Formerly Satish Dhawan Distinguished Professor, ISRO, Ahmedabad, India

Jeganathan Chockalingam
Professor, Department of Remote Sensing, Birla Institute of Technology (BIT) University, Mesra, India



The Third Edition of this book retains the basic principles of remote sensing, introduced in the earlier editions. It covers all aspects of the subject from electromagnetic radiation, its interaction with objects, various sensors, platforms, data processing, data product generation and end utilisation for earth resource monitoring and management. Apart from material that has retained value since the previous edition, this revised and updated edition presents additional information to keep the readers abreast of the emerging trends. The newer developments in sensor technology, supplementary information on image processing, data product generation, applications of remote sensing in disciplines such as archaeology, desertification and drought assessment are included. A relatively newer theme in remote sensing – GNSS remote sensing – has been introduced.

Since remote sensing is used by professionals from varied disciplines, the book is designed to cater to readers from various backgrounds. For those intending to pursue graduate studies in remote sensing, this book serves as an overview and introduction, so that the basic concepts of all topics – science, technology and applications – of remote sensing are clear. This directs them to delve deeper into their specific field of interest. The book serves as a source of information for professionals who come across remote sensing in their work and would like to learn more about its principles and practical uses to support their professional/ research activity. For faculty who want to widen their horizons, the comprehensive bibliography and relevant websites will be extremely helpful. Overall the book serves as a 'single window' source to comprehend the basics of the subject.

Contents: *Foreword* ⋄ *Preface to the Third Edition* ⋄ *Preface to the Second Edition* ⋄ *Preface to the First Edition* ⋄ *Introduction* ⋄ Electromagnetic Radiation ⋄ Fundamentals of Radiometry ⋄ Physical Basis of Signatures ⋄ Remote Sensors—An Overview ⋄ Optical–Infrared Sensors ⋄ Microwave Sensors ⋄ Platforms ⋄ Data Reception and Data Products ⋄ Data Analysis ⋄ Applications of Remote Sensing for Earth Resources Management ⋄ Geographical Information System (GIS) ⋄ *Colour Plates* ⋄ *Appendix 1 Influence of Atmosphere on Remote Sensing* ⋄ *Appendix 2 Atmospheric Sounding* ⋄ *Appendix 3 Decibels* ⋄ *Appendix 4 Map Projection* ⋄ *Appendix 5 Visual Interpretation* ⋄ *Appendix 6 Hyperspectral Image Analysis* ⋄ *Appendix 7 GNSS Remote Sensing* ⋄ *Appendix 8 Acronyms* ⋄ *References* ⋄ *Index*

2018	624 pp.	Paperback
978-93-86235-46-6		₹ 695.00

Geographical Information Science

Narayan Panigrahi
See page 19

Remote Sensing and Its Applications

L R A Narayan
Formerly Head of Applications, National Remote Sensing Agency, Hyderabad, India

This compilation of articles published in *The Hindu* provides a clear understanding of Remote Sensing, the amazing technology which is opening up new vistas for the mapping, management, and monitoring of our natural resources. Richly illustrated and easy to read, the book will be of interest to students, teachers, scientists and non-specialists.

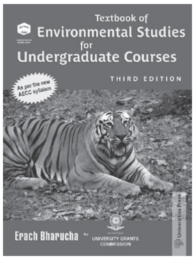
Contents: *Foreword* ⋄ *Preface* ⋄ *Introduction* ⋄ *List of Plates* ⋄ The Eye in the Sky ⋄ Keeping Track of the Satellite ⋄ Applications of Remote Sensing Data ⋄ Remote Sensing over Fishing Zones ⋄ Impact of Mining Activities on Environment-I ⋄ Impact of Mining Activities on Environment-II ⋄ Remote Sensing and Biodiversity ⋄ Satellites and Coastal Zones ⋄ Monitoring Forest Cover ⋄ Microwave Remote Sensing ⋄ Information and the Space Age ⋄ Remote Sensing for Route Alignment ⋄ Remote Sensing for Flood Management ⋄ Remote Sensing for Geographical Information Systems ⋄ Monitoring Urban Growth using Remote Sensing ⋄ Specialised Application of Remote Sensing ⋄ Mapping Wastelands through Remote Sensing ⋄ Digital Forest Management ⋄ Remote Sensing: Sky's the Limit ⋄ The Impact of Multi-Purpose River Projects ⋄ What Space Technology has to Offer ⋄ Preventing Natural Disasters ⋄ Opportunities Open Up ⋄ Careers in Remote Sensing ⋄ Remote Sensing for the Military ⋄ Remote Sensing for Managing Water Resources ⋄ Satellites and Aquaculture ⋄ Using Land through Remote Sensing ⋄ Watersheds and Remote Sensing ⋄ Resolutions in Remote Sensing ⋄ Gaining Ground Rapidly ⋄ Valuable Aid for Crop Production ⋄ Valuable Information Tool ⋄ Geoinformatics and Human Resources ⋄ Satellite Surveillance for Drought Conditions ⋄ Crop Forecast from Satellite Data ⋄ Sentinel in the Sky ⋄ Remote Sensing by RadarSat ⋄ Remote Sensing to Help Boost Tourism ⋄ Education in Space Science ⋄ Planning out Infrastructure ⋄ An Application of Geotechnology ⋄ Estimating Forest Cover ⋄ Tapping Potential ⋄ Understanding Oceans ⋄ Managing Groundwater ⋄ Databases for Geographic Systems

1999	236 pp.	Paperback
978-81-7371-268-5		₹ 725.00

Textbook of Environmental Studies for Undergraduate Courses NEW

(Third Edition)

Erach Bharucha
Director, Bharati Vidyapeeth Institute of Environment Education and Research, Pune, India



For a decade and a half, this book has been considered the most reliable textbook on the subject for all undergraduate students. This third edition has been revised as per the new AECC syllabus set down by the UGC and has been made extremely user-friendly. The aim of this book is not only to create awareness of environmental issues, but also to bring about pro-environmental action. The new, two-colour design of this edition will appeal to students and aid in reading and retention. The unique feature of this textbook is the accompanying App containing additional questions, colour pictures and video lectures.

Salient features

- Tailored precisely to the AECC curriculum set down by the UGC.
- Relevant case studies, examples and photographs create an interest in the reader.
- Colour plates showing the biogeographical zones, and various species of flora and fauna add value to Unit 4.
- Questions that induce reflection and follow-up action are highlighted in boxes and provide a thought-provoking feature.
- The thread of 'sustainable living' runs through the entire book, thus awakening the students to reality and suggests solutions for commonly encountered environmental issues.
- The exclusive App provides various types of practice questions (MCQs, fill up the blanks, match the following, colour pictures and video lectures) to aid the student in revising on-the-go.

For online resources, please visit
https:/www.universitiespress.com/tbevsugbybharucha

Contents: *Foreword* ◆ *Preface to the Third Edition* ◆ *Preface to the First Edition* ◆ *Acknowledgements* ◆ Introduction to Environmental Studies ◆ Ecosystems ◆ Natural Resources: Renewable and Non-Renewable Resources ◆ Biodiversity and Conservation ◆ Environmental Pollution ◆ Environmental Policies and Practices ◆ Human Communities and the Environment ◆ Field Work ◆ *Index*

2021	288 pp.	Paperback
978-93-89211-78-8		₹ 325.00

MANAGEMENT IN ENGINEERING

Industrial Psychology

Dipak Kumar Bhattacharyya
Professor, Xavier Institute of Management, Bhubaneswar, India

Sutapa Bhattacharya
Psychologist, Bhubaneswar, India

It is a comprehensive textbook for engineering and management students. The subject is covered in relation to the *specific areas of syllabus* as well as emerging thoughts in the field. *Industrial Psychology* or IP is a scientific study of factors affecting employees or workers. It comprises of work and time study, motivation and leadership. It also encompasses highly critical human resource management functions like recruitment, training and development. The modern challenges of managing diversity, change, technology and innovation can be effectively met only with training in IP. The book covers all these aspects in a lucid manner with a student-friendly approach.

Contents: Introduction to Industrial Psychology ◆ Scientific Management and Industrial Psychology ◆ Work Study ◆ Behavioural Theories and Industrial ◆ Psychology ◆ Motivation and Job Satisfaction ◆ Work Environment: Management of Fatigue and Stress ◆ Organizational Culture and Organizational Development ◆ Theories of Leadership ◆ Group Dynamics ◆ Job Analysis and Job Design ◆ Recruitment and Selection ◆ Psychological Testing ◆ Performance Management ◆ Training and Development

2012	300 pp.	Paperback
978-81-7371-784-0		₹ 475.00

Managerial Economics and Financial Analysis

Shailaja Gajjala
Professor, Department of Business Management, Osmania University, Hyderabad, India

Usha Munipalle
Professor, Department of Commerce, Nizam College, Hyderabad, India

Economics is the simple logic we apply for making decisions every day, be they purchases or investments. However, any concept or theory can be made complicated by the use of unnecessary jargon. *Managerial Economics and Financial Analysis* aims to cut through this barrier and present information in a logical and straightforward manner.

This book covers three important areas in the field of Finance: Managerial Economics, Financial Accounting and Financial Management. *Designed to meet the undergraduate course requirements of engineering students*, this book aims to present the main concepts and theories in a simple and lucid style. It includes many worked out examples and problems and provides interesting snippets of information relating to the current scenario in India.

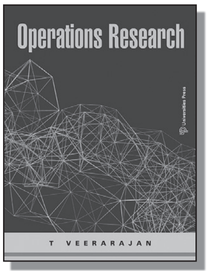
Salient Features: Central points presented in *easy-to-remember bullet form* ◆ *Worked out examples* progress from simple to complex ◆ *Line drawings* included to enhance understanding and for quick reference ◆ *Key terms defined* at the end of every chapter ◆ *Comprehensive practice questions and assignments (with answers)* provided for every chapter ◆ Neat, clutter-free layout to improve readability

Contents: Introduction to Managerial Economics ◆ Demand Analysis ◆ Demand Elasticity ◆ Demand Forecasting ◆ Production Analysis ◆ Cost Analysis ◆ Introduction to Markets and Managerial Theories of the Firm ◆ Pricing Policies and Practices ◆ Types of Business Organizations ◆ Financial Accounting ◆ Accounting Concepts and Recording of Transactions ◆ Ledger and Trial Balance ◆ Final Accounts ◆ Ratio Analysis ◆ Funds Flow Statement ◆ Capital Budgeting ◆ Sources of Finance ◆ *Appendix I* ◆ *Appendix II* ◆ *Answer Key* ◆ *Index*

2012	376 pp.	Paperback
978-81-7371-774-1		₹ 550.00

Operations Research

T Veerarajan
Formerly Dean, Department of Mathematics,
Velammal College of Engineering and Technology,
Madurai, India



Operations Research is a discipline that uses quantitative and mathematical techniques for decision-making when the selection involved is complex and cannot be arrived at using routine judgment and expertise. The book has been designed for graduate and post-graduate students of engineering, mathematics, statistics and management in Indian universities. The book provides a practical introduction to the primary concepts and techniques of optimization and deals at length with the application of operations research to the major phases of problem solving.

Contents: *Preface* ◆ *About the Author* ◆ Operations Research – Introduction and Pre-requisites ◆ Linear Programming ◆ Two-phase Simplex Method ◆ Revised Simplex Method ◆ Dual and Dual Simplex Programming ◆ Dynamic Programming ◆ Integer Programming ◆ Non-linear Programming ◆ Transportation and Assignment Problems ◆ Sequencing ◆ Game Theory ◆ Inventory Control ◆ Replacement and Maintenance Problems ◆ Network Scheduling of Projects by PERT/CPM Techniques ◆ Markov Chains ◆ Queueing Models ◆ Simulation ◆ *Bibliography* ◆ *Index*

2017	532 pp.	Paperback
978-93-86235-16-9		₹ 625.00

Production and Operations Management: Theory and Practice

Dipak Kumar Bhattacharyya
Professor, Xavier Institute of Management,
Bhubaneswar, India

Production and Operations Management is a core subject for MBA students; it is, therefore, compulsory reading for them. Given its engineering orientation, students often find it a challenging subject. In this book, practical examples from industry have been used to explain theory, making it interesting and pleasant reading for students.

Each chapter has been carefully crafted, keeping industry requirements in view, thereby enabling students to become up-to-date in the theories and practices of the subject. *The book conforms to the syllabus requirements of national and international MBA/PGDBM programmes.*

Special Features: This book is written in lucid language ◈ There is limited use of technical jargon ◈ *Case studies* have been added ◈ Explanation of *theory with practices from industry given as examples* ◈ *Numerical examples* have been included ◈ Discussion of contemporary areas have been added ◈ *Adequate examples and illustrations* have been provided ◈ *General and Critical Review Questions* have been appended at the end of each chapter.

Emerging areas discussed include: Ethical Issues in Production and Operations, Six Sigma Practices, Production and Operations Management Research, and International Production and Operations Management.

Contents: Introduction to Production and Operations Management ◈ Production Planning and Control ◈ New Product Planning and Development ◈ Facilities Planning, Layout and Location Analysis ◈ Scheduling and Sequencing of Production ◈ Work Study and Work Measurement ◈ Network Analysis and Project Management ◈ Maintenance Management ◈ Quality Management Practices ◈ Six Sigma in Production and Operations Management ◈ BPR, TQM, Cross-cultural Aspects and Models of Excellence ◈ Human Resources Management, Strategic Dimensions and POM ◈ Productivity, Incentives and POM ◈ Materials Management and Inventory Control ◈ Supply Chain Management ◈ Ethics, Corporate Social Responsibility and Environment Management in Production and Operations Management ◈ Production and Operations Management Research ◈ International Production and Operations Management

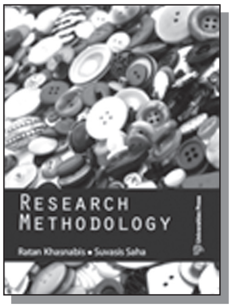
Available in print and e-book format.
For details, visit www.universitiespress.com.

2012	612 pp.	Paperback
978-81-7371-776-5		₹ 750.00

Research Methodology

Ratan Khasnabis
Formerly Professor, Department of Business Management, University of Calcutta, Kolkata, India

Suvasis Saha
Professor, Department of Business Management, University of Calcutta, Kolkata, India



The book is primarily intended to serve as a textbook for the students of Management at the undergraduate and postgraduate levels. It can be used for undergraduate courses in all universities in which the subject is offered.

The book addresses empirical research issues with a focus on research design, the problems involved in constructing an appropriate research design and the means to overcome these problems. Data, its sources, methods employed to obtain data, experimental techniques employed, types of errors that may creep in, how to measure, check and control errors are all addressed. Once the data is collected, methods to analyse the data, present them as a cogent report and the limitations of research are dealt with. A detailed case study illustrates all the concepts explained in the book and the chapter-wise assignments will definitely help the student to understand the basic issues of market research.

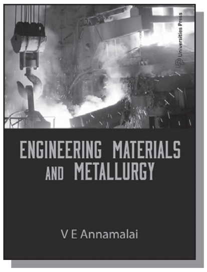
Contents: *Introduction* ◈ Research Design ◈ Sources of Data ◈ Maintaining Data Quality Under Various Settings ◈ Experimental Techniques ◈ The Questionnaire Method ◈ Errors in Data: Measurement Error ◈ Measurement and Scaling Techniques ◈ Methods of Data Collection ◈ Tools of Processing and Analysis of Data ◈ Sampling, Sampling Errors and Testing of Hypotheses ◈ Data, Analysis and Report Writing ◈ Research Administration ◈ An Illustration of Research Methodology ◈ *Appendices* ◈ *Index*

2015	320 pp.	Paperback
978-81-7371-952-3		₹ 450.00

MATERIALS SCIENCE

Engineering Materials and Metallurgy

V E Annamalai
Professor, Department of Mechanical Engineering in SSN College of Engineering, Chennai, India



The book provides an in-depth coverage of Engineering Materials and Metallurgy as required by the undergraduate students of engineering. The core concepts have been simplified for better understanding using graphs, tables, figures and examples. Self-evaluation questions will help the students assess their understanding and knowledge of the subject.

Special features Explains different types of materials, their properties, uses, treatments and transformations ◈ Over 155 illustrations ◈ 160 short answer and 55 long answer type questions ◈ 100 multiple choice questions with answers ◈ Sample university question papers with answers to select questions ◈ An annexure with questions that appeared in GATE exams

Contents: *Foreword* ◈ *Preface* ◈ *Alloys and Phase Diagrams* ◈ Introduction to Metallurgy ◈ Equilibrium Heating and Cooling ◈ Solidification ◈ Co-existence of Metals/Materials ◈ Phase ◈ Phase Rule ◈ Solid Solution and its Types ◈ Describing a Solid Solution Phase Diagram ◈ Eutectic System Phase Diagram ◈ Peritectic Reaction ◈ Transformations in the Solid State ◈ Summary of Phase Diagram Types ◈ *Summary* ◈ *Questions* ◈ *The Iron–Carbon System* ◈ Introduction to the Iron–Carbon System ◈ Plotting an Iron–Carbon Diagram ◈ Marking the Peritectic Points ◈ Marking the Eutectic Points ◈ Drawing the Eutectoid Portion Curve ◈ Discussing the Transformations ◈ Invariant Reaction ◈ Summary of Reactions in the Iron–Carbon Diagram ◈ Phases Present ◈ Critical Temperatures ◈ Transformations in Equilibrium Conditions ◈ Drawing the Microstructures ◈ Formation of Pearlite ◈ Classification, Composition and Microstructure of Ferrous Materials ◈ Coring and Homogenisation ◈ *Summary* ◈ *Questions* ◈ *Non-equilibrium Transformations and Hardenability* ◈ Isothermal Transformation Diagram ◈ TTT Diagram ◈ Continuous Cooling Curves (CCC) and Superimposing on TTT ◈ Critical Cooling Rate ◈ Microstructures of Steel ◈ Formation of Martensite ◈ Formation of Pearlite ◈ Hardenability ◈ Jominy End Quench Test ◈ *Summary* ◈ *Questions* ◈ *Heat Treatment* ◈ The Principle of Heat Treatment ◈ Definition of Heat Treatment ◈ Applications of Heat Treatment ◈ Case Hardening ◈ Consolidated Information ◈ *Summary* ◈ *Questions* ◈ Ferrous Alloys ◈ Classification, Composition and Microstructure of Ferrous Materials ◈ Effect of Non-equilibrium Cooling ◈ Allotropy of Iron ◈ Effect of Alloying Elements ◈ Element-wise Effects ◈ Multi-alloyed Steels ◈ Special Steels ◈ Wrought and Cast Iron ◈ Designation of Ferrous Materials ◈ *Summary* ◈ *Questions* ◈ *Non-ferrous Alloys* ◈ Copper and its Alloys ◈ Aluminium and its Alloys ◈ Bearing Alloys ◈ Magnesium Alloys ◈ Nickel Alloys ◈ Lead and Tin Alloys ◈ Titanium and its Alloys ◈ *Summary* ◈ *Questions* ◈ *Polymers* ◈ Polymers and Elastomers ◈ Polymer Molecular Structures ◈ Formation of Polymers ◈ Types of Polymers ◈ Properties and Applications of Polymers ◈ Resins ◈ Future of Plastics ◈ *Summary* ◈ *Questions* ◈ *Ceramics* ◈ Ceramics ◈ Processing of Ceramics ◈ Engineering Ceramics ◈ Composites ◈ Important Composites ◈ *Summary* ◈ *Questions* ◈ *Plastic Deformation and Fracture* ◈ Dislocation Theory ◈ Mechanisms of Plastic Deformation ◈ Effect of Defects on the Deformation Mechanism ◈ Changes in Properties due to Deformation ◈ Bauschinger Effect ◈ Fracture and its Importance ◈ Strengthening of Metals ◈ *Summary* ◈ *Questions* ◈ *Material Properties and Testing* ◈ Material Properties ◈ Testing of Materials ◈ Summary of Test Methods ◈ *Summary* ◈ *Questions* ◈ *Annexure I: Basics of Crystallography* ◈ *Annexure II: University Question Papers* ◈ *Annexure III: Objective Questions* ◈ *Annexure IV: GATE Metallurgy Stream Questions* ◈ *Annexure V: Answers to Part A Questions from University Question Papers* ◈ *Index*

2017 276 pp. Paperback
978-93-86235-04-6 ₹ 375.00

Universities Press-IIM Series in Metallurgy and Materials Science

The *Series in Metallurgy and Materials Science* has been initiated during the Diamond Jubilee of the Indian Institute of Metals (IIM). In the last decade the progress in the study and development of metallurgy and materials science has been rapid and extensive, giving us a whole new array of materials, with a wide range of applications, and a variety of techniques *for both processing and characterising them. With the help of an expert editorial panel of international and national scientists, the series aims to make this information available to a wide spectrum of readers through textbooks and monographs on select topics by experts in the field, and proceedings of select international conferences organised by the IIM.*

Advances in Stainless Steels

Baldev Raj (Ed.)
Director, National institute of Advanced Studies,
Indian Institute of Science Campus, Bengaluru, India

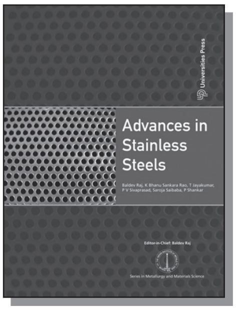
K Bhanu Sankara Rao (Ed.)
Professor and Dean, School of Engineering Sciences
and Technology, University of Hyderabad, India

T Jayakumar (Ed.)
Outstanding Scientist and Director, Metallurgy and
Materials Group, Indira Gandhi Centre for Atomic
Research, Kalpakkam, India

P V Sivaprasad (Ed.)
General Manager, Sandvik Materials Technology R&D,
PSandvik Asia Pvt Ltd, Pune, India

Saroja Saibaba
Head of Nuclear Materials and Microscopy Section,
Indira Gandhi Centre for Atomic Research,
Kalpakkam, India

P Shankar
Principal, Saveetha School of Engineering, Saveetha
University, Chennai, India



Advances in Stainless Steels is the fourth book in the IIM–Universities Press book series on Metallurgy and Materials Science. The book focusses on various facets—processing, component design, properties, fabrication and applications—of the wonder alloy: stainless steel. Stainless steels are a class of versatile alloys, which can be tailored to exhibit a wide range of engineering properties by alloy design and controlled thermomechanical treatments to meet demanding service conditions. Stainless steel production in India is presently about 1.8 million tonnes and accounts for nearly 7% of global tonnage produced. This is likely to show an enormous increase in the near future.

This book covers a broad spectrum of topics spanning the entire life cycle of stainless steel—from alloy design and characterization to engineering design, fabrication, mechanical properties, corrosion, quality assurance of components, in-service performance assessment, life prediction and failure analysis of materials and components. The contents provide useful feedback for further developments aimed at effective utilization of this class of materials. The book comprises articles that bring out contemporary developments in stainless steels and is thematically classified into the following sections.

- Component design, modelling and structural integrity
- Manufacturing technology
- Property evaluation
- Alloy development and applications
- Non-destructive evaluation methods
- Corrosion and surface modification

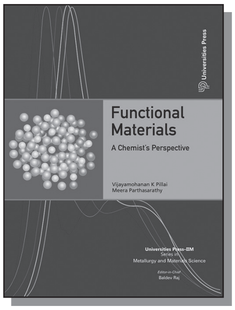
The articles are of high relevance and interest to manufacturers, fabricators, researchers, designers, suppliers and end users of stainless steel, and serve as a valuable source for everyday reference and also as a guide for providing solutions for challenges connected with alloy design, material selection, melting, processing, fabrication, metallurgy and applications.

2010	692 pp.	Hardback
978-81-7371-696-6		₹ 3,100.00

Functional Materials: A Chemist's Perspective

Vijayamohanan K Pillai
Acting Director, Central Electrochemical Research Institute, Karaikudi; Scientist, Physical & Materials Chemistry Division, National Chemical Laboratory, Pune, India

Meera Parthasarathy
Assistant Professor, Department of Chemistry, School of Chemical & Biotechnology, SASTRA University, Thanjavur, India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Functional Materials
A Chemist's Perspective
Vijayamohanan K Pillai
Meera Parthasarathy
Universities Press–IIM
Series in
Metallurgy and Materials Science
Editor-in-Chief
Baldev Raj

The Series in Metallurgy and Materials Science was initiated during the Diamond Jubilee of the Indian Institute of Metals (IIM). In the last decade, the progress in the study and development of metallurgy and materials science has been rapid and extensive, giving us a whole new array of materials, with a wide range of applications, and a variety of techniques for both processing and characterizing them. With the help of an expert editorial panel of international and national scientists, the series aims to make this information available to a wide spectrum of readers through textbooks, monographs on select topics, and proceedings of select international conferences organised by the IIM. This book is the eighth book in the series.

This book introduces the reader to the basic concepts, lines of development, main characteristics and applications of functional materials. Several examples of functional materials developed during the last two decades are used to illustrate their versatility and range of function. This book examines the preparation and characterization of some of these materials from the perspective of a synthetic chemist. Although research in this area is multidisciplinary, the chemistry of these materials is given special importance. Existing and emerging applications of functional materials in energy storage, polymer electronics, chemical sensors, nanobiotechnology and medicine are highlighted.

Special Features:

- Selection of topics based on curriculum and current interest
- Numerous examples and illustrations
- Colour plates to enhance understanding
- Further Reading and Exercises at the end of every chapter

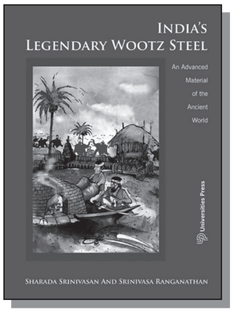
Contents: *Foreword* ◈ *Preface* ◈ *Acknowledgements* ◈ *About the Series* ◈ *Editorial Advisory Board* ◈ Functional Materials: A Virtual Tour ◈ Classification of Functional Materials ◈ Molecular Self-Assembly ◈ Bioinspired Materials ◈ Smart Materials ◈ Functional Materials for Sustainable Energy ◈ Materials for Polymer Electronics ◈ Functional Nanocomposites ◈ Going Beyond Functional Materials—Future Directions ◈ *Index*

2012	408 pp.	Paperback
978-81-7371-768-0		₹ 775.00

India's Legendary Wootz Steel

Sharada Srinivasan
Professor, National Institute of Advanced Studies, Indian Institute of Science, Bengaluru, India

Srinivasa Ranganathan
Indian Institute of Science, National Institute of Advanced Studies, Bengaluru, India


India's
Legendary Wootz Steel
An Advanced
Material
of the
Ancient
World
Universities Press
Sharada Srinivasan and Srinivasa Ranganathan

This book is reissued under the Universities Press-IIM Series in Metallurgy and Materials Science.

A fascinating history of India's legendary high-grade steel—wootz steel—which was highly prized and much sought after across the world for over two millennia. Wootz steel was used to make the fabled Damascus blades.

Although Indian wootz steel was such an important material in the metallurgical history of mankind, there are no books devoted to Indian contributions. First brought out by Tata Steel in November 2004 as a celebration of the twin centenaries of J.N. Tata and J.R.D.Tata, the book has been widely acclaimed. *It is both scholarly as well as highly readable at the level of popular archaeo-science.*

Original cartoons that are both colourful and humorous have been added to make the book more interesting and bring alive the times in which important developments were made.

2014	160 pp.	Hardback
978-81-7371-721-5		₹ 1,750.00

Powder Metallurgy: Science, Technology and Materials

Anish Upadhyaya
Professor and Head, Department of Materials Science and Engineering, Indian Institute of Technology Kanpur, Kanpur, India

G S Upadhyaya
Formerly Professor, Department of Materials and Metallurgical Engineering, Indian Institute of Technology Kanpur, Kanpur, India

Since the 1920s modern powder metallurgy has been used to produce a wide range of structural Powder Metallurgy (PM) components, self-lubricating bearings and cutting tools. The conventional method involves the production of metal powders, and manufacture of useful objects from such powders by die compaction and sintering. Wrought products are also produced by this route. Powder injection moulding permits the production of stronger, more uniform and more complex PM parts. *A detailed discussion of PM materials and products is given in the book.*

Special Features: Sintering has been elaborated in two chapters—Sintering theory and Sintering technology. ◈ Testing and Quality Control of PM Materials and Products, is not found in many PM books. ◈ Techno-economics of PM processing are also described in detail. ◈ Powder metallurgical aspects of both metallic and ceramic systems are treated equally. ◈ Materials handling at various stages of processing. ◈ Pressureless powder shaping. ◈ Functionally graded materials. ◈ Powder Metallurgy material code. ◈ New approach–Pyrophoricity and toxicity in Chapter 3–Nanostructured materials and the electronic theory of sintering in chapter 7 ◈ For powder metallurgical engineers–Various kinds of actual testing and quality control methods in Chapter 11–ceramics materials in Chapter 12–Wide range of practically applied parts in Chapter 13

Contents: *Introduction* ◈ Powder Production ◈ Powder Characterisation ◈ Powder Treatment ◈ Powder Compaction ◈ Pressureless Powder Shaping ◈ Sintering Theory ◈ Sintering Technology ◈ Full Density Consolidation ◈ Secondary Treatments ◈ Testing and Quality Control of P/M Materials and Products ◈ Metallic and Ceramic P/M Materials ◈ P/M Applications ◈ Techno-economics of P/M Processing

2011	536 pp.	Paperback
978-81-7371-717-8		₹ 875.00

Textbook of Nanoscience and Nanotechnology

B S Murty
Professor, Department of Metallurgical and Materials Engineering, Indian Institute of Technology Madras, Chennai, India

P Shankar
Principal, Saveetha School of Engineering, Saveetha University, Chennai, India

Baldev Raj
Director, National institute of Advanced Studies, Indian Institute of Science Campus, Bengaluru, India

B B Rath
Director, Materials Science and Component Technology, Naval Research Laboratory, Washington DC, USA

James Murday
Naval Research Laboratory, Washington DC, USA

This book *is the second textbook in the Universities Press–IIM Series in Metallurgy and Materials Science.* It is a book for beginners in the field of nanoscience and nanotechnology and is *suitable for both undergraduate and postgraduate students who are taking a course in nanoscience and nanotechnology*. It provides an introduction to the terminology and historical perspectives of this domain of science, discusses the effects of size and the unique and widely differing properties of nanomaterials in comparison to bulk materials, and describes the advances in methods of synthesis, and consolidation and characterization techniques. The applications of nanoscience and technology and emerging materials and technologies are also presented in the book.

Special Features: Current data and research findings, with special emphasis on Indian sources, included in every chapter ◆ Exercises and problems at the end of each chapter ◆ Glossary and Index

Contents: The big world of nanomaterials ◆ Unique properties of nanomaterials ◆ Synthesis routes ◆ Applications of nanomaterials ◆ Tools to characterize nanomaterials ◆ Nanostructured materials with high application potential ◆ Concerns and challenges of nanotechnology

2012	248 pp.	Paperback
978-81-7371-738-3		₹ 625.00

MECHANICAL ENGINEERING

Advances in Stainless Steels

Baldev Raj (Ed.)
Director, National institute of Advanced Studies, Indian Institute of Science Campus, Bengaluru, India

K Bhanu Sankara Rao (Ed.)
Professor and Dean, School of Engineering Sciences and Technology, University of Hyderabad, India

T Jayakumar (Ed.)
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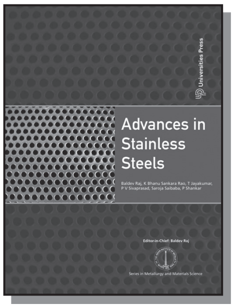
Universities Press
Advances in Stainless Steels
Baldev Raj, K Bhanu Sankara Rao, T Jayakumar, P V Sivaprasad, Saroja Saibaba, P Shankar
Editor-in-Chief: Baldev Raj
Series in Metallurgy and Materials Science

Advances in Stainless Steels is the fourth book in the IIM–Universities Press book series on Metallurgy and Materials Science. The book focusses on various facets—processing, component design, properties, fabrication and applications—of the wonder alloy: stainless steel. Stainless steels are a class of versatile alloys, which can be tailored to exhibit a wide range of engineering properties by alloy design and controlled thermomechanical treatments to meet demanding service conditions. Stainless steel production in India is presently about 1.8 million tonnes and accounts for nearly 7% of global tonnage produced. This is likely to show an enormous increase in the near future.

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- Manufacturing technology
- Property evaluation
- Alloy development and applications
- Non-destructive evaluation methods
- Corrosion and surface modification

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2010	692 pp.	Hardback
978-81-7371-696-6		₹ 3,100.00

Basic Engineering Thermodynamics

A Venkatesh
Formerly Professor of Mechanical Engineering, Indian Institute of Technology Madras, Chennai; (currently residing in) Bengaluru, India

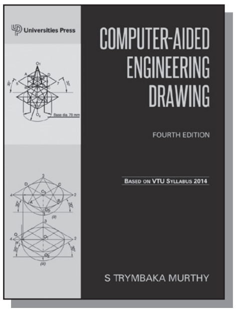
Basic Engineering Thermodynamics addresses the needs of BTech and BE students studying thermodynamics as a core course. Using his forty-year experience in teaching, the author methodically explains difficult and abstract concepts, making them easy to understand as well as interesting. Numerous carefully chosen solved problems and exercises are given to coach the eager student to tackle every concept.

Contents: Fundamental Concepts and Definitions ◈ Work ◈ Temperature and Heat ◈ The First Law of Thermodynamics for Systems—Pure Substances ◈ First Law of Thermodynamics for Control Volumes ◈ Heat Engines—The Second Law of Thermodynamics ◈ Reversibility and the Thermodynamic Temperature Scale ◈ Entropy—Available and Unavailable Energy ◈ Ideal Gas and Ideal Gas Mixtures ◈ Properties of Pure Substance—Water ◈ Real Gas ◈ Fuels and Combustion ◈ *Objective Type Questions* ◈ *Bibliography* ◈ *Index*

2007	495 pp.	Paperback
978-81-7371-587-7		₹ 575.00

Computer-Aided Engineering Drawing
(For VTU)

S Trymbaka Murthy
Formerly Professor, Department of Mechanical Engineering, Sir M Visvesvaraya Institute of Technology, Bengaluru, India


Universities Press
COMPUTER-AIDED ENGINEERING DRAWING
FOURTH EDITION
BASED ON VTU SYLLABUS 2014
S TRYMBAKA MURTHY

Engineering drawing is a compulsory subject for all disciplines as it is the graphical language engineers use to convey ideas of objects, systems and their analyses. The use of computer software for engineering drawing is a well established today, with several software offering advanced features for visualising and projecting views as required for the purpose of construction/analysis. This book covers the essentials of computer-aided engineering drawing with the help of step-by-step explanation of the generic process employed by standard engineering drawing software. The author adopts an interactive approach to convey the principles of freehand sketching, orthographic projection of points, straight lines, plane surfaces and solid sections as well as the development of lateral surfaces of solids and isometric projections using BIS SP: 46 2003 standards.

The contents of this book meets the requirement of VTU syllabus and is prescribed by the university as a recommended textbook.

Special features: Uses the latest BIS conventions, SP:46-2003 ◈ Introduces the various software for computer-aided engineering drawings ◈ Includes several problems solved using different methods ◈ Numerical answers provided for all solved problems ◈ Includes solutions to difficult problems using 3D diagrams ◈ Incorporates standard assumptions in case of incomplete data by framing special problems ◈ Includes problems from VTU and other university examinations for practice along with hints wherever necessary ◈ A concise summary included at the end of each chapter to aid revision

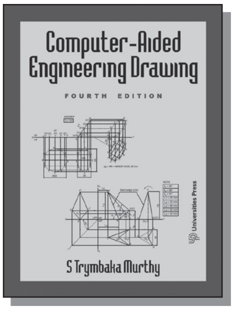
Contents: Introduction ◈ Computer-Aided Drawing ◈ Elements and Principles of Orthographic Projection ◈ Free Hand Sketching ◈ Projections of Points ◈ Projections of Straight Lines ◈ Projections of Plane Surfaces ◈ Projections of Solids ◈ Sections and Section Planes ◈ Development of Lateral Surfaces of

Solids ◈ Isometric Projection ◈ *Syllabus and Scheme of Examination* ◈ *Model Papers*

2014	312 pp.	Paperback
978-81-7371-930-1		₹ 475.00

Computer-Aided Engineering Drawing
(For BPUT)

S Trymbaka Murthy
Formerly Professor, Department of Mechanical Engineering, Sir M Visvesvaraya Institute of Technology, Bengaluru, India



Computer-Aided Engineering Drawing focuses on the application of computers for engineering drawing and explains the generic process employed by standard engineering software packages, step by step. The author adopts an interactive approach to convey the principles of freehand sketching, orthographic projection of points, straight line, plane surfaces and solid sections as well as the development of lateral surfaces of solids and isometric projections using BIS SP: 46-2003 standards and reinforces the topics of all chapters with several solved problems.

Contents: *Preface to the Fourth Edition* ◈ *Preface to the First Edition* ◈ *Acknowledgements* ◈ Abbreviations, *Symbols and Notations (General)* ◈ *Abbreviations Recommended by BIS (IS: 11670-1993)* ◈ Introduction ◈ Computer-Aided Drawing ◈ Elements And Principles of Orthographic Projection ◈ FreeHand Sketching ◈ Projections of Points ◈ Projections of Straight Lines ◈ Projections of Plane Surfaces ◈ Projections of Solids ◈ Sections and Section Planes ◈ Development of Lateral Surfaces of Solids ◈ Isometric Projection ◈ *Model Question Papers*

2016	308 pp.	Paperback
978-93-86235-01-5		₹ 475.00

Computer Simulation of Compression-Ignition Engine Processes

V Ganesan
Professor, Internal Combustion Engines Laboratory, Department of Mechanical Engineering, Indian Institute of Technology Madras, Chennai, India

This book attempts to provide a simplified framework for the vast and complex map of technical material that exists on compression-ignition engines, and at the same time include sufficient details to convey the complexity of engine simulation. The emphasis here is on the thermodynamics, combustion physics and chemistry, heat transfer, and friction processes relevant to compression-ignition engines with simplifying assumptions. Since details are covered from the fundamentals, it will be a valuable tool for both undergraduate and postgraduate students, as well as for practising engineers.

Contents: *Preface* ◈ *List of Symbols* ◈ *Introduction* ◈ Reactive Processes ◈ Adiabatic Flame Temperature ◈ Isentropic Changes of State ◈ Compression-Ignition Engines ◈ CI Engine Simulation with Air as Working Medium ◈ CI Engine Simulation with Adiabatic Combustion ◈ CI Engine Simulation with Progressive Combustion ◈ CI Engine Simulation with Gas Exchange Process ◈ *Bibliography* ◈ *Index*

2000	248 pp.	Paperback
978-81-7371-283-8		₹ 550.00

Computer Simulation of Spark-Ignition Engine Processes

V Ganesan
Professor, Internal Combustion Engines Laboratory, Department of Mechanical Engineering, Indian Institute of Technology Madras, Chennai, India

This book contains the theory and computer programs for the simulation of spark-ignition (SI) engine processes. *It starts with the fundamental concepts and goes on to the advanced level and can thus be used by undergraduates, postgraduates and Ph.D. scholars.*

Contents: *Preface* ◈ *List of Symbols* ◈ Introduction ◈ Reactive Process ◈ Adiabatic Flame Temperature ◈ Isentropic Changes of State ◈ Spark-Ignition Engines ◈ SI Engine Simulation with Air as Working Medium ◈ SI Engine Simulation With Adiabatic Combustion

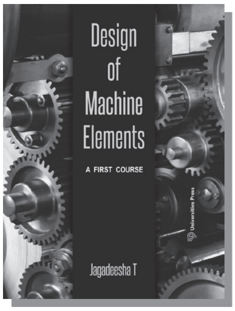
◈ SI Engine Simulation with Progressive Combustion ◈ SI Engine Simulation with Gas Exchange Process ◈ Simulation of Two-Stroke SI Engines ◈ *Bibliography* ◈ *Index*

1996	248 pp.	Paperback
978-81-7371-015-5		₹ 550.00

Design of Machine Elements: A First Course

Jagadeesha T

Assistant Professor, Department of Mechanical Engineering, National Institute of Technology Calicut, Kozhikode, India



Design of Machine Elements is one of the most important subjects taught to mechanical, production and manufacturing engineering courses across the country. *Design of Machine Elements – A First Course* is designed to cover the key elements that fall under the subject's vast purview. It discusses important topics such as power screws, mechanical springs, threaded joints, couplings, keys, splines and different kinds of joints. The book devotes exclusive chapters to elaborate on each of these topics for the student's benefit. It analyses theoretical concepts and backs them with several solved examples and illustrations, while also providing several end-of-chapter problems for practice.

Contents: *Preface* ◈ *About the Author* ◈ Introduction to Machine Design ◈ Design for Static Strength ◈ Eccentric Loading ◈ Theories of Elastic Failure ◈ Stress Concentration ◈ Design for Fatigue Strength ◈ Design for Impact Strength ◈ Design of Shafts ◈ Design of Keys and Splines ◈ Design of Knuckle and Cotter Joints ◈ Design of Couplings ◈ Design of Welded Joints ◈ Design of Riveted Joints ◈ Threaded Fasteners ◈ Power Screws ◈ Mechanical Springs ◈ *Index*

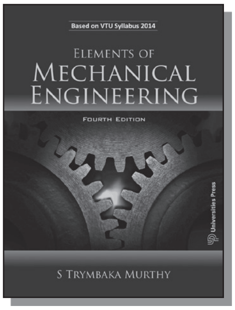
2018	1172 pp.	Paperback
978-93-86235-45-9		₹ 1,075.00

Elements of Mechanical Engineering

(Fourth Edition)

S Trymbaka Murthy

Formerly Professor, Department of Mechanical Engineering, Sir M. Visvesvaraya Institute of Technology Bangalore, Bengaluru, India



An understanding of the fundamentals of mechanical systems is a prerequisite for engineering studies. This book encapsulates the basic concepts of varied fields of mechanical engineering, particularly fuel and steam energy, the role of prime movers in power generation (steam boilers, steam turbines, gas turbines, water turbines and IC engines) and the theory behind refrigeration and air-conditioning. It also introduces the reader to the use of machine tools in manufacturing processes. The book builds on these topics from the first principles, amply supported by examples, solved problems and illustrations.

This book caters to the revised syllabus enunciated by VTU for its first-year BE/BTech course in all branches of engineering and has been prescribed by the university as a recommended textbook from the academic year 2014–2015.

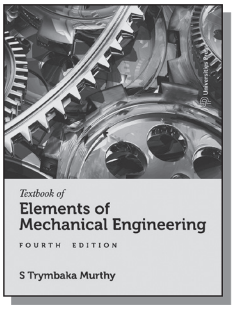
Special features: A simple and comprehensive introduction to energy, fuels and their properties ◈ Solved numerical problems on IC engines ◈ Exclusive chapters on drilling, soldering and welding, useful for workshop practice ◈ Illustrations and sketches that portray explicit two-dimensional views ◈ More than 280 chapter-end questions, significant from the examination perspective ◈ Supplementary bits of information included as asides to kindle interest

Contents: Energy and Fuels ◈ Steam and Its Properties ◈ Steam Boilers ◈ Steam Turbines ◈ Gas Turbines ◈ Water Turbines ◈ Internal Combustion Engines (IC Engines) ◈ Machine Tools and Cutting Tools ◈ Lathe ◈ Drilling Machines ◈ Milling Machines ◈ Robotics ◈ Automation ◈ Engineering Materials ◈ Soldering ◈ Brazing ◈ Welding ◈ Refrigeration ◈ Air Conditioning

2014	216 pp.	Paperback
978-81-7371-929-5		₹ 375.00

Textbook of Elements of Mechanical Engineering (For BPUT)

S Trymbaka Murthy
Formerly Professor, Department of Mechanical Engineering, Sir M Visvesvaraya Institute of Technology, Bengaluru, India



Textbook of Elements of Mechanical Engineering has been designed to cover the concepts of mechanical engineering that are generally taught to BE/BTech students in their first year of study. Simple and comprehensive in its approach, the book is replete with numerical problems and exercises for practice to enable the students grasp the concepts and use them for real-time applications. The flow of each chapter is gradual as it walks the student through the first principles, building on each topic step by step.

Contents: *Preface to the Fourth Edition* ◈ *Preface to the First Edition* ◈ *Acknowledgements* ◈ *About the Authors* ◈ *Module I:* Energy and Fuels ◈ Steam and Its Properties ◈ Steam Boilers ◈ *Module II:* Steam Turbines ◈ Gas Turbines ◈ Water Turbines ◈ Internal Combustion Engines ◈ *Module III:* Machine Tools and Cutting Tools ◈ Lathe ◈ Drilling Machines ◈ Milling Machines ◈ Robotics ◈ Automation ◈ *Module IV:* Engineering Materials ◈ Soldering ◈ Brazing ◈ Welding ◈ *Module V:* Refrigeration ◈ Air Conditioning

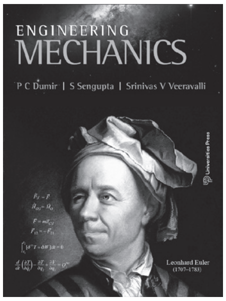
2016	212 pp.	Paperback
978-93-86235-02-2		₹ 375.00

Engineering Mechanics NEW

PC Dumir
Formerly Professor, Applied Mechanics Department, IIT Delhi, New Delhi, India

S Sengupta
Formerly Member, Engineering and Technology Development Division, Engineer's India Ltd (EIL) and Member, Applied Mechanics Department, IIT Delhi, New Delhi, India

Srinivas V Veeravalli
Faculty member, Applied Mechanics Department, IIT Delhi, New Delhi, India



This introductory undergraduate engineering textbook on mechanics has been developed bythe authors based on their experience of teaching the subject at IIT Delhi for over three decades. Students of physics and mathematics too will find the clear, concise and rigorous treatment of classical mechanics useful.

The subject has been developed in the spirit of modern continuum mechanics, as the classical model is physically valid only for systems of finite size. The logical sequence of kinematics, axioms, dynamics and statics has been followed, and statics treated as a special case of dynamics. Concepts are rigorously defined for the general case, prior to presenting their specific forms for particular cases. This approach helps in developing abstract thinking and avoiding ambiguities. A large number of examples that mimic real-life engineering systems have been included to illustrate the underlying principles and a systematic approach to solving problems.

Salient features

- Follows the approach of the general to the particular to avoid misconceptions arising from dealing with particular cases first. Further, concepts do not have to be learnt twice or thrice over (e.g., 1D, 2D and 3D).
- Primitives, defined entities, axioms and derived results are clearly differentiated. Simplification and modelling of physical systems has been highlighted and brought to the forefront.
- Includes a chapter on variational mechanics to introduce students to this powerful method.
- Clear and explanatory diagrams have been extensively used for reinforcing concepts and development of theory.
- Includes a large number of solved examples for illustrating the underlying principles, the application of governing equations, and the process of breaking down complex engineering problems for analysis.
- The rich collection of exercises comprising concept review questions and practice problems of various kinds enable complex problem-solving capability and deep-rooted learning.
- An additional 340 questions and problems and 8 examples are available for free access at www.universitiespress.com/EngineeringMechanics-DSV

Contents: Kinematics ◈ Axioms and Force Systems ◈ Dynamics of a Rigid Body ◈ Statics ◈ Variational Mechanics ◈ Special Topics ◈ *Appendixes*

2020 840 pp. Paperback
978-93-89211-57-3 ₹ 995.00

Engineering Mechanics

M V Seshagiri Rao
Professor and Head of Civil Engineering,
JNTU College of Engineering, Hyderabad, India

D Rama Durgaiah
Formerly Professor of Civil Engineering,
JNTU College of Engineering, Hyderabad, India

This book covers all the topics essential for a first course in engineering mechanics. Written keeping in mind the needs of undergraduate engineering students and those appearing for competitive examinations, it covers the theoretical concepts and operations of solid mechanics in a lucid and well-illustrated manner. Several worked-out examples are interspersed throughout the book; this along with the *chapter-end exercises consisting of multiple-choice questions, numerical problems, short-answer questions and descriptive questions* exposes the students to a variety of situations for testing their understanding of the subject at the conceptual and analytical levels.

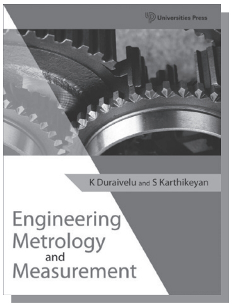
Contents: *Preface* ◈ Forces and Moments ◈ Friction ◈ Center of Gravity and Moment of Inertia ◈ Kinematics ◈ Additional Topics in Dynamics ◈ *Index*

2005 360 pp. Paperback
978-81-7371-543-3 ₹ 495.00

Engineering Metrology and Measurement

K Duraivelu
Professor and Dean of Faculty of Engineering &Technology, Vadapalani Campus, SRM University, Chennai, India

S Karthikeyan
Professor and Head, Department of Mechanical Engineering, Vadapalani Campus, SRM University, Chennai, India


Universities Press
K Duraivelu and S Karthikeyan
Engineering Metrology and Measurement

Metrology and Measurement play an important role in many engineering fields, especially in the production, inspection and quality control of physical products. Accurate measurement in real time is crucial for monitoring and controlling operations in many industries. This book deals with the basic concepts of measurement, including linear, angular and form measurement. It also explores in depth the measurement of force, strain, power, vibration, fluid flow and temperature. Recent advances such as laser metrology, computer-aided inspection and machine vision are also discussed. When coupled with extensive practical experiments, the book will help students gain a solid understanding of the main concepts of this fascinating subject.

Salient Features

- Comprehensive coverage of the syllabi pertaining to this subject of most Indian universities
- Incorporates end-of-chapter summaries, multiple choice questions and review questions
- Includes over 220 figures to complement the text
- Features a section on the use of statistical tools to ensure quality control

Contents: *Foreword by Dr R Velraj* ◈ *Foreword by Dr V Raghavan* ◈ *Preface* ◈ **Section I: Engineering Metrology** ◈ Basic Concepts of Measurement ◈ Linear Measurement ◈ Angular Measurement ◈ Form Measurement ◈ Advances In Metrology ◈ **Section II: Engineering Measurement** ◈ Measurement of Force, Strain and Pressure ◈ Measurement of Torque and Power ◈ Measurement of Level, Vibration and Translation ◈ Measurement of Fluid Flow ◈ Measurement of Temperaturev ◈ **Section III: Quality Control** ◈ Statistical Quality Control ◈ *Appendix 1: Table of Constants for Control Charts for Variables* ◈ *Appendix 2: Table of Standard Normal Probabilities* ◈ *Index*

2018	416 pp.	Paperback
978-93-86235-52-7		₹ 495.00

Engineering Optimization: A Modern Approach

Ranjan Ganguli

See page 56

Engineering Thermodynamics Through Examples: More than 765 Solved Examples

Y V C Rao

Formerly Professor of Chemical Engineering, Indian Institute of Technology Kanpur, Kanpur, India

This book presents the basic concepts, principles and applications of the principles in analysing real life problems in an interactive manner. *The book covers the syllabus of all universities and engineering colleges and can be used as a primary text or a supplement to any textbook on thermodynamics for undergraduate students of all branches of engineering. It can also be used as a reference book by graduate students and practising engineers*. Psychometry and chemical thermodynamics, Jacobian method of deriving thermodynamic relations in addition to the conventional partial differentials method are presented and illustrated through several examples. Sufficient thermodynamic property data tables are appended.

Contents: Basic Concepts ◈ Zeroth Law of Thermodynamics ◈ Properties of Simple Compressible Fluids ◈ First Law of Thermodynamics and its Application ◈ Second Law of Thermodynamics ◈ Thermodynamic Potentials and Availability ◈ Thermodynamic Relations ◈ Power and Refrigeration Cycles ◈ Non-reacting Gas Mixtures and Psychrometry ◈ Combustion and Chemical Thermodynamics ◈ *Appendices* ◈ *Nomenclature* ◈ *Index*

2003	704 pp.	Paperback
978-81-7371-423-8		₹ 995.00

Finite Element Analysis and Procedures in Engineering

H V Lakshminarayana

See page 17

Finite Element Analysis for Engineering and Technology

Tirupathi R Chandrupatla

See page 17

First Course in Fluid Mechanics, A

S Narasimhan

Formerly Professor, Department of Fluid Mechanics, Indian Institute of Technology Bombay, Mumbai, India

This book is primarily devoted to the application of the laws of Newtonian mechanics to solve complex problems in fluid motion which are of common *interest to civil, mechanical, aeronautical and chemical engineers*.

The topics discussed are fluid properties and their role in fluid motion; fluid statics; fluid kinematics; Euler's equations and Bernoulli's energy equation; forms of irrotational flows; property of viscosity and the Navier–Stokes equations of motion; turbulence; dimensional analysis and model similitudes.

Contents: *Preface* ◈ *Acknowledgements* ◈ Properties of Fluids ◈ Fluid Statics ◈ Kinematics of Fluid Flow ◈ Dynamics of Flow ◈ Examples of Irrotational Flow of Idea Fluids ◈ Applications of Bernoulli's Theorem and Modifications ◈ Force-Momentum Relationship ◈ Laminar Flow ◈ Turbulent Flow ◈ Flow in Pipes ◈ Forces on Submerged Bodies ◈ Open Channels ◈ Compressable Flow ◈ Dimensional Analysis and Similitude ◈ *Solutions* ◈ *Index*

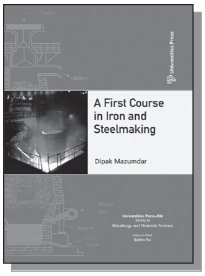
Distributed worldwide (except India)
by CRC Press LLC, USA, Taylor and Francis Group

2006	452 pp.	Paperback
978-81-7371-564-8		₹ 650.00

First Course in Iron and Steelmaking, A

Dipak Mazumdar

Ministry of Steel Chair Professor, Indian Institute of Technology Kanpur, Kanpur, India



The Series in Metallurgy and Materials Science was initiated during the Diamond Jubilee of the Indian Institute of Metals (IIM). In the last decade the progress in the study and development of metallurgy and materials science, their applications, as well as the techniques for processing and characterizing them has been rapid and extensive. With the help of an expert editorial panel of international and national scientists, the series aims to make this information available to a wide spectrum of readers. This book is the fourth textbook in the series.

According to the author, the requirements for a text of this kind are: it should be concise and contemporary, less descriptive, based on fundamentals and sufficiently quantitative. This is because courses on extractive metallurgy, mineral processing, fuels, furnaces and refractories have been dispensed with to accommodate newer subjects related to structure, properties and processing of different kinds of emerging and functional materials such as refractories, polymers and composites. *A First Course in Iron and Steelmaking* is a textbook catering to undergraduate metallurgical engineering students that fulfils all these criteria. The author's experience in more than a dozen domestic steel and refractory industries has added flavour and value to the concepts presented in the book.

Salient Features:

- It is a comprehensive book featuring the status of the Indian iron and steel industry, the processes followed in extraction, the traditional, contemporary as well as those expected to be followed in the future.
- Each process has been described with their advantages and disadvantages cited.
- Contains a large number of numerical worked examples as well as exercises.
- Exercises are structured to help students in developing their understanding of fundamental concepts through self-study.
- Includes appropriate figures, diagrams and tables close to the point of reference.
- Excellent resource material has been provided in each chapter to assist readers to study the subject in greater detail.

Contents: *Preface* ◈ An Overview of Iron and Steelmaking ◈ The Science Base of Iron and Steelmaking ◈ Ironmaking ◈ Steady State Material and Enthalpy Balance in an Iron Blast Furnace ◈ Primary Steelmaking ◈ De-oxidation, Ladle and Tundish Metallurgy ◈ Solidification of Steel, Casting Processes and Finishing Operations ◈ Iron and Steelmaking in India ◈ *Index*

2015	396 pp.	Paperback
978-81-7371-939-4		₹ 1,150.00

Fuels and Combustion (Third Edition)

Samir Sarkar

See page 13

Fundamentals of Computational Fluid Dynamics

Tapan K Sengupta
Professor, Department of Aerospace Engineering, Indian Institute of Technology Kanpur, Kanpur, India

This book aims to provide a foundation to CFD which finds application in solving cutting-edge research problems. It includes both classical and recent methods of solving high Reynolds number incompressible flows. The first four chapters deal with the governing equations and discussions on ranges of temporal and spatial scales. This is followed by classical methods for PDEs, coordinate transformations and grid generation. A full chapter is devoted to spectral analysis tools developed by the author, and aliasing error which is least understood but important for DNS/LES. The last three chapters provide higher order methods, discussions on higher accuracy finite volume methods and their comparion to finite element methods. In the last chater, applications of some of the methods highlighting the issues of unsteady and transitional/turbulent flows are presented.

Contents: *Preface* ◆ Basic Ideas of Computational Fluid Mechanics ◆ Governing Equations of Fluid Mechanics ◆ Classification of Quasi-Linear PDEs ◆ Additional Issues of CFD: Space-Time Resolution of Flows ◆ Discretization of Partial Differential Equations ◆ Solution Methods for Parabolic PDEs and their Analysis ◆ Solution Method for Elliptic PDEs ◆ Solution of Hyperbolic PDEs d Curvillinear Coordinates and Grid Generation ◆ Spectral Analysis of Numerical Schemes and Aliasing Error ◆ High Order Methods ◆ Introduction to Finite Volume and Finite Element Methods ◆ Solution of Navier-Stokes Equation ◆ *Appendices* ◆ *Index*

2004	364 pp.	Paperback
978-81-7371-478-8		₹ 1,095.00

Gas Tables (Third Edition)

E Rathakrishnan
See page 1

Heat Transfer

Y V C Rao
Formerly Professor of Chemical Engineering, Indian Institute of Technology Kanpur, Kanpur, India

An outcome of the lecture notes prepared by the author, *this book has been prepared primarily for an introductory course in heat and mass transfer*. Emphasis has been placed on precise and logical presentation of the concepts and principles. The traditional, classical approach has been adopted in presenting the subject matter. *Every chapter has a set of learning objectives, a chapter summary, and several review questions. Finally, every chapter closes with a set of unsolved problems with answers at the end of the book. Several solved problems are included throughout.*

Contents: *Preface* ◆ *Nomenclature* ◆ *Introduction* ◆ One-Dimensional Steady-State Heat Conduction ◆ Heat Transfer from Extended Surfaces ◆ Two-and Three-Dimensional Steady-State Heat Conduction ◆ Unsteady-State Heat Conduction ◆ Transient Heat Transfer- Numerical and Graphical Methods of Analysis ◆ Radiation Heat Transfer ◆ Principles of Convection ◆ Natural Convection and Forced Convection ◆ Condensation and Boiling Heat Transfer ◆ Heat Exchangers ◆ Mass Transfer ◆ *Appendices* ◆ *Answers to Problems* ◆ *Bibliography* ◆ *Index*

2001	488 pp.	Hardback
978-81-7371-384-2		₹ 595.00

Industrial Psychology

Dipak Kumar Bhattacharyya & Sutapa Bhattacharya
See page 67

Introduction to Strength of Materials

D S Prakash Rao
See page 21

Introduction to Thermodynamics, An (Second Edition)

Y V C Rao
Formerly Professor of Chemical Engineering, Indian Institute of Technology Kanpur, Kanpur, India

This book provides a precise and logical presentation of the concepts and principles of thermodynamics from the macroscopic (classical) point of view. In addition to the *nice presentation of theory*, each chapter of the book has many *solved examples* which will help the students in better understanding the basic concepts. Several *problems are given at the end of each chapter*, for the students to solve by applying thermodynamic principles. The answers are given at the end of the book.

Contents: *Preface* ◈ *Nomenclature* ◈ *Introduction* ◈ Concepts and Definitions ◈ Thermodynamics Properties of Fluids ◈ Zeroth Law of Thermodynamics ◈ First Law of Thermodynamics ◈ First Law Analysis of Processes ◈ Second Law of Thermodynamics ◈ Thermodynamics ◈ Power and Refrigeration Cycles ◈ Gas-Vapour Mixtures and Psychrometry ◈ *Appendices* ◈ *Answer to Problems* ◈ *Index*

2003 500 pp. Paperback
978-81-7371-461-0 ₹ 725.00

Mass Transfer Concepts

K Asokan
See page 13

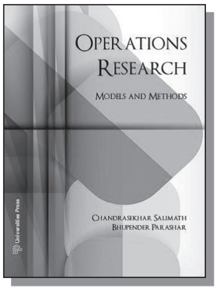
Mechanics of Composite Materials and Structures

Madhujit Mukhopadhyay
See page 22

Operations Research, Models and Methods

Chandrasekhar Salimath
Formerly Professor, J S S Academy of Technical Education, Noida, India

Bhupender Parashar
Associate Professor, J S S Academy of Technical Education, Noida, India



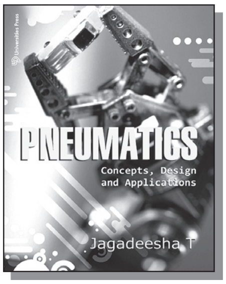
The guiding philosophy of the authors has been to treat the subject matter from a mathematical perspective, highlighting the fact that Operations Research is essentially a science of decision making, affecting almost every aspect of life and translating into real life benefits. Their approach has been two-fold—to motivate the students to learn the basic concepts of OR while developing mathematical modelling and problem solving skills, and to enhance their decision making capabilities. This book on Operations Researchcovers the existing syllabi of UG/PG programmes in many of the Indian Technical Universities.

Contents: *Preface* ◈ *Roadmap (How to use the book)* ◈ Operations Research—An Overview ◈ Linear Programming (LP)-I ◈ Linear Programming (LP)-II ◈ Transportation Problem (TP) ◈ Assignment Problem (AP) ◈ Job Sequencing Problem (JSP) ◈ Network Models ◈ Project Management ◈ Game Theory ◈ Queueing (Waiting Line) Theory ◈ Inventory Control (Management) ◈ *Replacement (Maintenance) Theory* ◈ *Suggested Reading* ◈ *Index*

2014 436 pp. Paperback
978-81-7371-931-8 ₹ 495.00

Pneumatics: Concepts, Design and Applications

Jagadeesha T
Assistant Professor, Department of Mechanical Engineering, National Institute of Technology, Kozhikode, India



This book provides a clear and concise overview of the basic principles of pneumatics technology, the design of pneumatic systems and the applications of the same for a host of engineering solutions, including industrial control. Designed primarily as an undergraduate textbook for mechanical, production, automobile and mechatronics engineering disciplines, it covers the subject in sufficient detail to be of use to postgraduate students as well as those preparing for competitive examinations.

The book employs numerous examples to bring forth the basic principles underlying the use of pneumatic power; it also provides physical interpretations of mathematical analyses for understanding the solutions of complex problems with ease.

Salient Features:

- Emphasis on presenting concepts in an unambiguous manner with the help of many worked-out problems
- Examples chosen with care to provide exposure to real-life industrial problems
- Covers the curriculum prescribed in technical universities in India
- In-depth treatment of the aspects of production of compressed air, its drying, cooling, conditioning and distribution
- Detailed coverage of the logic design of pneumatic circuits
- Includes advanced topics like KV mapping and emergency circuits, discussed using Boolean algebra as the basis for SOP and POS
- Hydropneumatics discussed in detail with examples
- Well-framed exercise problems ranging from simple to thought-provoking ones included in all the chapters
- Additional support in the form of review questions and answers available at www.universitiespress.com/pneumatics/resources

Contents: *Preface* ◈ *Acknowledgements* ◈ Introduction To Pneumatics ◈ Preparation of Compressed Air ◈ Conditioning and Distribution of Compressed Air ◈ Pneumatics Actuators and Air Motors ◈ Pneumatic Control Valves ◈ Single Actuator Circuits ◈ Multi Actuator Circuits – Part I ◈ Multi Actuator Circuits – Part II ◈ Electro-pneumatic Control ◈ Pneumatic Circuit Design Using Plcs ◈ Introduction To Fluidics ◈ Hydropneumatics ◈ Maintenance and Troubleshooting of Pneumatic Systems ◈ *Index*

2015 520 pp. Paperback
978-81-7371-941-7 ₹ 750.00

Principles of Fluid Mechanics and Fluid Machines

(Third Edition)

N Narayana Pillai

Professor Emeritus, Amrita School of Engineering, Coimbatore, India

This book is intended to be used as a textbook for a first course in fluid mechanics. It stresses on principles and takes the students through the various developments in theory and applications. A number of exercises are given at the end of each chapter, all of which have been successfully class-tested by the authors. *It will be ideally suited for students taking an undergraduate degree in engineering in all universities in India.* Some significant additions have been made to the text in the present edition. The new topics discussed include propagation of errors, the force on a fireman's nozzle, the propulsion of turbojets and rockets, standing wave flume for measurement of discharge in irrigation channels and the characteristics of centrifugal pumps. A number of examples applying the concept of control volume and pressure momentum transport rate equation have been added. Considering the importance of compressible flow, a whole chapter on elements of compressible flow has been added.

Contents: *Foreword* ◈ *Preface to the third edition* ◈ *Preface to the first edition* ◈ *Introduction* ◈ Properties of fluids ◈ Fluid pressure and its measurements ◈ Pressure on immersed surfaces ◈ Buoyancy and floatation ◈ Relative equilibrium of moving fluids ◈ Fluid kinematics ◈ Principles of ideal fluid flow ◈ Analysis of flow patterns ◈ Fluid dynamics ◈ Flow measurements ◈ Flow through pipes ◈ Viscous flow—laminar and turbulent flows ◈ Dimensional analysis and similitude ◈ Boundary layer theory ◈ Drag and lift on immersed bodies ◈ Flow in open channels ◈ Water hammer in pipes ◈ Turbo-machines ◈ Positive displacement pumps ◈ Elements of Compressible Flow ◈ *References* ◈ *Index*

2009 498 pp. Paperback
978-81-7371-675-1 ₹ 650.00

Principles of Metal Cutting

G Kuppuswamy

Formerly Assistant Professor, Manufacturing Engineering Section, Indian Institute of Technology Madras, Chennai, India

This book provides an introduction to the principles of metal cutting technology, an important part of manufacturing engineering today. These principles form the basis for understanding vital areas like cutting tool design, machinability data, operation planning, etc. SI units have been used and a number of numerical examples have been provided in each chapter.

Contents: *Preface* ◆ *List of Symbols* ◆ *Introduction* ◆ Tool Geometry of Single-point Cutting Tools ◆ Chip Formation Mechanism ◆ Force System in Orthogonal Cutting ◆ Thermal Aspects in Machining ◆ Tool Wear and Tool-life Analysis ◆ Machinability and Machining Economics ◆ Cutting Fluids ◆ Advances in Cutting Tool Materials ◆ Chatter and its Significance ◆ Surface Roughness ◆ Chip Breakers ◆ Aspects of Single-point Tool Design ◆ Machining Non-metal and Hard Materials ◆ *Appendix A* ◆ *Appendix B* ◆ *Bibliography* ◆ *Answer to Exercise Problems* ◆ *Index*

1996	248 pp.	Paperback
978-81-7371-028-5		₹ 575.00

Production and Operations Management: Theory and Practice

Dipak Kumar Bhattacharyya

See page 68

Robotics Primer, The

Maja J Mataric

See page 112

Strength of Materials (Third Edition)

B S Basavarajaiah & P Mahadevappa

See page 26

Strength of Materials: A Practical Approach (Volume 1)

D S Prakash Rao

See page 26

Textbook on Heat Transfer, A (Fourth Edition)

S P Sukhatme

Professor Emeritus, Department of Mechanical Engineering, Indian Institute of Technology Bombay, Mumbai, India

This classic text deals with the elementary aspects of heat transfer, with special emphasis on the fundamental laws so that the subject is perceived by the student as both a science and an art. *The text is supported by a large number of solved examples. Each chapter contains many problems with answers provided at the end of the book.*

The fourth edition is an expanded version of the earlier editions. *It is written as a stand-alone text which can be read and understood by the student on his own. Thus, it contains many more explanatory passages, solved problems and figures to illustrate the text.* Earlier editions of the book contained a number of figures from which values had to be used in order to solve certain types of problems. The present edition essentially eliminates the need for reading numerical values from graphs by giving appropriate equations. *An added feature is the inclusion of a new chapter on mass transfer.*

Contents: *Preface to the Fourth Edition* ◆ *Preface to the Third Edition* ◆ *List of Principal Symbols* ◆ *Introduction* ◆ Heat Conduction in Solids ◆ Thermal Radiation ◆ Principles of Fluid Flow ◆ Heat Transfer by Forced Convection ◆ Heat Transfer by Natural Convection ◆ Heat Exchangers ◆ Condensation and Boiling ◆ Mass Transfer ◆ *Answers* ◆ *Appendix*

Available in print and e-book format.
For details, visit www.universitiespress.com.

2005	412 pp.	Paperback
978-81-7371-544-0		₹ 595.00

Thermodynamics

Y V C Rao

Formerly Professor of Chemical Engineering, Indian Institute of Technology Kanpur, Kanpur, India

Thermodynamics is the science dealing with energy and its transformation. The laws of thermodynamics are of wide applicability and are extensively used in several branches of engineering science. In the study of thermodynamics, one can adopt two different points of view, namely microscopic and macroscopic. Since *the purpose of this book is to serve as an introduction to the study of thermodynamics, the macroscopic approach has been adopted. It presents the essential concepts and principles, with particular emphasis on precise and logical presentation.*

Contents: *Preface* ◆ *Nomenclature* ◆ Fundamental Concepts and Definitions ◆ Ideal and Real Gases ◆ Zeroth Law of Thermodynamics ◆ First Law of Thermodynamics ◆ Second Law Thermodynamics ◆ Properties of Steam ◆ Gas Power Cycles ◆ Vapour Compression Refrigeration ◆ Psychrometry ◆ *Appendices* ◆ *Answers* ◆ *Index*

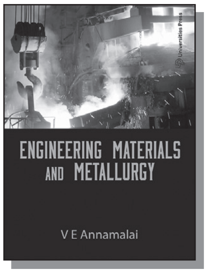
2001	216 pp.	Paperback
978-81-7371-388-0		₹ 450.00

METALLURGY

Engineering Materials and Metallurgy

V E Annamalai

Professor, Department of Mechanical Engineering in SSN College of Engineering, Chennai, India



The book provides an in-depth coverage of Engineering Materials and Metallurgy as required by the undergraduate students of engineering. The core concepts have been simplified for better understanding using graphs, tables, figures and examples. Self-evaluation questions will help the students assess their understanding and knowledge of the subject.

Special features Explains different types of materials, their properties, uses, treatments and transformations ◆ Over 155 illustrations ◆ 160 short answer and 55 long answer type questions ◆ 100 multiple choice questions with answers ◆ Sample university question papers with answers to select questions ◆ An annexure with questions that appeared in GATE exams

Contents: *Foreword* ◆ *Preface* ◆ *Alloys and Phase Diagrams* ◆ Introduction to Metallurgy ◆ Equilibrium Heating and Cooling ◆ Solidification ◆ Co-existence of Metals/Materials ◆ Phase ◆ Phase Rule ◆ Solid Solution and its Types ◆ Describing a Solid Solution Phase Diagram ◆ Eutectic System Phase Diagram ◆ Peritectic Reaction ◆ Transformations in the Solid State ◆ Summary of Phase Diagram Types ◆ *Summary* ◆ *Questions* ◆ The Iron–Carbon System ◆ Introduction to the Iron–Carbon System ◆ Plotting an Iron–Carbon Diagram ◆ Marking the Peritectic Points ◆ Marking the Eutectic Points ◆ Drawing the Eutectoid Portion Curve ◆ Discussing the Transformations ◆ Invariant Reaction ◆ Summary of Reactions in the Iron–Carbon Diagram ◆ Phases Present ◆ Critical Temperatures ◆ Transformations in Equilibrium Conditions ◆ Drawing the Microstructures ◆ Formation of Pearlite ◆ Classification, Composition and Microstructure of Ferrous Materials ◆ Coring and Homogenisation ◆ *Summary* ◆ *Questions* ◆ Non-equilibrium Transformations and Hardenability ◆ Isothermal Transformation Diagram ◆ TTT Diagram ◆ Continuous Cooling Curves (CCC) and Superimposing on TTT ◆ Critical Cooling Rate ◆ Microstructures of Steel ◆ Formation of Martensite ◆ Formation of Pearlite ◆ Hardenability ◆ Jominy End Quench Test ◆ *Summary* ◆ *Questions* ◆ Heat Treatment ◆ The Principle of Heat Treatment ◆ Definition of Heat Treatment ◆ Applications of Heat Treatment ◆ Case Hardening ◆ Consolidated Information ◆ *Summary* ◆ *Questions* ◆ Ferrous Alloys ◆ Classification, Composition and Microstructure of Ferrous Materials ◆ Effect of Non-equilibrium Cooling ◆ Allotropy of Iron ◆ Effect of Alloying Elements ◆ Element-wise Effects ◆ Multi-alloyed Steels ◆ Special Steels ◆ Wrought and Cast Iron ◆ Designation of Ferrous Materials ◆ *Summary* ◆ *Questions* ◆ Non-ferrous Alloys ◆ Copper and its Alloys ◆ Aluminium and its Alloys ◆ Bearing Alloys ◆ Magnesium Alloys ◆ Nickel Alloys ◆ Lead and Tin Alloys ◆ Titanium and its Alloys ◆ *Summary* ◆ *Questions* ◆ Polymers ◆ Polymers and Elastomers ◆ Polymer Molecular Structures ◆ Formation of Polymers ◆ Types of Polymers ◆ Properties and Applications of Polymers ◆ Resins ◆ Future of Plastics ◆ *Summary* ◆ *Questions* ◆ Ceramics ◆ Ceramics ◆ Processing of Ceramics ◆ Engineering Ceramics ◆ Composites ◆ Important Composites ◆ *Summary* ◆ *Questions* ◆ Plastic Deformation and Fracture ◆ Dislocation Theory ◆ Mechanisms of Plastic Deformation ◆ Effect of Defects on the Deformation Mechanism ◆ Changes in Properties due to Deformation ◆ Bauschinger Effect ◆ Fracture and its Importance ◆ Strengthening of Metals ◆ *Summary* ◆ *Questions* ◆ Material Properties and

Testing ◈ Material Properties ◈ Testing of Materials ◈ Summary of Test Methods ◈ *Summary* ◈ *Questions* ◈ *Annexure I: Basics of Crystallography* ◈ *Annexure II: University Question Papers* ◈ *Annexure III: Objective Questions* ◈ *Annexure IV: GATE Metallurgy Stream Questions* ◈ *Annexure V: Answers to Part A Questions from University Question Papers* ◈ *Index*

2017 276 pp. Paperback
978-93-8623-504-6 ₹ 375.00

First Course in Iron and Steelmaking, A

Dipak Mazumdar
See page 81

India's Legendary Wootz Steel

Sharada Srinivasan & Srinivasa Ranganathan
See page 72

Introduction to Metallurgy, An
(Second Edition)

Alan Cottrell
Senior Research Associate, Materials Science;
formerly Goldsmiths' Professor of Metallurgy,
University of Cambridge, UK

This classic textbook aims to provide undergraduates with a broad overview of metallurgy from atomic theory, thermodynamics, reaction kinetics and crystal physics, to elasticity and plasticity.

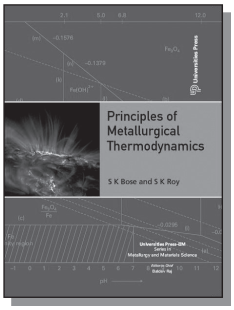
Contents: *Preface* ◈ *Prologue* ◈ The Atomic Nucleus ◈ Atomic Structure ◈ Chemical Bounding ◈ Heat and Energy ◈ Entropy and Free Energy ◈ Free Energies of Metallic Compounds ◈ Extraction of Metals ◈ Electrochemical Extraction and Refining Processes ◈ Extraction of Reactive and Refractory Metals ◈ Iron and Steel Making ◈ Kinetics of Metallurgical Reactions ◈ Solids, Liquids and Solidification ◈ Alloys ◈ The Phase Diagram ◈ Ternary Phase Diagrams ◈ Metal Crystals-I Periodicity ◈ Metal Crystals-II Directionality ◈ Metal Crystals-III Energies and Processes ◈ Heat-treatment of Alloys ◈ Mechanical Properties ◈ Plastic Working ◈ Oxidation and Corrosion ◈ Electronic Structure and Properties ◈ Properties and Uses ◈ *Index*

2000 564 pp. Paperback
978-81-7371-239-5 ₹ 950.00

Principles of Metallurgical Thermodynamics

S K Bose
Department of Metallurgical and Materials
Engineering, Indian Institute of Technology
Kharagpur, Kharagpur, India

S K Roy
Department of Metallurgical and Materials
Engineering, Indian Institute of Technology
Kharagpur, Kharagpur, India


Principles of Metallurgical Thermodynamics
S K Bose and S K Roy
Universities Press
Universities Press-IIM Series in Metallurgy and Materials Science

The Series in Metallurgy and Materials Science was initiated during the Diamond Jubilee of the Indian Institute of Metals (IIM). This book is the third textbook in the series.

Principles of Metallurgical Thermodynamics deals with the thermodynamics of reactive systems, with emphasis on the reactivity of metals and materials being used by metallurgical and materials scientists all over the world. Though the focus is on equilibrium thermodynamics, it also touches upon some methods to incorporate non-equilibrium effects relevant to material scientists. This knowledge will enable students to solve the challenging problems faced during operation in different materials-processing routes. It will also help in the search for new substances that might revolutionize high as well as low temperature applications because of their super-fluid and super-conducting properties, outer space environmental adaptability and more attractive electrical, magnetic and dielectric properties.

Contents: *Preface* ◈ Nomenclature, Symbols, Units and Dimensions ◈ Introduction ◈ Concept of Internal Energy and the First Law of Thermodynamics ◈ Concept of Entropy and the Second Law of Thermodynamics ◈ Temperature Dependence of Heat Capacities, Entropy and the Third Law of

Thermodynamics ◆ Homogeneous and Heterogenous Equilibria, Fugacity, Activity and Equilibrium Constant ◆ Ellingham–Richardson Diagrams ◆ Phase Rule and Phase Relations, Phase Stability and Thermochemical Diagrams ◆ Phase Equilibrium and Phase Transformation in Metals Under High Pressures ◆ Thermodynamics of Special Systems ◆ Thermodynamics of Solutions ◆ Thermodynamics of Electrochemical Cells and Solid Electrolytes ◆ Thermodynamics of Point Defects in Binary Inorganic Compounds ◆ Thermodynamics of Surfaces and Interfaces ◆ *Index*

2014	688 pp.	Paperback
978-81-7371-927-1		₹ 950.00

Powder Metallurgy: Science, Technology and Materials

Anish Upadhyaya & G S Upadhyaya
See page 73

Advances in Cloud Computing

Anirban Basu (Ed.)
Chief Consultant, PQR Software, Bengaluru; Professor and Head, Computer Science Engineering (R&D), East Point Research Academy, Bengaluru, India

Rajiv Ranjan (Ed.)
Research Scientist and Project Leader, CSIRO ICT Center Information Engineering Laboratory, Canberra, Australia

Rajkumar Buyya (Ed.)
Professor of Computer Science and Software Engineering; Director, Cloud Computing and Distributed Systems (CLOUDS) Laboratory, University of Melbourne, Australia

The next wave in computing technology, expected to usher in a new era, will be based on cloud computing. Cloud computing assembles large networks of virtualized services comprising hardware resources (CPU, storage, and network) and software resources (e.g., databases, message queuing systems, monitoring system, and load-balancers). Cloud providers offer organizations the option of deploying their application over a network of infinite resource pool with practically no capital investment, and with modest operating costs proportional to their actual usage. As with any emerging technology, a host of issues related to the deployment and delivery models, security issues, performance considerations, etc., are in a state of flux. This compendium contains *state-of-the-art papers on cloud computing presented at the first international conference organized by the Computer Society of India in July 2012, which would be of interest to researchers, professionals, and industrial practitioners active in this field.*

Contents: *Preface* ◆ *Part I (Invited Papers)* ◆ MediaWise—Designing a Smart Media Cloud ◆ Resource Management on Clouds: the Multifaceted Problem and Solutions ◆ People-centered Cloud Services Aggregation and Exchange ◆ Cloud Security ◆ Business Benefits of Cloud Computing—Looking Beyond Technology ◆ Mobile Cloud Computing ◆ Sensing-as-a-Service and Big Data ◆ Agile Practices and Cloud Computing in Software Development ◆ Future of Inventions in Cloud Computing ◆ The Art and Science of Making the Cloud Work ◆ Cloud Computing Adoption in India—A Practitioner's View ◆ Trust in Cloud Infrastructure and Security in Sensor Cloud Computing ◆ SAP Business By Design—Next Generation Cloud Suite for Medium Enterprises ◆ API Cloud Store
Part II (Contributed Papers) ◆ T-Chord: Trust Based Peer-to-Peer Lookup Service for Internet Applications ◆ Network Allocation to Vertical Handoff Call Using Non-cooperative Game Theory ◆ Proof of Data Retrievability for Static Data ◆ A Software Engineering Approach for Cloud Migration ◆ SQL-GQL Inter-Query Translation for Google App Engine Datastore ◆ Measures to Make Cloud Energy Efficient ◆ MCS-like Algorithms for Efficient Mutual Exclusion in Cloud and Multi-core Settings ◆ Reputation Schemes among Cloud-based E-commerce Agents when Using ◆ Multi-Criteria Decision Making for the Case of Overlapping Assessments ◆ Compiler Optimizations for OpenCL Compiler ◆ Hybrid Cloud Solutions for the SMEs' using Eucalyptus as a Platform ◆ A Pragmatic Scheduling Approach for Creating Optimal Priority of Jobs with Business Values in Cloud Computing ◆ High Performance Private Cloud for Satellite Data Processing—Engineering in Cloud ◆ Cloud Deployment Considerations for Service Providers ◆ Exploring Cloud Computing and Security Issues ◆ Application of IP Security in Cloud
Part III (Short Papers) ◆ A Secure Web-Application Architecture for the Cloud ◆ A Novel Architecture Using Advanced Encryption Standard to Implement Disk Security ◆ Fast Virtual Machine Checkpoint/Migration Technique Using Fast Virtual Disk Image in Clouds ◆ Redescription Mining with Geological Data ◆ Cloud Based National Health Information System for Public Use in India

Available in print and e-book formats.
For details, visit www.universitiespress.com.

2012	188 pp.	Paperback
978-81-7371-778-9		₹ 750.00

Bioinformatics and Bioprogramming in C

L N Chavali
Visiting Faculty, Bioinformatics, Osmania University, Hyderabad, India

Bioinformatics and Bioprogramming in C is designed to introduce C language to the biology, biochemistry, microbiology and biotechnology community as a tool for solving biological problems. To help in understanding the concepts, most of the terminology used is biocentric and the programs help in real-life problems like gene sequence analysis and prediction.

The book moves gradually from simple ideas to more complex programming concepts, thus equipping the reader to comprehend the case studies on dynamic programming and PAM matrices included at the end.

Contents: *Foreword* ◈ *Preface* ◈ *Acknowledgements* ◈ *Introduction* ◈ Basic Terminology ◈ Operators ◈ Statements and Control Flow ◈ Functions ◈ Character Input and Output ◈ Arrays ◈ Pointers ◈ Structures ◈ Files ◈ Data Structures ◈ *Case Studies* ◈ *Appendix* ◈ *Index*

2009	224 pp.	Paperback
978-81-7371-648-5		₹ 475.00

Bioinformatics: Basics, Algorithms and Applications

Ruchi Singh
Visiting Faculty in Bioinformatics, Goa, India

Richa Sharma
Assistant Professor and Head, Department of Information Science and Engineering, The Oxford College of Engineering, Bengaluru, India

This book provides a simple and concise explanation of the basic principles, tools and applications of bioinformatics. It explains subjects that are part of a conventional bioinformatics course such as databases, database access and analyses tools; principles of computer science that underlie the algorithms which are built into these tools; core algorithms of sequence analyses and phylogeny construction.

The book has been planned and structured as an undergraduate textbook for a one-semester foundation course in bioinformatics. Care has been taken to design the algorithms such that even beginners can understand them without difficulty.

Contents: *Getting Started* ◈ Introduction: Introduction to bioinformatics ◈ Introduction to algorithms ◈ Databases and Matrices: Biological databases ◈ Database searching ◈ Scoring matrices ◈ Sequence Alignment: Pairwise sequence alignment ◈ Multiple sequence alignment ◈ Phylogenetic analysis ◈ Other Bioinformatics Algorithms: Basic algorithms ◈ Graph algorithm ◈ String algorithm ◈ Applications of Bioinformatics: Transcriptomics ◈ Metabolomics ◈ Pharmacogenomics ◈ Combinatorial synthesis ◈ Genomics ◈ Proteomics ◈ *Bibliography* ◈ *Index*

2010	272 pp.	Paperback
978-81-7371-713-0		₹ 475.00

Blockchain Technology

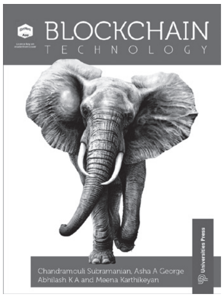
NEW

Chandramouli Subramanian
Associate Director, Cognizant Technology Solutions, Chennai, India

Asha A George
Certified blockchain and cryptocurrency expert, India

Abhilash K A
Solution architect, Bengaluru, India

Meena Karthikeyan
Digital enterprise solutions expert, India


BLOCKCHAIN
TECHNOLOGY
Chandramouli Subramanian, Asha A George
Abhilash K A and Meena Karthikeyan
Universities Press

Blockchain Technology explains the concepts of blockchain in simple terms and leads the readers gradually to a point where they are at ease with the principles and in readiness to deploy blockchain in real-world use cases. The book covers the application areas of blockchain in great detail and will be useful for students planning to enter the software industry. It systematically outlines the history of blockchain and explains, with several use-case scenarios, how blockchain technology is adopted by mainstream financial and industrial domains worldwide because of its ease of use, increased security and better transparency. Incorporating four useful case studies and conforming to the AICTE guidelines, this a much-needed curriculum aid for university students.

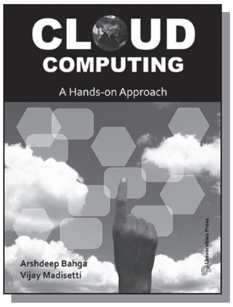
Contents: *Preface* ◈ *Acknowledgements* ◈ *About the Authors* ◈ Fundamentals of Blockchain ◈ Blockchain Types and Consensus Mechanism ◈ Cryptocurrency – Bitcoin, Altcoin and Token ◈ Public Blockchain System ◈ Smart Contracts ◈ Private Blockchain System ◈ Consortium Blockchain ◈ Initial Coin Offering ◈ Security in Blockchain ◈ Application of Blockchain ◈ Limitations and Challenges of Blockchain ◈ Blockchain Case Studies ◈ Blockchain Platform using GoLanguage ◈ Blockchain Ethereum Platform using Solidity ◈ Blockchain Platform using Python ◈ Blockchain platform using Hyperledger Fabric ◈ *Appendices | Connecting Remix with Ganache; Connecting MyEtherWallet with Ganache; Connecting Remix with Metamask; Model Syllabus for Blockchain Technology d Index*

2021	696 pp.	Paperback
978-93-89211-63-4		₹ 825.00

Cloud Computing: A Hands-on Approach

Arshdeep Bahga
Georgia Institute of Technology, Atlanta, USA

Vijay Madisetti
Professor, Department of ECE, Georgia Institute of Technology, Atlanta, USA



This book is written as a textbook on cloud computing for educational programs at colleges. It uses an immersive “hands-on approach” to transfer knowledge to the reader by providing the necessary guidance and knowledge to develop working code for real-world cloud applications.

It is organised into three main parts. Part I covers technologies that form the foundations of cloud computing. These include topics such as virtualization, load balancing, scalability and elasticity, deployment, and replication. Part II introduces the reader to the design and programming aspects of cloud computing. Case studies on design and implementation of several cloud applications in the areas such as image processing, live streaming and social networks analytics are provided. Part III introduces the reader to specialised aspects of cloud computing including cloud application benchmarking, cloud security, multimedia applications and big data analytics. Case studies in areas such as IT, healthcare, transportation, networking and education are provided.

The book contains hundreds of figures and tested code samples that serve to provide a rigorous, “no hype” guide to cloud computing. Review questions and exercises are provided at the end of each chapter. The focus of the book is on getting the reader firmly on track to developing robust cloud applications on their own. Thus, readers can use the exercises to develop their own applications on cloud platforms, such as those from Amazon Web Services, Google Cloud, and Microsoft’s Windows Azure.

Additional support is available at the book’s website: www.cloudcomputingbook.info

The book can also be used by cloud service providers (companies) for their customer and employee training programs.

Contents: *Part I: Introduction and Concepts* ◈ Introduction to Cloud Computing ◈ Cloud Concepts & Technologies ◈ Cloud Services & Platforms ◈ Hadoop & MapReduce ◈ *Part II: Developing for Cloud* ◈ Cloud Application Design ◈ Python Basics ◈ Python for Cloud ◈ Cloud Application Development in Python ◈ *Part III: Advanced Topics* ◈ Big Data Analytics ◈ Multimedia Cloud ◈ Cloud Application Benchmarking & Tuning ◈ Cloud Security ◈ Cloud for Industry, Healthcare & Education ◈ *Appendix-A: Setting up Ubuntu VM* ◈ *Appendix-B: Setting up Django* ◈ *Bibliography* ◈ *Index*

2014	456 pp.	Paperback
978-81-7371-923-3		₹ 695.00

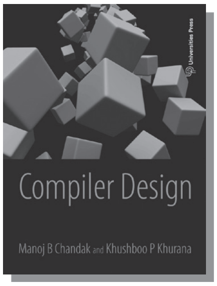
Communications System Modelling and Simulation Using MATLAB and Simulink

K C Raveendranathan
See page 41

Compiler Design

Manoj B Chandak
Professor and Head, Department of Computer Science and Engineering, Shri Ramdeobaba College of Engineering and Management, Nagpur, India

Khushboo P Khurana
Assistant Professor, Department of Computer Science and Engineering, Shri Ramdeobaba College of Engineering and Management, Nagpur, India



The compiler is a vital component in the programming process that translates high-level language to machine code. This comprehensive guide to compiler design begins by introducing students to the compiler and its functions. It then explains in detail each phase of compiler design – lexical, syntax and semantic analysis, code generation and optimisation. It clarifies important internal processes such as storage management, the symbol table and parallel compiling. It also describes various error handling techniques and provides an overview of the open-source compiler construction tools currently available.

Salient Features

- Contains more than 170 figures to complement the text
- Includes numerous programming examples to further elucidate the concepts
- Provides comprehensive end-of-chapter exercises – fill in the blank and true or false questions, as well as practice and programming questions
- Includes a separate chapter on important GATE examination questions, along with their solutions

Contents: *Preface* ◈ *Acknowledgements* ◈ Introduction to Compilers ◈ Lexical Analysis ◈ Syntax Analysis ◈ Syntax-directed Translation and Semantic Analysis ◈ Intermediate Code Generation Using Syntax-directed Translations ◈ Code Optimisation ◈ Code Generation ◈ Storage Management and Symbol Table ◈ Error Handling ◈ Compiler Construction Tools ◈ Functional Languages ◈ Parallel Compilers and Scheduling ◈ Programs on Compiler Design ◈ *Solved Gate Questions* ◈ *Index*

2018 480 pp. Paperback
978-93-86235-64-0 ₹ 550.00

Computer Algorithms/C++
(Second Edition)

Ellis Horowitz
Professor of Computer Science and Electrical Engineering, University of Southern California, Los Angeles, USA

Sartaj Sahni
Distinguished Professor and Chair of Computer and Information Sciences and Engineering, University of Florida, Gainesville, USA

Sanguthevar Rajasekaran
UTC Chair Professor of Computer Science and Engineering, University of Connecticut, Storrs, USA

This is the thoroughly revised and updated edition of the text that helped establish computer algorithms as a discipline of computer science. *A major strength of this text is its focus on design techniques rather than on individual algorithms.*

The second edition of *Computer Algorithms/C++* emphasizes:

- *Design techniques:* Divide and conquer, the greedy method, dynamic programming, backtracking and branch and bound are illustrated with several examples. Each algorithm is completely analysed.
- *Examples:* A wide range of examples provides students with the actual implementation of correct design.
- *The latest research:* A thorough treatment of probabilistic and parallel algorithms is included.
- *Full integration of randomised algorithms:* Performance with non-randomised algorithms is thoroughly compared.

Web support for instructors contains solutions to exercises and PowerPoint presentations.

Contents: *Preface* ◆ *Introduction* ◆ Elementary Data Structures ◆ Divide-and-Conquer ◆ The Greedy Method ◆ Dynamic Programming ◆ Basic Traversal and Search Techniques ◆ Backtracking ◆ Branch and Bound ◆ Algebraic Problems ◆ Lower Bound Theory ◆ NP-Hard and NP-Complete Problems ◆ Approximation Algorithms ◆ PRAM Algorithms ◆ Mesh Algorithms ◆ Hypercube Algorithms ◆ *Index*

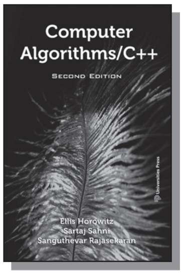
2008	808 pp.	Paperback
978-81-7371-611-9		₹ 650.00

Computer Algorithms/C++
(Second Edition) (For VTU)

Ellis Horowitz
Professor of Computer Science and Electrical Engineering, University of Southern California, Los Angeles, USA

Sartaj Sahni
Distinguished Professor and Chair of Computer and Information Sciences and Engineering, University of Florida, Gainesville, USA

Sanguthevar Rajasekaran
UTC Chair Professor of Computer Science and Engineering, University of Connecticut, Storrs, USA

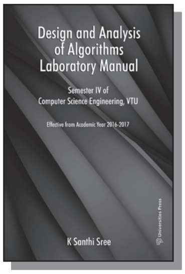


This is the thoroughly revised and updated edition of the textbook that helped establish computer algorithms as a discipline of computer science. Using the popular object-oriented language C++, the text incorporates the latest research and state-of-the-art applications, bringing this classic to the forefront of modern computer science education. A major strength of this textbook is its focus on design techniques rather than on individual algorithms.

The second edition of *Computer Algorithms/C++* emphasizes:

- *Design techniques:* Divide and conquer, the greedy method, dynamic programming, backtracking and branch and bound are illustrated with several examples. Each algorithm is completely analysed.
- *Examples:* A wide range of examples provides students with the actual implementation of correct design.
- *The latest research:* A thorough treatment of probabilistic and parallel algorithms is included.
- *Full integration of randomised algorithms*: Performance with non-randomised algorithms is thoroughly compared.

Computer Algorithms/C++ is appropriate as a core textbook for upper- and graduate-level courses in algorithms. This edition is distributed with a free lab manual containing solutions of the laboratory exercises prescribed by VTU for the paper titled *Design and Analysis of Algorithms*. The lab manual is authored by Dr K Santhi Sree, Professor, School of Information Technology, Jawaharlal Nehru Technological University (JNTUH), Hyderabad.

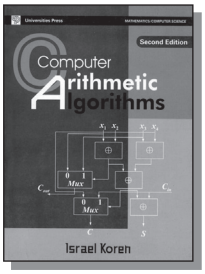

Design and Analysis of Algorithms Laboratory Manual
Semester IV of Computer Science Engineering, VTU
Effective from Academic Year 2016-2017
K Santhi Sree
Universities Press

Contents: *Preface* ◆ *Introduction* ◆ Elementary Data Structures ◆ Divide-and-Conquer ◆ The Greedy Method ◆ Dynamic Programming ◆ Basic Traversal and Search Techniques ◆ Backtracking ◆ Branch and Bound ◆ Algebraic Problems ◆ Lower Bound Theory ◆ NP-Hard and NP-Complete Problems ◆ Approximation Algorithms d PRAM Algorithms ◆ Mesh Algorithms ◆ Hypercube Algorithms ◆ *Index*

2017	852 pp.	Paperback
978-93-86235-14-5		₹ 675.00

Computer Arithmetic Algorithms
(Second Edition)

Israel Koren
Professor of Electrical and Computer Engineering, University of Massachusetts, Amherst, USA



This book explains the principles of algorithms used in arithmetic operations on digital computers. It covers basic arithmetic operations like addition, subtraction, multiplication, and division in fixed-point and floating-point number systems in addition to more complex operations such as square root extraction and evaluation of exponential, logarithmic, and trigonometric functions.

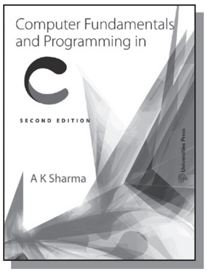
This new edition incorporates sections on floating-point adders, floating-point exceptions, general carry-look-ahead adders, prefix adders, ling adders, and fused multiply-add units. New algorithms and implementations have been added to almost all chapters. An on-line JavaScript-based simulator for many of the algorithms contained in the book is available at: *www.ecs.umass.edu/ece/koren/arith/simulator.*

Contents: *Forward to the Second Edition* ◈ *Preface* ◈ Conventional Number Systems ◈ Unconventional Fixed-Radix Number Systems ◈ Sequential Algorithms for Multiplication and Division ◈ Binary Floating-Point Numbers ◈ Fast Addition ◈ High-Speed Multiplication ◈ Fast Division ◈ Division through Multiplication ◈ Evaluation of Elementary Function ◈ Logarithmic Number System ◈ The Residue Number System ◈ *Index*

2005 300 pp. Paperback
978-81-7371-533-4 ₹ 695.00

Computer Fundamentals and Programming in C (Second Edition)

A K Sharma
Professor, Department of Computer Engineering,
BS Anangpuria Institute of Technology and
Management, Faridabad, India



This second edition of *Computer Fundamentals and Programming in C* revisits the topics covered in the earlier edition and provides an updated exposition of key topics that are often covered at the undergraduate level. It is a comprehensive book ideal for students of engineering and computer science, as also for those who have chosen the subject in their ancillary courses. The book is comprised of two parts. The first part discusses topics such as microprocessors and data representation and provides a concise introduction to programming languages and operating systems. The second part provides an introduction to C and delineates the schemes and conventions followed in using it as a programming language.

Contents: *Preface* ◈ *Part I: Computer Fundamentals* ◈ Fundamentals of Computers ◈ Introduction to Microprocessors ◈ Input-Output Devices ◈ Data Representation ◈ Boolean Algebra and Logic Gates ◈ Introduction to Programming Languages ◈ Operating Systems – An Introduction ◈ Computer Networks and Internet ◈ *PART II: Programming in C* ◈ Introduction to C ◈ Operators and Expressions ◈ Flow of Control ◈ Input-Output Functions ◈ Arrays ◈ Structures ◈ Pointers ◈ Functions ◈ Files ◈ Preprocessor ◈ *Index*

2018 620 pp. Paperback
978-93-86235-29-9 ₹ 650.00

Computer Programming and Numerical Analysis: An Integrated Approach (Revised Edition with C)

N Datta
Head, Department of Mathematics, Heritage Institute of Technology, Kolkata; formerly Senior Professor, Department of Mathematics, Indian Institute of Technology Kharagpur, Kharapur, India

The availability of high-speed digital computers has led to the widespread study of computer programming and numerical analysis in Indian universities and technological institutes. *This book presents the theory and applications of numerical methods for the solution of various types of computational problems in science and engineering.*

Contents: *Preface* ◈ Introduction to Computer Systems ◈ Problem Solving on a Computer ◈ FORTRAN Language Fundamentals ◈ Expression and Assignment Statements ◈ Simple Input/output Statements ◈ Control Statements ◈ Subscripted Variables ◈ Subprograms ◈ Files and General Input/output Statements ◈ Programming ◈ Errors in Numerical Computation ◈ Interpolation ◈ Numerical Differentiation and Integration ◈ Solution of Algebraic and Transcendental Equations ◈ Solution of Systems of Linear Equations ◈ Numerical Solution of Ordinary Differential Equations ◈ Matrix Eigen value Problem ◈ Finite Difference Methods for Solving BVP Associated with Partia Differential Equations ◈ Miscellaneous topics ◈ Programs ◈ *Appendix A: The Programming Language C* ◈ *Appendix B: Some Selected Programs* ◈ *Index*

2003	516 pp.	Paperback
978-81-7371-451-1		₹ 650.00

Constructive Java Programming

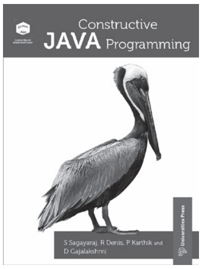
NEW

S Sagayaraj
Associate Professor, Department of Computer Science, Sacred Heart College, Tirupattur, India

R Denis
Assistant Professor, Department of Computer Science, Sacred Heart College, Tirupattur, India

P Karthik
Assistant Professor, Department of Software Technology, Sacred Heart College, Tirupattur, India

D Gajalakshmi
Assistant Professor, Department of Computer Science, Sacred Heart College, Tirupattur, India



Constructive Java Programming is custom-made for readers who wish to start learning to program in an object-oriented programming language. It has been designed primarily as a first programming text. The approach regards Java as a language that readers will want to use as a primary tool in many different areas of their programming work—not just for creating programs with graphical content within Web pages. Every chapter concludes with Short Questions, Comprehensive Questions, Solved Programs and Programming Exercises. These will aid in self-evaluation and enhance the students' understanding of the subject.

Salient features

- The focus is on Java as a platform-independent language.
- Introduction of classes, objects, arrays and control structures.
- The solved programs are based on real-life examples.
- Comprehensive appendices on Net Beans IDE and Database Access with MySQL are provided on the App and website.

Contents: Foundations of Java ◈ Java Essentials ◈ Control Statements ◈ Classes and Objects ◈ Arrays ◈ String Handling ◈ Inheritance ◈ Interface and Package ◈ Exception Handling ◈ Multithreading ◈ Files and I/O Streams ◈ Applets ◈ GUI Applications – Part 1 ◈ GUI Applications – Part 2 ◈ Java Database Connectivity ◈ Collections ◈ Design Patterns ◈ Servlets ◈ Java Server Pages ◈ Introduction to MVC

2021	604 pp.	Paperback
978-93-89211-77-1		₹ 650.00

Cryptography: An Introduction

V V Yaschenko
Series: Indian Editions of AMS Titles

See page 54

Database Application Book, The: Using the MYSQL Database System

Narain Gehani
Dean, College of Computing Sciences, New Jersey Institute of Technology, Newark, USA

This is a companion volume to *'The Database Book: Principles and Practice Using MySQL'*. Here, the open source MySQL database system is used to illustrate the writing of database applications. The book is ideal for a first course on database applications or as a second book for a course on databases. It is also a perfect companion for software professionals in the business of writing database applications.

The book begins with a review of relational databases and SQL to lay the basis for application development. The requirements of a web-based database application (an online book store is taken as an illustrative example), the possible database application architectures for the same and the writing of applications using JSP and PHP with MySQL database API are covered in the book. An implementable prototype that is robust and of production quality is developed in the process.

Contents: *Preface* ◈ *Acknowledgements* ◈ Database Applications ◈ Relational Databases ◈ The Everest Books Ordering & Reporting System (EBORS) ◈ Everest Books Database Tables ◈ Database Application Architectures ◈ JDBC ◈ JSP ◈ PHP ◈ EBORS – The Implementation ◈ Database Security ◈ Projects ◈ *Bibliography* ◈ *Glossary* ◈ *Index*

2012	308 pp.	Paperback
978-81-7371-759-8		₹ 650.00

Database Book, The: Principles and Practice Using MySQL

Narain Gehani
Dean, College of Computing Sciences, New Jersey Institute of Technology, Newark, USA

This book provides a comprehensive coverage of database principles and practice. The author uses the open source database 'MySQL' for illustration. The standard database language for querying (interacting with) relational databases is SQL (structured query language). MySQL is the most popular 'open source' database system with an installed base of over 5 million systems. It is a very fast, multi-threaded, multi-user database which *can be effectively used by teachers who want to teach concepts and practice, database users, programmers and computer scientists.*

Contents: *Preface* ◈ *Acknowledgement* ◈ Databases ◈ A Real Example – The Everest Books Database ◈ Relational Databases (With A My SQL Flavor) ◈ Manipulating The Databases ◈ Database Design ◈ SQL ◈ Transactions ◈ Constraints ◈ Triggers ◈ Objects ◈ Indexes ◈ Views ◈ Spatial Databases ◈ Security ◈ Logs & Recovery ◈ Replication ◈ Tuning ◈ *Appendix A: Codd's Rules For Relational Databases* ◈ *Appendix B: DATABASE APIS* ◈ *Appendix C: Importing & Exporting Data* ◈ *Bibliography* ◈ *Glossary* ◈ *Index*

2008	390 pp.	Paperback
978-81-7371-621-8		₹ 895.00

Database Book, The: Principles and Practice Using the ORACLE Database System

Narain Gehani
Dean, College of Computing Sciences, New Jersey Institute of Technology, Newark, USA

Melliyal Annamalai
Oracle Corporation, Redwood City, USA

Learn how to use and design databases, make them hum, sing and dance, and understand what makes them tick. A database is like an appliance that users need to understand and use as experts but they do not need to understand how to build the appliance. *This book provides a comprehensive coverage of database principles and practice. The author teaches databases without burdening the reader with theorems and internal algorithms and methods used to implement database systems. The Oracle database system is used for the examples.*

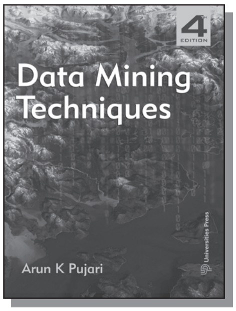
Contents: Databases ◈ The Everest Books Database ◈ Relational Databases (Oracle Flavor) ◈ Manipulating The Database ◈ Database Design ◈ SQL ◈ The PL/SQL Programming Language ◈ Transactions ◈ Constraints ◈ Triggers ◈ Objects ◈ Indexes ◈ Views ◈ Spatial Databases ◈ Unstructured & XML Data ◈ Security ◈ Logs & Recovery ◈ Replication ◈ Tuning ◈ Appendix A: Codd's Rules For Relational Databases ◈

Appendix B: Database APIs ◈ Appendix C: Importing & Exporting Data ◈ *Bibliography* ◈ *Glossary* ◈ *Index*

2012	392 pp.	Paperback
978-81-7371-758-1		₹ 695.00

Data Mining Techniques
(Fourth Edition)

Arun K Pujari
Faculty and Dean, School of Computer and Information Sciences, University of Hyderabad, Hyderabad; Vice-Chancellor, Central University of Rajasthan, India



This book addresses all the major and latest techniques of data mining. It deals in detail with the latest algorithms for discovering association rules for clustering and building decision trees, and techniques such as neural networks, genetic algorithms, rough set theory and support vector machine used in data mining. The algorithmic details of different techniques such as Apriori, Pincer-search, Dynamic Itemset Counting, FP-Tree growth, SLIQ, SPRINT, BOAT, CART, RainForest, BIRCH, CURE, BUBBLE, ROCK, STIRR, PAM, CLARANS, DBSCAN, GSP, SPADE and SPIRIT are covered. The book also discusses the mining of web, spatial, temporal and text data. In the third edition, the chapter on data warehousing concepts was thoroughly revised to include multidimensional data modelling and cube computation; the discussion on genetic algorithms was also expanded as a separate chapter. In the fourth edition, a chapter on ROC curve for visualizing the performance of a binary classifier and the method for computing AUC and its uses has been included.

Students of computer science, mathematical science and management will find this introductory textbook beneficial for a first course on the subject; the exposition of concepts with supporting illustrative examples and exercises makes it suitable for self-study as well.

Contents: *Foreword* ◈ *Prologue* ◈ *Preface to the Fourth Edition* ◈ *Preface to the First Edition* ◈ *Acknowledgements* ◈ **Introduction** ◈ **Data Warehousing** ◈ *Further Reading* ◈ *Exercises* ◈ *Bibliography* ◈ **Data Mining** ◈ *Conclusions* ◈ *Further Reading* ◈ *Exercises* ◈ *Bibliography* ◈ **Association Rules** ◈ *Summary* ◈ *Further Reading* ◈ *Exercises* ◈ *Bibliography* ◈ **Clustering Techniques** ◈ *Conclusions* ◈ *Further Reading* ◈ *Exercises* ◈ *Bibliography* ◈ **Decision Trees** ◈ *Conclusions* ◈ *Further Reading* ◈ *Exercises* ◈ *Bibliography* ◈ **Rough Set Theory** ◈ *Further Reading* ◈ *Exercises* ◈ *Bibiliography* ◈ **Genetic Algorithm** ◈ *Conclusions* ◈ *Further Reading* ◈ *Exercises* ◈ *Bibliography* ◈ **Other Techniques** ◈ *Conclusions* ◈ *Further Reading* ◈ *Exercises* ◈ *Bibliography* ◈ **Performance Evaluation - ROC Curve** ◈ *Further Reading* ◈ *Exercises* ◈ *Bibliography* ◈ **Web Mining** ◈ *Conclusions* ◈ *Further Reading* ◈ *Exercises* ◈ *Bibliography* ◈ **Temporal and Spatial Data Mining** ◈ *Conclusions* ◈ *Further Reading* ◈ *Exercises* ◈ *Bibliography* ◈ *Index*

2016	432 pp.	Paperback
978-93-86235-05-3		₹ 595.00

Data Structures and Algorithms in C and Python

FORTHCOMING

Chandan Banerjee
Professor and Head, Department of Information Technology, Netaji Subhash Engineering College, Kolkata, India

Atanu Das
Head, Department of Computer Applications; Formerly Head, Department of CSE, Netaji Subhash Engineering College, Kolkata, India

This book covers the Theory and Practical syllabus of all Indian universities on the said course. All the algorithms and methods discussed in the book have been implemented using C and Python – a unique and useful feature. Implementation of data structures and algorithms using procedural C and object-oriented Python is taken as a state-of-the-art venture in this work. The incorporation of traditional C language and Python will provide a dazzling and different flavour to the existing literature and also makes for an attractive text to the new generation of students.

At the end of each chapter, three types of questions are included: MCQs, Short Answers and Descriptive Answers from recent university examinations. Answers to all MCQs are provided, with explanations as required.

There are practical exercises for working out real problems and a section on solving MCQs for the GATE examination in Computer Science and Information Technology. There are also sections with conceptual questions and answers so that students can prepare themselves for IT-related technical tests, interviews, and viva-voce examinations during campus placement/recruitment opportunities.

All the necessary theories are explained with easy, simple and comprehensive text, figures and examples. The necessary algorithms are also presented. The book provides 50 algorithms, 50 integrated solved C programs, and 50 integrated solved Python programs with output.

……

Data Structures, Algorithms and Applications in C++

(Second Edition)

Sartaj Sahni
Distinguished Professor and Chair of Computer and Information Sciences and Engineering, University of Florida, Gainesville, USA

This new edition provides a comprehensive coverage of fundamental data structures, making it ideal for use in computer science courses. It makes significant use of the Standard Templates Library (STL) and relates the data structures and algorithms developed in the text to corresponding implementations in the STL. Many new examples and exercises also have been included.

Real-world applications are a unique feature of this text. The author provides several applications for each data structure and algorithm design method discussed, taking examples from topics such as sorting, compression and coding, and image processing. There are almost *1,000 exercises, including comprehension and simple programming problems, and projects. Additionally, the book has an associated website that contains all the programs in the book, sample data, generated output, solutions to selected exercises, and sample tests with answers.*

Contents: *Part I:* Preliminaries ◆ C++ Review ◆ Performance analysis ◆ Asymptotic Notation ◆ Performance Measurement

Part II: Data Structures ◆ Linear lists – Array representation ◆ Linear Lists – Linked Representation ◆ Arrays and Matrices ◆ Stacks ◆ Queues ◆ Skip List and Hashing ◆ Binary and other trees ◆ Priority Queues ◆ Tournament Trees ◆ Binary Search Trees ◆ Balanced Search Trees ◆ Graphs

Part III: Algorithm-Design Methods ◆ The Greedy Method ◆ Divide and Conquer ◆ Dynamic Programming ◆ Backtracking (on the web) ◆ Branch and Bound (on the web) ◆ *Index*

2005	832 pp.	Paperback
978-81-7371-522-8		₹ 650.00

Data Structures, Algorithms, and Applications in JAVA

(Second Edition)

Sartaj Sahni
Distinguished Professor and Chair of Computer and Information Sciences and Engineering, University of Florida, Gainesville, USA

This new edition provides a comprehensive coverage of fundamental data structures, making it ideal for use in computer science courses. *Real-world applications are a unique feature of this text. Dr. Sahni* provides several applications for each data structure and algorithm design method discussed, taking examples from topics such as sorting, compression and coding, and image processing. There are almost 1,000 exercises, including comprehension and simple programming problems, and projects. Additionally, the *book has an associated website that contains all the programs in the book, animations, sample data, generated output, solutions to selected exercises, and sample tests with answers.*

Contents: *Part I:* Preliminaries ◆ Java Review ◆ Performance Analysis ◆ Asymptotic Notation ◆ Performance Measurement

Part II: Data Structures ◆ Linear Lists—Array Representation ◆ Linear Lists—Linked Representation ◆ Linear Lists—Simulated Pointers ◆ Arrays and Matrices ◆ Stacks ◆ Queues ◆ Skip Lists and Hashing ◆ Binary and Other Trees ◆ Priority

Queues ◈ Tournament Trees ◈ Binary Search Trees ◈ Balanced Search Trees ◈ Graphs

Part III: Algorithm-Design Methods ◈ The Greedy Method ◈ Divide and Conquer ◈ Dynamic Programming ◈ Backtracking (On the Web) ◈ Branch and Bound (On the Web) ◈ *Index*

2005	872 pp.	Paperback
978-81-7371-523-5		₹ 750.00

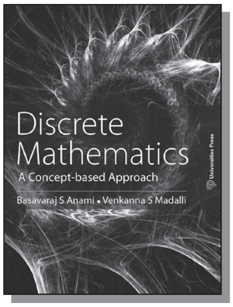
Digital Electronics and Logic Design

Jaydeep Chakravorty
See page 42

Discrete Mathematics: A Concept-based Approach

Basavaraj S Anami
Principal, KLE Institute of Technology, Hubballi, India

Venkanna S Madalli
Professor, Department of MCA, KLE Institute of Technology, Hubballi, India



Discrete Mathematics – A Concept-based Approach focuses on the applications of discrete mathematical concepts to real-life scenarios and makes the subject appealing to the student. It caters to the syllabus requirement of students of mathematics and computer science at the undergraduate and postgraduate levels in distinguished engineering colleges. The flow of the topics is gradual and designed to lead the students step by step, from the first principles to the advanced topics. The sequencing of the book's contents reflect the order and manner in which the subject in normally approached in the classroom. Each topic is supported by appropriate examples from computer science to showcase the application of discrete mathematics in the field of computers. This book can also be used as a foundation course for studying advanced mathematical concepts. PowerPoint slides that encapsulate the essential points of each chapter, solutions to chapter-end exercises and solved university question papers are available as online supplements that can be accessed at www.universitiespress.com/basavarajsanami/discretemathematics

Contents: *Foreword* ◈ *Preface* ◈ *Acknowledgements* ◈ *About the Authors* ◈ Overview of Disciplines in Mathematics ◈ Fundamentals of Mathematical Logic ◈ Mathematical Induction ◈ Introduction to Set Theory ◈ Relations and Operations ◈ General Functions and Growth Functions ◈ Algebraic Structures ◈ Coding Theory ◈ Fundamentals of Counting Principles ◈ Introduction to Probability ◈ Finite State Machine ◈ Introduction to Recurrence Relations ◈ Introduction to Graph Theory ◈ *Bibliography* ◈ *Index*

2016	376 pp.	Paperback
978- 81-7371-999-8		₹ 575.00

Effective E-learning: Design, Development and Delivery

Madhuri Dubey
Cordys Software India Pvt Ltd, Hyderabad, India

Effective E-learning deals with the fundamentals of content design, development and delivery. *Universities across India can use it as a textbook for their e-learning programmes. Content designers and developers in the corporate, academic, vocational and government domains can use it to develop e-learning course material.*

Real-life examples and hypothetical scenarios have been included. Illustrations, worksheets, exercises, check lists, questionnaires and a glossary make this a useful tool for the learner.

Contents: *Section I:* E-learning–the big picture—ICT and E-learning ◈ An Overview of E-learning ◈ E-learning in India ◈ *Section II:* Holistic approach to design, development and delivery—Theoretical background ◈ The Framework ◈ Analysis ◈ Design ◈ Development ◈ Delivery ◈ Evaluation ◈ Looking ahead ◈ Glossary ◈ *Appendix 1: Learner analysis* ◈ *Appendix 2: Subject matter expert (SME)* ◈ *Appendix*

3: Content analysis ◈ Appendix 4: E-learning evaluation ◈ Bibliography ◈ Index

2011	300 pp.	Paperback
978-81-7371-728-4		₹ 895.00

Embedded Systems Engineering

C R Sarma
See page 45

Fundamentals of Computer Algorithms
(Second Edition)

Ellis Horowitz
Professor of Computer Science and Electrical Engineering, University of Southern California, Los Angeles, USA

Sartaj Sahni
Distinguished Professor and Chair of Computer and Information Sciences and Engineering, University of Florida, Gainesville, USA

Sanguthevar Rajasekaran
UTC Chair Professor of Computer Science and Engineering, University of Connecticut, Storrs, USA

This is the new edition of the programming language-independent text that helped establish computer algorithms as a discipline of computer science. The text incorporates the latest research and state-of-the-art applications, bringing this classic to the forefront of modern computer science education. *A major strength of this text is its focus on design techniques rather than on individual algorithms. This book is appropriate as a core text for upper-and graduate-level courses in algorithms.*

The second edition of *Fundamentals of Computer Algorithms* emphasises:

Design techniques: Divide and conquer, the greedy method, dynamic programming, backtracking and branch and bound are illustrated with several examples. Each algorithm is completely analysed. *Examples*: A wide range of examples provides students with the actual implementation of correct design.

The latest research: A thorough treatment of probabilistic and parallel algorithms is included.

Full integration of randomised algorithms: Performance with non-randomised algorithms is thoroughly compared. Web support for instructors contains solutions to exercises and PowerPoint presentations.

Contents: *Preface* ◈ *Introduction* ◈ Elementary Data Structures ◈ Divide-and-Conquer ◈ The Greedy Method ◈ Dynamic Programming ◈ Basic Traversal and Search Techniques ◈ Backtracking ◈ Branch and Bound ◈ Algebraic Problems ◈ Lower Bound Theory ◈ *NP*-Hard and *NP*-Complete Problems ◈ Approximation Algorithms ◈ PRAM Algorithms ◈ Mesh Algorithms ◈ Hypercube Algorithms ◈ *Index*

2008	808 pp.	Paperback
978-81-7371-612-6		₹ 650.00

Fundamentals of Data Structures in C
(Second Edition)

Ellis Horowitz
Professor of Computer Science and Electrical Engineering, University of Southern California, Los Angeles, USA

Sartaj Sahni
Distinguished Professor and Chair of Computer and Information Sciences and Engineering, University of Florida, Gainesville, USA

Susan Anderson-Freed
Professor of Computer Science, Illinois Wesleyan University, Bloomington, USA

This new edition provides a comprehensive and technically rigorous introduction to data structures such as arrays, stacks, queues, linked lists, trees and graphs and techniques such as sorting, hashing that form the basis of all software. In addition, this text presents advanced or specialised data structures such as priority queues, efficient binary search trees, multiway search trees and digital search structures. The book now discusses topics such as weight biased leftist trees, pairing heaps, symmetric min–max heaps, interval heaps, top-down splay trees, B+ trees and suffix trees. Red – black trees have been made more accessible. *The section on multiway tries has been significantly expanded and discusses several trie variations and their application to Internet packet forwarding.*

Contents: Basic Concepts ◆ Arrays and Structures ◆ Stacks and Queues ◆ Linked Lists ◆ Trees ◆ Graphs ◆ Sorting ◆ Hashing ◆ Priority Queues ◆ Efficient Binary Search Trees ◆ Multiway Search Trees ◆ Digital Search Structures ◆ *Index*

2008	664 pp.	Paperback
978-81-7371-605-8		₹ 575.00

Fundamentals of Data Structures in C++
(Second Edition)

Ellis Horowitz
Professor of Computer Science and Electrical Engineering, University of Southern California, Los Angeles, USA

Sartaj Sahni
Distinguished Professor and Chair of Computer and Information Sciences and Engineering, University of Florida, Gainesville, USA

Dinesh Mehta
Professor and Assistant Department Head of Mathematical and Computer Sciences, Colorado School of Mines, Golden, USA

This new edition provides a comprehensive and technically rigorous introduction to data structures such as arrays, stacks, queues, linked lists, trees and graphs and techniques such as sorting, hashing that form the basis of all software. In addition, this text presents advanced or specialized data structures such as priority queues, efficient binary search trees, multiway search trees and digital search structures. *The book has been updated to include the latest features of the C++ language*. Features such as exceptions and templates are now incorporated throughout the text along with limited exposure to STL. Treatment of queues, iterators and dynamic hashing has been improved. The book now discusses topics such as secure hashing algorithms, weight biased leftist trees, pairing heaps, symmetric min–max heaps, interval heaps, top-down splay trees, B+ trees and suffix trees. Red–black trees have been made more accessible. The section on multiway tries has been significantly expanded and discusses several trie variations and their application to Internet packet forwarding.

Web support for instructors contains solutions to exercises and PowerPoint presentations.

Contents: Basic Concepts ◆ Arrays ◆ Stacks and Queues ◆ Linked Lists ◆ Trees ◆ Graphs ◆ Sorting ◆ Hashing ◆ Priority Queues ◆ Efficient Binary Search Trees ◆ Multiway Search Trees ◆ Digital Search Structures ◆ *Index*

2008	720 pp.	Paperback
978-81-7371-606-5		₹ 625.00

Fundamentals of Data Warehouses

Matthias Jarke
Maurizio Lenzerini
Dipartimento di Ingegneria Informatica, Automatica e Gestionale Antonio Ruberti,Università di Roma La Sapienza, Rome, Italy

Yannis Vassiliou
Panos Vassiliadis

Data warehouses have captured the attention of practitioners and researchers alike. But the design and optimisation of data warehouses remains an art rather than a science. *This book presents the first comparative review of the state-of-the-art and best current practice of data warehouses*. It covers source and data integration, multidimensional aggregation, query optimisation, update propagation, metadata management, quality assessment, and design optimisation. Also, based on results of the *European Data Warehouse Quality project*, it offers a conceptual framework by which the architecture and quality of data warehouse efforts can be assessed and improved using enriched metadata management combined with advanced techniques from databases, business modelling, and artificial intelligence. *For researchers and database professionals in academia and industry, the book offers an excellent introduction to the issues of quality and metadata usage in the context of data warehouses.*

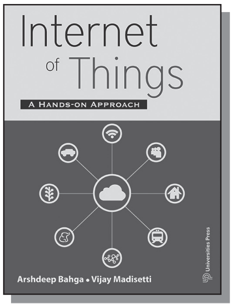
Contents: Data Warehouse Practice: An Overview ◆ Data Warehouse Research: Issues and Projects ◆ Source Integration ◆ Data Warehouse Refreshment ◆ Multidimensional Data Models and Aggregation ◆ Query Processing and Optimization ◆ Metadata and Data Warehouse Quality ◆ Quality-Driven Data Warehouse Design ◆ *Bibliography* ◆ *Appendix A: ISO Standards Information Quality* ◆ *Appendix B: Glossary* ◆ *Index*

2008	207 pp.	Paperback
978-81-8128-914-8		₹ 450.00

Internet of Things: A Hands-on Approach

Arshdeep Bahga
Research Scientist, Georgia Institute of Technology, Atlanta, USA

Vijay Madisetti
Professor of Computer Engineering, Georgia Institute of Technology, Atlanta, USA



This book is written as a textbook for educational programs at colleges and universities. It can also be used by IoT (Internet of Things) vendors and service providers for training their program developers. The authors have used an immersive 'hands on' approach, similar to the one adopted in the companion book, Cloud Computing: A Hands-on Approach, to help readers gain expertise in developing working code for real-world IoT applications.

It is organised into three main parts. Part I covers the building blocks of Internet of Things (IoT) and their characteristics. Domain specific IoT and their real-world applications are described along with a generic design methodology and an IoT system management approach using NETCONF-YANG. Part II introduces the reader to the programming aspects of IoT with a view to developing rapid prototypes of complex IoT applications. A primer on Python, the programming language used in this book, is included to bring readers to a common level of expertise. Packages, frameworks and cloud services including WAMP-AutoBahn, Xively cloud and Amazon Web Services that can be used to develop IoT systems are described. The Raspberry Pi device has been chosen for the examples in this book. Case studies with complete source code for various IoT domains such as home automation, smart environment, smart cities, logistics, retail, smart energy, smart agriculture, industrial control and smart health are described. Part III introduces the reader to advanced topics in IoT, including IoT data analytics and tools for IoT. Case studies on collecting and analyzing data generated by IoT in the cloud are described.

Contents: Introduction & Concepts ◆ Introduction to Internet of Things ◆ Domain Specific IoTs ◆ IoT and M2M ◆ IoT System Management with NETCONF-YANG ◆ Developing Internet of Things ◆ IoT Platforms Design Methodology ◆ IoT Systems - Logical Design using Python ◆ IoT Physical Devices & Endpoints ◆ IoT Physical Servers & Cloud Offerings ◆ Case Studies Illustrating IoT Design ◆ Advanced Topics ◆ Data Analytics for IoT ◆ Tools for IoT ◆ *Appendix-A - Setting up Raspberry Pi* ◆ *Appendix-B - Setting up Ubuntu VM* ◆ *Appendix-C - Setting up Django* ◆ *Bibliography* ◆ *Index*

2015	520 pp.	Paperback
978-81-7371-954-7		₹ 775.00

Introduction to Graph Theory, An

S Pirzada
Professor, Department of Mathematics, University of Kashmir, Srinagar, India

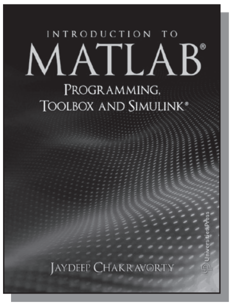
In this *comprehensive and up-to-date book on graph theory*, the reader is provided a thorough understanding of the fundamentals of the subject - the structure of graphs, the techniques used to analyse problems in graph theory, and the use of graph-theoretical algorithms in mathematics, engineering and computer science. Many topics, not generally found in standard books, are described here. These include new proofs of various classical theorems, signed degree sequences, criteria for graphical sequences, eccentric sequences, matching and decomposition of planar graphs into trees, and scores in digraphs.

Contents: *Introduction* ◆ Degree Sequences: ◆ Eulerian and Hamiltonian Graphs ◆ Trees ◆ Connectivity ◆ Planarity ◆ Colourings ◆ Matchings and Factors ◆ Edge Graphs and Eccentricity Sequences ◆ Graph Matrices ◆ Digraphs ◆ Score Structure in Digraphs ◆ *References* ◆ *Index*

2012	404 pp.	Paperback
978-81-7371-760-4		₹ 575.00

Introduction to MATLAB Programming, Toolbox and Simulink

Jaydeep Chakravorty
Associate Professor and Head, Department of Electrical Engineering, Baddi University
Solan, India



This book provides a simple, easy-to-use introduction to MATLAB®, the programming environment popular with students, scientists and engineers and industries the world over as a tool for computation and simulation. The basic features of MATLAB are explained in a step-by-step manner with many examples to enable the reader to become proficient in using the language for a variety of applications.

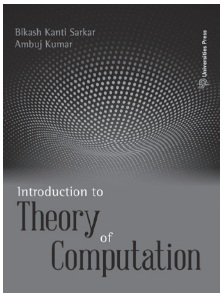
Salient points: Covers MATLAB programming, MATLAB toolbox and Simulink all in one book ◆ Includes separate chapters on MATLAB GUI and communication systems engineering toolbox ◆ Includes more than 400 solved problems and designs relevant to science and engineering problems ◆ Consists of around 150 exercise problems ◆ No previous exposure to MATLAB required to understand the book ◆ Provides a simple description of different utilities and resources available in MATLAB

Contents: Starting MATLAB ◆ Common Inbuild MATLAB Functions ◆ Writing Program in M-file ◆ Creating an Array in MATLAB ◆ Array Mathematics ◆ Two-dimensional Plot ◆ Three-dimensional Plot ◆ Relational and Logical Operators ◆ Conditional Statements ◆ Functions ◆ Polynomials ◆ Interpolation and Curve Fitting ◆ Numerical Analysis ◆ Graphical User Interfaces (GUI) In MATLAB ◆ Control System Toolbox ◆ Symbolic Math Toolbox ◆ Fuzzy Logic Toolbox ◆ Neural Network Toolbox ◆ Signal Processing Toolbox ◆ Communication Toolbox ◆ Introduction to Simulink ◆ SIM Power System Model ◆ Some Application Problems ◆ *Appendix A: List of some of the most common MATLAB commands* ◆ *Appendix B Solutions to odd problems of Chapter 23* ◆ *Index*

2014	556 pp.	Paperback
978-81-7371-928-8		₹ 825.00

Introduction to Theory of Computation

NEW



Bikash Kanti Sarkar
Faculty Member, Department of Computer Science and Engineering, BIT, Mesra, Ranchi, India

Ambuj Kumar
Seasoned software professional, Hyderabad, India

The book introduces readers to Theory of Computation, one of the fundamental pillars of Computer Science, and can be used as a core textbook by undergraduate students of Engineering. It offers a cohesive presentation of all aspects of Theoretical Computer Science, namely, automata, formal languages, computability and complexity. It also covers the mathematical preliminaries necessary for the subject.

As Theory of Computation forms an important part of the syllabus of various national and state level competitive examinations and is also a highscoring area, several problems from previous competitive examinations have also been included in this book, and shortcut tricks have been provided, where feasible.

Salient features

- Proper mathematical explanation for various computational models, numerous figures, highlighted notes and shortcut tips for easy understanding of ideas
- Numerous solved examples mapping with other relevant subjects and real-world problems

- Ideas for research direction and project-based problems at the end of every chapter
- Key Points to draw attention to the important ideas/concepts discussed
- Exercises comprising practice problems as well as MCQs at the end of every chapter
- Competitive examination section with solved examples of several national and state-level competitive examinations, such as GATE, NET, SET and PhD entrance

Additional practice questions and programming problems, as well as chapter-wise PowerPoint slides, can be accessed at: https://universitiespress.com/intro-theoryofcomputation

Contents: *Preface* ◈ *Acknowledgements* ◈ Basic Mathematics for Theory of Computation ◈ Finite Automata ◈ Regular Expressions ◈ Grammar ◈ Pushdown Automata ◈ Turing Machine ◈ Classes of Problems ◈ *Exercises* ◈ *Appendix: Competitive Examination Questions and Answers* ◈ *Index*

2019	408 pp.	Paperback
978-93-86235-75-6		₹ 525.00

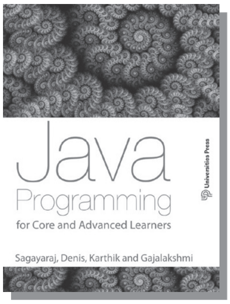
Java Programming – For Core and Advanced Users

Sagayaraj
Associate Professor, Department of Computer Science, Sacred Heart College, Tirupattur, India

Denis
Assistant Professor, PG Department of Computer Science, Sacred Heart College, Tirupattur, India

Karthik
Assistant Professor, PG Department of Computer Science, Sacred Heart College, Tirupattur, India

Gajalakshmi
Assistant Professor, PG Department of Computer Science, Sacred Heart College, Tirupattur, India


Java
Programming
for Core and Advanced Learners
Sagayaraj, Denis, Karthik and Gajalakshmi
Universities Press

This is a compact and complete textbook for core and advanced Java, covering the requirements of undergraduate courses in computer science and information technology. The book explains the concepts and reinforces them with several solved examples and illustrations. It also elucidates the implementation of GUI and UML features to capture and communicate the details of user interface, supported by relevant screenshots for the reader's benefit. Its exhaustive coverage of the subject makes it an ideal reference book for software engineers and practitioners working in IT and other related industries.

Contents: *Preface* ◈ *About the Authors* ◈ Foundations of Java ◈ Java Essentials ◈ Control Statements ◈ Classes and Objects ◈ Arrays ◈ String Handling ◈ Inheritance ◈ Interface and Package ◈ Exception Handling ◈ Multithreading ◈ Files and I/O Systems ◈ Applets ◈ GUI Applications - Part 1 ◈ GUI Applications - Part 2 ◈ Networking ◈ Java Database Connectivity ◈ Collections ◈ Design Patterns ◈ Servlets ◈ Java Server Pages ◈ Web Programming-Part 1: Client-Side Programming ◈ Web Programming-Part 2: Server-Side Programming ◈ *Appendix A: NetBeans IDE* ◈ *Appendix B: Database Access with MySQL* ◈ *Index*

2018	888 pp.	Paperback
978-93-86235-32-9		₹ 695.00

Multimedia Applications

Ralf Steinmetz
Professor of Multimedia Communications, Technische Universitat Darmstadt, Germany

Klara Nahrstedt
Ralph and Catherine Fisher Professor, Department of Computer Science, University of Illinois at Urban-Champagne, USA

Multimedia Applications discusses the basic characteristics of multimedia document handling, programming, security, human computer interfaces, and multimedia application services. *The overall goal of the book is to provide a broad understanding of multimedia systems and applications in an integrated manner:* a multimedia application and its user interface must be developed in an integrated fashion with underlying multimedia middleware, operating systems, networks, security, and multimedia devices.

Contents: *Preface* ◆ *Introduction* ◆ Database Systems ◆ Programming ◆ Security ◆ Documents, Hypertext, and Hypermedia ◆ Design ◆ User Interfaces ◆ Multimedia Learning ◆ Multimedia Applications ◆ *Bibliography* ◆ *Index*

2007	264 pp.	Paperback
978-81-8128-651-2		₹ 575.00

Multimedia Database Management Systems

B Prabhakaran
Department of Computer Science and Engineering, Indian Institute of Technology Madras; University of Maryland at College Park, USA

Multimedia Database Management Systems presents the issues and the techniques used in building multimedia database management systems. This book can be used as a *text for graduate students and researchers* working in the area of multimedia databases. In addition, the book serves as essential *reading material for computer professionals* who are in (or moving to) the area of multimedia databases.

Contents: *Preface* ◆ *Introduction* ◆ Multimedia Storage and Retrieval ◆ Metadata for Multimedia ◆ Multimedia Data Access ◆ Multimedia Information Modeling ◆ Querying Multimedia Databases ◆ Multimedia Communication ◆ MMDBMS Architecture ◆ *References* ◆ *Index*

2007	216 pp.	Paperback
978-81-8128-652-9		₹ 495.00

Numerical Methods: A Programming-based Approach

Arun Kumar Jalan & Utpal Sarkar
See page 60

· ·

Numerical Methods with Programs in BASIC, FORTRAN, Pascal and C++
(Revised Edition)

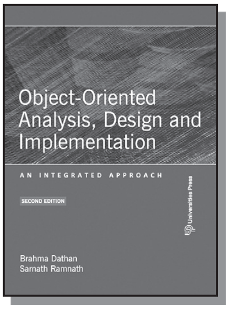
S Balachandra Rao & C K Shantha
See page 61

· ·

Object-Oriented Analysis, Design, and Implementation: An Integrated Approach
(Second Edition)

Brahma Dathan
Professor, Department of Information and Computer Sciences, Metropolitan State University, St. Paul, USA

Sarnath Ramnath
Professor and Chairperson, Department of Computer Science, St Cloud State University, St. Cloud, USA



This book employs a case-study-based approach for providing a comprehensive introduction to the principles of object-oriented design. The salient points of its coverage are:

- A sound footing on object-oriented concepts such as classes, objects, interfaces, inheritance, polymorphism, dynamic linking, etc.
- A good introduction to the stage of requirements analysis
- Use of UML to document user requirements and design
- An extensive treatment of the design process
- Coverage of implementation issues
- Appropriate use of design and architectural patterns
- Introduction to the art and craft of refactoring
- Pointers to resources that further the reader's knowledge

The book stresses on implementation aspects, without which the learning is incomplete. This is achieved through the use of case studies for introducing the various concepts of analysis and design, ensuring that the theory is never separate from the implementation details. In the first edition, UML was introduced on an "as-needed" basis; certain UML diagrams that were not needed in the case studies considered were not covered. This edition includes a new chapter for providing a concise introduction to the remaining UML diagrams using the same holistic approach employed in the first edition.

All the main case studies used in this book have been implemented by the authors using Java. An appendix on Java provides a useful, short tutorial on the language.

Contents: *Part I:* Basic Object-oriented Concepts: Introduction ◈ Basics of Object-Oriented Programming ◈ Relationships between Classes ◈ Language Features for Object-Oriented Implementation

Part II: Introduction to Object-oriented Analysis, Design, Implementation and Refactoring: Elementary Design Patterns ◈ Analysing a System ◈ Design and Implementation ◈ How 'Object-Oriented' is Our Design?

Part III: Advanced Concepts in Object-oriented Design: Exploring Inheritance ◈ Modelling with Finite State Machines ◈ Interactive Systems and the MVC Architecture ◈ Designing with Distributed Objects ◈ The Unified Modelling Language ◈ *Appendix A: Java Essentials ◈ A.1 Language Basics ◈ A.2 A Simple Java Program ◈ A.3 Primitive Data Types ◈ A.4 Relational Operators ◈ A.5 A Note on Input and Output ◈ A.6 Selection Statements ◈ A.7 Loops ◈ A.8 Methods ◈ A.9 Arrays ◈ Bibliography ◈ Index*

Distributed worldwide (except India)
by Springer Science + Business Media

2014	516 pp.	Paperback
978-81-7371-880-9		₹ 675.00

Object Oriented Programming through JAVA

P Radha Krishna
SET Labs, Infosys Technologies Limited, Hyderabad, India

This book can be used by B.E. (Computer Science), B.Tech.(I.T), M.Tech., M.Sc. and M.C.A. students for their curriculum. Independent learners will also find the book self-explanatory, providing a wealth of information and detail. *Supplementary material can be accessed by following the weblinks given in the book.* The author's experience shows in the efficient handling of key topics, such as Java essentials (classes, objects, packages, interfaces and so on), Multithreading, AWT, Applets, Swings. From the elementary level, Radha Krishna takes the reader on to practical applications: JDBC, Networking classes and Servlets, in a systematic manner, making the book a complete first course in object oriented Java programming. Illustrative programs highlight the use of each feature described in the book. *Exercises and sample programs help readers revise concepts and assess their progress.*

Contents: Object Oriented Programming ◈ Introduction to Java Programming ◈ Java Language Fundamentals ◈ Java as Object Oriented Programming ◈ Exception Handling ◈ Multithreading ◈ Files and I ◈ O Streams ◈ Database Handling using JDBC ◈ AWT ◈ Swings ◈ Servlets ◈ Networking and Java RMI

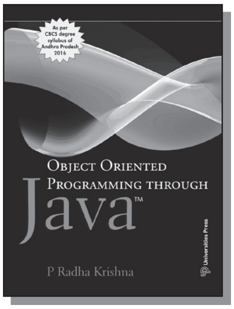
Distributed worldwide (except India)
by CRC Press LLC, USA, Taylor and Francis Group

2006	492 pp.	Paperback
978-81-7371-572-3		₹ 650.00

Object Oriented Programming through Java

(As per the CBCS Degree Syllabus of Andhra Pradesh 2016)

P Radha Krishna
Principal Research Scientist, Infosys Limited, Hyderabad, India


As per CBCS degree syllabus of Andhra Pradesh 2016
OBJECT ORIENTED PROGRAMMING THROUGH
Java™
P Radha Krishna
Universities Press

This book has been developed to suit the needs of the undergraduate students of the CBCS degree course in Andhra Pradesh for the paper on Java programming. The book follows a unique approach that will help readers learn object oriented Java programming on their own. It covers Java language essentials, such as classes, objects, packages and interfaces. Detailed chapters on multithreading, how to create platform-independent GUIs using Java AWT and applets, and on accessing databases using JDBC are also included.

Special Features

- Content structured as per the CBCS degree course in Andhra Pradesh

- Crisp explanations, illustrative programs and highlighted points enable easy understanding of concepts
- 87 new sample programs included to further enhance comprehension of the subject
- End-of-chapter exercises include objective type questions, and long and short answer questions

Contents: *Preface* ◈ *Acknowledgements* ◈ Object Oriented Programming ◈ Introduction to Java Programming ◈ Java Language Fundamentals ◈ Java as an OOP Language ◈ Exception Handling ◈ Multithreading ◈ Files and I/O Streams ◈ Applets ◈ Database Handling using JDBC ◈ The Abstract Window Toolkit ◈ *Appendix: Lab Exercises and Solutions* ◈ *Index*

2016 496 pp. Paperback
978-81-7371-994-3 ₹ 495.00

Object Recognition: Fundamentals and Case Studies

M Bennamoun & G J Mamic

This volume introduces the fundamental concepts and tools involved in the design and implementation of object recognition systems. Divided into *three parts*, it first introduces the topic and covers the acquisition of images, then details 3-D object reconstruction, modelling and matching, and finally describes typical recognition systems using case studies.

Key Features: Extensive literature surveys of state-of-the-art systems ◈ Recognition will be *essential reading for research scientists, advanced undergraduate and postgraduate students in computer vision, image processing and pattern classification. It will also be of interest to practitioners working in the field of computer vision.*

Contents: *Part A*: Introduction and Acquisition Systems: Introduction ◈ Stereo Matching and Reconstruction of a Depth Map ◈ *Summary*

Part B: Database Creation and Modeling for 3D Object Recognition: 3-D Object Creation for Recognition ◈ Object Representation and Feature Matching ◈ *Summary*

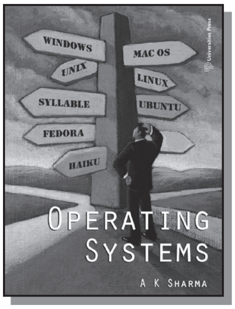
Part C: Vision Systems: Case Studies ◈ Optical Character Recognition ◈ Recognition by Parts and Part Segmentation Techniques ◈ 3D Object Recognition Systems ◈ *Summary* ◈ *Appendices* ◈ Vector and Matrix Analysis ◈ Principal Component Analysis ◈ Optimisation Fundamentals ◈ Differential Geometry: Basic Principles ◈ Spline Theory ◈ Detailed Derivation of Registration Equations ◈ *References* ◈ *Index*

2008 362 pp. Paperback
978-1-85233-398-0 ₹ 550.00

Operating Systems

A K Sharma

Professor, Department of Computer Engineering,
BS Anangpuria Institute of Technology and
Management, Faridabad, India



This is a comprehensive book meant for graduate and undergraduate courses on operating systems. It delineates the fundamental principles of operating systems and provides a clear description of the concepts that underlie its course structure. The theory that governs the functions of operating systems is explained in simple language and substantiated by end-of-chapter case studies using UNIX, Linux and Windows platforms. Core concepts of all chapters are also compiled as PowerPoint presentations that can be accessed online at www.universitiespress.com/aksharma/operatingsystems

Contents: *Preface* ◈ Computer Systems: An Overview ◈ Operating Systems: An Introduction ◈ Operating System Architecture Models ◈ Processes and Threads ◈ Concurrency ◈ Deadlocks ◈ Memory Management ◈ Virtual Memory ◈ Input Output Management ◈ Disk Management ◈ File Systems ◈ Protection and Security ◈ *Answers to Chapter-end Questions* ◈ *Bibliography* ◈ *Index*

2016 392 pp. Paperback
978- 81-7371-982-0 ₹ 575.00

Pattern Recognition: An Introduction

M Narasimha Murty
Principal Research Scientist, Department of Computer Science and Automation, Indian Institute of Science, Bengaluru, India

Susheela Devi
Professor, Department of Computer Science and Automation, Indian Institute of Science, Bengaluru, India

Observing the environment and recognising patterns for the purpose of decision making is fundamental to human nature. *This book deals with the scientific discipline that enables similar perception in machines through pattern recognition, which has application in diverse technology areas—character recognition, image processing, industrial automation, internet searches, speech recognition, medical diag-nostics, target recognition, space science, remote sensing, data mining, biometric identification—to name a few. This book is an exposition of principal topics in pattern recognition using an algorithmic approach.* It provides a thorough introduction to the concepts of pattern recognition and a systematic account of the major topics in pattern recognition besides reviewing the vast progress made in the field in recent times. It includes basic techniques of pattern recognition, neural networks, support vector machines and decision trees. While theoretical aspects have been given due coverage, the emphasis is more on the practical. *The book is replete with examples and illustrations and includes chapter-end exercises.*

Contents: *Introduction* ◈ Representation ◈ Nearest Neighbour Based Classifiers ◈ Bayes Classifier ◈ Hidden Markov Models ◈ Decision Trees ◈ Support Vector Machines ◈ Combination of Classifiers ◈ Clustering ◈ Summary ◈ An Application: Handwritten Digit Recognition

2011	352 pp.	Paperback
978-81-7371-725-3		₹ 495.00

Principles of Computer Graphics

Shalini Govil-Pai
Sunnyvale, USA

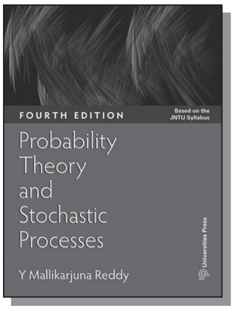
OpenGL, a technology standard to develop CG applications, has had incredible momentum in both the professional and consumer markets. Once only the domain of production houses, OpenGL has grown to be the standard for graphics programming on all platforms, personal computers, and workstations. Now more than ever, people are eager to learn about what it takes to make such productions, and how they can be a part of them. Current literature on how to make movies/games focus more on the technology (OpenGL, DirectX, etc) and their APIs rather than on the principles of computer graphics. However, understanding these principles is the key to dealing with any technology API. *The aim of the book is to teach readers the principles of computer graphics.* Hands-on examples developed in OpenGL illustrate the key concepts, and readers develop a professional animation, following traditional processes used in production houses. By the end of the book, readers will be experts in the principles of computer graphics and OpenGL. They will be able to develop their own professional quality games via the same approach used in production houses.

Contents: *Preface* ◈ From Pixels to Shapes ◈ Making Them Move ◈ Pixels, Images and Image Files ◈ Let The Games Begin ◈ 3D Modeling ◈ Rendering, Shading and Lighting ◈ Advanced Techniques ◈ And Finally, Introducing Maya ◈ Animation ◈ Viewpoint Animation ◈ Lights, Camera, Action! ◈ *Appendix A* ◈ *Appendix B* ◈ *Appendix C* ◈ *Bibliography* ◈ *Index of Terms*

2007	308 pp.	Paperback
978-81-8128-674-1		₹ 625.00

Probability Theory and Stochastic Processes
(Fourth Edition)

Y Mallikarjuna Reddy
Principal and Professor, ECE Department, Vasireddy Venkatadri Institute of Technology, Nambur, Guntur, India



FOURTH EDITION
Based on the JNTU Syllabus
Probability Theory and Stochastic Processes
Y Mallikarjuna Reddy
Universities Press

This book provides an introduction into the mathematical concepts and tools necessary for understanding the theory of probability and the dynamics of stochastic processes central to a number of application areas in engineering sciences, biology medicine and finance. The material covered in the book is particularly suited to an undergraduate programme in electronics and communications engineering, for it focuses on probability and the random variable, on random processes, linear systems and probabilistic tools for modelling of noise, which are of direct relevance to this branch of engineering. Each topic is introduced with the fundamental concepts and underlying theories in a concise manner, and is then followed up with several worked-out examples for developing problem-solving skills in the learner. Many of the problems have been drawn from previous years' examination papers to give students an exposure to the variety and kinds typically encountered in exam situations; the focus of the selection is to train them in the use of explicit probability distributions for solving engineering and physics problems.

Contents: *Preface* ◈ Introduction to Probability ◈ The Random Variable ◈ Operations on One Random Variable ◈ Multiple Random Variables ◈ Operations on Multiple Random Variables ◈ Random Processes ◈ Random Processes: Spectral Characteristics ◈ Linear Systems with Random Processes ◈ Solved JNTU Question Papers for the Year 1-2 ◈ *Appendix A: Indefinite Integrals, Definite Integrals and Finite Series* ◈ *Appendix B: Fourier Transform Pairs* ◈ *Bibliography* ◈ *Index*

2013	672 pp.	Paperback
978-81-7371-887-8		₹ 595.00

Programming Logic and Techniques

S B Kishor

Assistant Professor and Head of Department, Computer Science, Sardar Patel Mahavidyalaya, Chandrapur, India

This basic textbook on programming provides readers with a concise and clear introduction to programming concepts and programming logic. It is suitable for an introductory course in program development at the undergraduate level in computer science and allied disciplines.

Salient Features: Introduces program development and design process, algorithms, input/output techniques, and control structures with the help of pseudo code and flowcharts ◈ Discusses data storage, data retrieval and data updating techniques ◈ Emphasises the importance of design of algorithms ◈ Discusses the analysis of algorithms for efficiency (space and time complexity concepts) ◈ Contains a variety of illustrative examples and exercises ◈ Includes an appendix with illustrative examples showing how a problem can be written in different languages like BASIC, FORTRAN, PASCAL, COBOL, C, C++, C#, JAVA, VB, VB.NET, PL/SQL, JAVA SCRIPT.

Contents: *Preface* ◈ *Acknowledgements* ◈ Language Evolution ◈ Programming ◈ Construction Tools ◈ Basics of Programming Language ◈ Conditional Statements ◈ Looping Structures ◈ Arrays ◈ Sorting and Searching ◈ Multi-dimensional Arrays ◈ *Appendix* ◈ *Index*

Available in print and e-book formats.
For details, visit www.universitiespress.com.

2012	200 pp.	Paperback
978-81-7371-822-9		₹ 275.00

Programming with C

R S Bichkar

Professor, CSE Department, Raisoni College of Engineering, Pune, India

C is a powerful and flexible programming language, which every programmer must know to gain a good understanding of the principles of programming. However, C is not very easy to learn, and a beginner is very likely to be overwhelmed by the complexity of its features. *This book aims* *to make C programming language as simple as possible for beginners and yet to provide sufficient depth of coverage for intermediate as well as advanced users. It deals with the concepts of C programming in a carefully planned manner, with focus on commonly used concepts and topics, supported by numerous short as well as complete working programming examples. The chapters on flowcharts, standard C library, program development tools and Turbo C graphics, not usually available in most popular books on C, have been included to enable readers to follow a self-study approach successfully*. The presentation of advanced topics in a separate section in each chapter also helps manage the complexity of the language, providing easy access to topics for both beginners and advanced users.

Special Features: Written mainly for beginners, yet useful for intermediate and advanced users too ◆ Chapter on flowcharts to illustrate concepts of program design ◆ Chapter on integrated development environments (IDEs) that include Turbo C/C++, a very popular IDE amongst students, and Code Blocks, a powerful yet easy-to-use free IDE supporting a large number of features ◆ Large number of examples (short examples as well as complete working programs) for explaining concepts and enabling rapid development of C programming skills ◆ Carefully designed exercises at the end of each chapter ◆ Chapter on Turbo C++ graphics ◆ Good coverage of ANSI standard C library

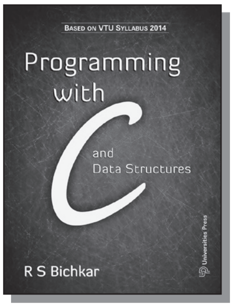
Contents: Introduction to computers, programming and C language ◆ Representing data ◆ Arithmetic operators and expressions ◆ C standard library ◆ Conditional control ◆ Looping control ◆ Nested control structures ◆ Functions ◆ Vectors or one-dimensional arrays ◆ Matrices and multidimensional arrays ◆ Pointers ◆ Strings ◆ Structures ◆ Files ◆ Searching and sorting ◆ Miscellaneous concepts ◆ Graphics in Turbo C and Turbo C++ ◆ *Appendices:* The ASCII character set; Summary of C operators; Summary of C statements; C standard library; Turbo C

Available in print and e-book formats.
For details, visit www.universitiespress.com.

2012	672 pp.	Paperback
978-81-7371-771-0		₹ 595.00

Programming with C and Data Structures

R S Bichkar
Professor, CSE Department, Raisoni College of Engineering, Pune, India


Based on VTU Syllabus 2014
Programming with C and Data Structures
Universities Press
R S Bichkar

This comprehensive textbook is designed to meet the requirements of the first year engineering curriculum of VTU. It aims to fulfil the broad objective of enabling the students to learn the basic principles of problem solving through C programming language and develop programming skills. The concepts of C programming are dealt with in a carefully planned manner with greater emphasis on commonly used concepts and topics, supported by numerous short as well as complete working programming examples. A separate chapter on laboratory programs will help students to test their understanding of concepts and apply them in practice. In addition, the book also exposes learners to modular programming, basic concepts of pointers and data structures and the effective utilisation of memory using pointer technology.

Contents: *Preface* ◆ Syllabus and mapping with book contents ◆ Introduction to Computers, Programming and the C Language ◆ Representing Data ◆ Operators and Expressions ◆ The C Standard Library ◆ Conditional Control or Branching ◆ Looping Control ◆ Functions ◆ Vectors or One-dimensional Arrays ◆ Matrices and Multidimensional Arrays ◆ Strings ◆ Structures ◆ Files ◆ Pointers ◆ C Preprocessor ◆ Introduction to Data Structures ◆ *Laboratory Programs (Part B: Problem Solving in C)* ◆ *Appendix A: The ASCII Character Set* ◆ *Appendix B: Summary of C Operators* ◆ *Appendix C: Past Question Papers* ◆ *Appendix D: Model Question Papers*

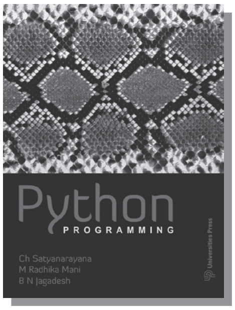
2014	566 pp.	Paperback
978-81-7371-942-4		₹ 475.00

Python Programming

Ch Satyanarayana
Professor, Department of CSE, and Director of Academics and Planning, JNTU Kakinada, India

M Radhika Mani
Head, Department of Computer Science and Engineering, Pragati Engineering College, Surampalem, India

B N Jagadesh
Head, Department of Computer Science and Engineering, Srinivasa Institute of Engineering and Technology, Amalapuram, India



The book covers the elements of Python programming with due emphasis on the basic rules and conventions and demonstrates how Python can be used to create efficient programs. It dwells on the topics dealt with in undergraduate courses of computer science and presents a rich pedagogy that includes fill-in-the-blanks, true/false, MCQs, short- and long-answer type questions, and debugging exercises to hone the learner's skills in Python programming.

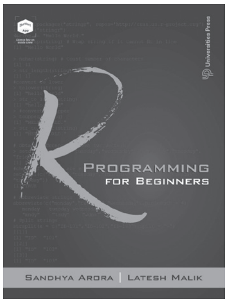
Contents: *Preface* ◆ *Introduction* ◆ Fundamentals of Python Programming ◆ Syntax and Styles ◆ Control Flow ◆ Sequences–Lists ◆ Tuples ◆ Dictionaries ◆ Functions ◆ Modules ◆ Object Oriented Programming Principles ◆ Packages ◆ Strings and Regular Expressions ◆ Files and Directory Access ◆ Errors and Exceptions ◆ Multithreading ◆ Tkinter ◆ Events ◆ Standard Library ◆ Testing ◆ *Appendix A: Networking* ◆ *Appendix B: Sending E-mail* ◆ *Appendix C: Plotting Graphs* ◆ *Appendix D: CGI/Web Programming using Python* ◆ *Index*

2018	380 pp.	Paperback
978-93-86235-63-3		₹ 425.00

R Programming for Beginners NEW

Sandhya Arora
Professor, Department of Computer Engineering, MKSSS's Cummins College of Engineering for Women, Pune, India

Latesh Malik
Associate Professor and Head, Department of Computer Science & Engineering, Government College of Engineering, Nagpur, India



R is a free, open-source, adaptable, extensible language with tremendous applications in the field of statistical computation and data science. It offers basic programming and has very strong built-in functions for statistical analysis. It is also a perfect fit for Big Data solutions and supports graphical techniques to visualise and present data effectively.

In this book, students will learn about R programming, from its fundamentals to advanced concepts relating to data science and machine learning.

Salient Features

- Covers traditional programming concepts in R, such as its features, data types, categorisation, operators, vectors, matrices, data frames, functions and the R profiler
- Explains basic and advanced statistical concepts such as measures of central value, dispersion and shape; sampling distribution; correlation coefficient and regression analysis; inference, ANOVA, machine learning concepts and text mining, and how to implement them in R
- Includes numerous examples and program code
- Provides multiple choice, programming and concept-based questions at the end of every chapter

- Provides access to an Android app with additional material

Online resources are available at www.universitiespress.com/rprogramming

Contents: *Preface* ◆ *Acknowledgements* ◆ Introduction to R Programming ◆ Data Definitions and Categorisation ◆ Operators ◆ Control Statements and Functions ◆ Interfacing with R ◆ Vectors ◆ Matrices ◆ Lists ◆ Data Frames ◆ Factors and Tables ◆ Regular Expressions and String Manipulation in R ◆ Accessing Input and Output ◆ R Apply Family ◆ The R Profiler ◆ Descriptive Statistics using R ◆ Probability ◆ Sampling Distributions ◆ Correlation and Regression Analysis ◆ Statistical Inference ◆ Analysis of Variance ◆ Machine Learning Algorithms in R ◆ Text Mining in R: Sentiment Analysis ◆ *Exercises* ◆ *Index*

2020	280 pp.	Paperback
978-93-89211-56-6		₹ 400.00

Robotics Primer, The

Maja J Mataric
Professor of Computer Science and Neuroscience and Director of the Center for Robotics and Embedded Systems; Codirector of Robotics Research Lab and Senior Associate Dean for Research, Viterbi School of Engineering, University of Southern California, Los Angeles, USA

The Robotics Primer offers a broadly accessible *introduction to robotics for students at pre-university and university levels, robot hobbyists, and anyone interested in this burgeoning field*. The text takes the reader from the most basic concepts (including perception and movement) to the most novel and sophisticated applications and topics (humanoids, shape-shifting robots, space robotics), with an emphasis on what it takes to create autonomous intelligent robot behavior. The core concepts of robotics are carried through from fundamental definitions to more complex explanations, all presented in an engaging, conversational style that will appeal to readers of different backgrounds. *The Robotics Primer* covers such topics as the definition of robotics, the history of robotics (“Where do Robots Come From?”), robot components, locomotion, manipulation, sensors, control, control architectures, representation, behaviour (“Making Your Robot Behave”), navigation, group robotics, learning, and the future of robotics (and its ethical implications). To encourage further engagement, experimentation, and course and lesson design. *The Robotics Primer* is unique as a principled, pedagogical treatment of the topic that is accessible to a broad audience; the only prerequisites are curiosity and attention. It can be used effectively in an educational setting or more informally for self-instruction. *The Robotics Primer is a springboard for readers of all backgrounds—including students taking robotics as an elective outside the major, graduate students preparing to specialize in robotics, and secondary teachers who bring robotics into their classrooms.*

Contents: *Preface* ◆ What Is a Robot? Defining Robotics ◆ Where Do Robots Come From? A Brief but Gripping History of Robotics ◆ What’s in a Robot? Robot Components ◆ Arms, Legs, Wheels, Tracks, and What Really Drives Them Effectors and Actuators ◆ Move It! Locomotion ◆ Grasping at Straws Manipulation ◆ What’s Going On? Sensors ◆ Switch on the Light Simple Sensors ◆ Sonars, Lasers, and Cameras Complex Sensors ◆ Stay in Control: Feedback Control ◆ The Building Blocks of Control: Control Architectures ◆ What’s in Your Head? Representation ◆ Think Hard, Act Later: Deliberative Control ◆ Don’t Think, React! Reactive Control ◆ Think and Act Separately, in Parallel Hybrid Control ◆ Think the Way You Act: Behavior-Based Control ◆ Making Your Robot Behave: Behavior Coordination ◆ When the Unexpected Happens: Emergent Behavior ◆ Going Places: Navigation ◆ Go, Team! Group Robotics ◆ Things Keep Getting Better Learning ◆ Where To Next? ◆ *The Future of Robotics* ◆ *Bibliography* ◆ *Glossary* ◆ *Index*

2010	288 pp.	Paperback
978-81-7371-680-5		₹ 750.00

Structure and Interpretation of Computer Programs

(Second Edition)

Harold Abelson
Class of 1922 Professor, MacVicar Teaching Fellow, Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, USA

Gerald Jay Sussman
Matsushita Professor of Electrical Engineering, Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, USA

Julie Sussman
Writer and editor, Cambridge, USA

This book has had a dramatic impact on computer science curricula over the past decade. There are new implementations of most of the major programming systems in the book, including the interpreters and compilers, and the authors have incorporated many small changes that reflect their experience teaching the course at MIT since the first edition was published.

A new theme has been introduced that emphasises the central role played by different approaches to dealing with time in computational models: objects with state, concurrent programming, functional programming and lazy evaluation, and non-deterministic programming. *There are new example sections on higher-order procedures in graphics and on applications of stream processing in numerical programming, and many new exercises.*

In addition, all the programs have been reworked to run in any scheme implementation that adheres to the IEEE standard.

Contents: *Foreword* ◈ *Preface to the Second Edition* ◈ *Preface to the First Edition* ◈ *Acknowledgement* ◈ Building Abstractions with Procedures: The Elements of Programming ◈ Procedures and the Processes They Generate ◈ Formulating Abstractions with Higher-Order Procedures: Building Abstraction with Data ◈ Introduction to Data Abstraction ◈ Hierarchical Data and the Closure Property ◈ Symbolic Data ◈ Multiple Representations for Abstract Data ◈ Systems with Generic Operations: Modularity, Objects, and State ◈ Assignment and Local State ◈ The Environment Model of Evaluation ◈ Modeling with Mutable Data ◈ Concurrency: Time Is of the Essence ◈ Streams: Metalinguistic Abstraction ◈ The Metacircular Evaluator ◈ Variations on a Scheme-Lazy Evaluation ◈ Variations on a Scheme-Nondeterministic Computing ◈ Logic Programming: Computing with Register Machines ◈ Designing Register Machines ◈ A Register-Machine Simulator ◈ Storage Allocation and Garbage Collection ◈ The Explicit-Control Evaluator ◈ Compilation ◈ *References* ◈ *List of Exercises* ◈ *Index*

2005	684 pp.	Paperback
978-81-7371-527-3		₹ 850.00

Theory of Probability and Stochastic Processes

Pradip Kumar Ghosh
Professor, Department of ECE, Mody University of Science and Technology, Laxmangarh, India

The theory of probability, applied extensively in all fields of engineering and physical sciences to model situations and outcomes, finds usage in fields as varied as social and behavioural sciences, biology, economics, management and business studies as well. This book, written to cater to an undergraduate engineering curriculum, explains the concepts and the mathematics of probability and stochastic processes to enable a student to solve practical problems with confidence. It covers probability axioms, conditional probability, special distributions, random variables, expectations, generating functions, operations on random variables, random processes and their temporal and structural characteristics and response of linear systems to random signals. Several solved examples illustrating the application of key concepts have been included in each chapter. This, together with the generous number of chapter-end exercises of varied levels of difficulty makes this book invaluable as a textbook on the subject.

Contents: Theory of Probability ◈ Theory of Random Variables d Functional Transformation of One Random Variable ◈ Statistical Characteristics of Two or More Random Variables ◈ Operations on Multivariate Random Variables ◈ Correlation Theory of Random Process ◈ Spectral Representation of Random Processes ◈ Response of Linear System to Random Signals ◈ *Bibliography* ◈ *Index*

2010	284 pp.	Paperback
978-81-7371-673-7		₹ 475.00

SYSTEMS, MODELS, INFORMATICS AND CONTROL (SMIC) SERIES

This series encompassess books in the broad areas of dynamical systems; mathematical modelling in actuarial, biological, behavioural, physical, sociological and engineering sciences; economics and finance; artificial intelligence, bio informatics, data warehousing and mining; neural networks and their implementations; and control theory and robotics.

Introduction to Mathematical Computer Science, An

Kasturi Viswanath
University of Hyderabad, India

An Introduction to Mathematical Computer Science explores an alternative approach to the teaching of computer science, an approach that is independent of technology, using a methodology that simultaneously deals with both theory and practice.

The 'mapcode' formalism introduced here is based on classical ideas, but this book is the first to explore the possibilities of the formalism extensively to evolve the subject as an area of mathematics. Using only the algebra of sets and maps and no advanced mathematics or formal logic, the book suggests a unified point of view for understanding the structure of finite automata, Turing machines, von Neumann machines, and neural systems. It also introduces a 10-step design process for devising algorithms and verifying their termination and correctness. Recursion and sorting algorithms are examined. Data types and Boolean function theory are explained from a novel point of view.

The book, with its several illustrative diagrams and exercises, will serve as a textbook for mathematics and computer science students at both undergraduate and graduate levels.

Contents: *Foreword* ◆ *Preface* ◆ Motivation and Notation ◆ Discrete Flows ◆ Mapcode Machines ◆ Finite Automata ◆ Turing Machines ◆ What is Programming? ◆ Mapcode Theorems ◆ Recursion ◆ Sorting Algorithms ◆ Data Types ◆ Boolean Spaces and Maps ◆ What is a Computer? ◆ Topological Computations ◆ Neural Systems ◆ *Appendix A: Number Representations* ◆ *Appendix B: Arithmetic with Limited Storage* ◆ *Bibliography* ◆ *Index*

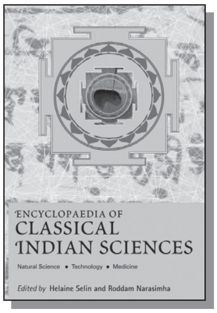
2008	304 pp.	Paperback
978-81-7371-630-0		₹ 850.00

Encyclopaedia

Encyclopaedia of Classical Indian Sciences

Helaine Selin
Formerly Professor, Hampshire College, Amherst, USA

Roddam Narasimha
DST Year-of-Science Professor, Jawaharlal Nehru Centre for Advanced Science Research, Bengaluru, India



India's contributions to science and technology are among the most ancient and influential in the world. In mathematics, the decimal place value system with zero as a numeral, used universally today, owes its origin to India. The science of Ayurveda, which has been practised for millennia in India, is now gaining wider acceptance even as many ancient remedies are turned into modern drugs. Indian astronomical computations, ritual geometry, brick technology and metallurgical innovations have been among the finest achievements in the world of science and technology.

Encyclopaedia of Classical Indian Sciences is an attempt to provide an authentic account of natural science, technology and medicine as practised by Indians and other South Asians. It also includes biographical articles on many ancient Indian scientists, and some articles (polemic in nature) on the history of Indian science and technology, such *as the essay on the effects of colonialism. All articles are contributions of acknowledged authorities on their subject drawn from across the world.*

Contents: *Preface* ◈ *Acknowledgements* ◈ Agriculture ◈ Alchemy ◈ Algebra: Bijaganita ◈ Arithmetic: Patiganita ◈ Armillary Spheres ◈ Aryabhata ◈ Astrology ◈ Astronomical Instruments ◈ Astronomy ◈ Astronomy in the Indo-Malay Archipelago ◈ Atomism ◈ Atreya ◈ Bakhshali Manuscript ◈ Baudhayana ◈ Bhaskara I ◈ Bhaskara II ◈ Al-Biruni ◈ Brahmagupta ◈ Bricks ◈ Calculus ◈ Calendars ◈ Candrasekhara Samanta ◈ Caraka ◈ City Planning ◈ Colonialism and Science ◈ Combinatorics in Indian Mathematics Decimal Notation ◈ Desantara ◈ Devacarya ◈ Dyes ◈ East and West ◈ East and West: India in the Transmission of ◈ Knowledge from East to West ◈ Eclipses ◈ Environment and Nature ◈ Epilepsy ◈ Ethnobotany ◈ Forestry ◈ Geography ◈ Geometry ◈ Gnomon ◈ Haridatta ◈ Irrigation in India and Sri Lanka ◈ Jagannatha Samrat ◈ Jai Singh ◈ Jayadeva ◈ Kamalakara ◈ Knowledge Systems: Local Knowledge ◈ Knowledge Systems ◈ Lalla ◈ Lunar Mansions in Indian Astronomy ◈ Madhava of Sangamagrama ◈ Magic and Science ◈ Magic Squares in Indian Mathematics ◈ Mahadeva ◈ Mahavlra ◈ Mahendra Suri ◈ Makaranda ◈ Maps and Mapmaking ◈ Mathematics ◈ Medical Ethics ◈ Medicine: Ayurveda ◈ Medieval Science and Technology ◈ Metallurgy: Bronzes of South India ◈ Metallurgy: Iron and Steel ◈ Metallurgy: Zinc and its Alloys: Ancient Smelting Technology ◈ Meteorology ◈ Military Technology ◈ Munisvara ◈ Narayana Pandita ◈ Navigation ◈ Number Theory ◈ Observatories ◈ Paksa ◈ Parameswara ◈ Paulisa ◈ Physics ◈ Pi in Indian Mathematics ◈ Precession of the Equinoxes ◈ Putumana Somayaji: ◈ Rainwater Harvesting ◈ Ramanujan ◈ Rationale in Indian Mathematics ◈ Rockets and Rocketry ◈ Salt ◈ Sailkara Variyar ◈ Satananda ◈ Science as a Western Phenomenon ◈ Sexagesimal System ◈ Sphujidhvaja ◈ Sridhara ◈ Sripati ◈ Sulbasutras ◈ Suryasiddhanta ◈ Susruta ◈ Technology and Culture ◈ Textiles ◈ Time ◈ Trigonometry ◈ Vakyakarana ◈ Values and Science ◈ Varahamihira ◈ Vatesvara ◈ Weights and Measures in the Indus Valley ◈ Western Dominance ◈ Wind Power ◈ Yavanesvara ◈ Yoga ◈ Yuktibhasa of Jyesthadeva ◈ Zero ◈ Zij ◈ Zodiac ◈ List of Contributors ◈ Index

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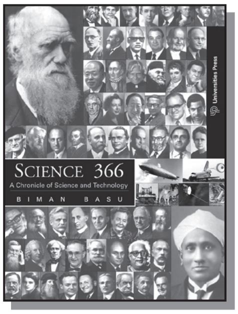
For details, visit www.universitiespress.com.

2007 492 pp. Hardback
978-81-7371-555-6 ₹ 1,350.00

Science 366: A Chronicle of Science and Technology

Biman Basu
Formerly Editor, Science Reporter, Council of Scientific and Industrial Research (CSIR), New Delhi, India



Dates have an important place in our lives—not only are they historical occasions that we observe every year but they are also milestones to measure our growth in age, prosperity and wisdom. Therefore, dates in the scientific field can be used as a measure of progress in our quest for the unknown—dates when some important scientific discovery was made or some famous scientist was born. There are also dates that mark important breakthroughs in our understanding of the universe around us—new discoveries and new inventions that have changed our life.

This book can be considered a diary of scientific events—both Indian and international—including dates related to scientists and their works; inventors and their inventions; scientific organisations; and important scientific occurrences.

The entries are arranged chronologically. An entry for the date of birth of a scientist or inventor gives a brief biography of the person, while an entry for the date of founding or inauguration of a scientific institution gives a brief summary of the activities and achievements of the institution. All the entries are cross-referenced for easy navigation.

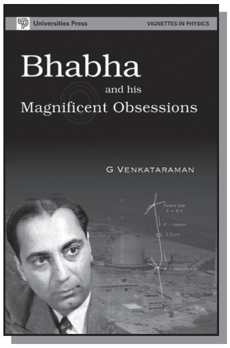
Available in print and e-book formats.
For details, visit www.universitiespress.com.

2008 712 pp. Paperback
978-81-7371-607-2 ₹ 1,550.00

BIOGRAPHIES

Bhabha and His Magnificent Obsessions

G Venkataraman



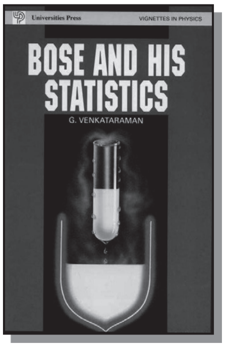
This book is about the remarkable scientist Homi Jehangir Bhabha who, at the age of eighteen, went to Cambridge to study physics and started his research career there. In 1939, when Bhabha came to India on a short vacation, he was forced to stay on as the Second World War broke out. This was, of course, a blessing for the country as he later steered the country's scientific destiny. The book records Bhabha's contributions which were in many dimensions and not just purely scientific.

Available in print and e-book formats.
For details, visit www.universitiespress.com.

1994 222 pp. Paperback
978-81-7371-007-0 ₹ 425.00

Bose and His Statistics

G Venkataraman



This book describes a monumental discovery made by Satyendranath Bose. It also helps the reader take a step closer in understanding Bose—the scientist—and describes the events that surround this exciting discovery.

Available in print and e-book formats.
For details, visit www.universitiespress.com.

1992	136 pp.	Paperback
978-81-7371-036-0		₹ 325.00

Chandrasekhar and His Limit

G Venkataraman

This is a heartwarming and very inspiring story about Subrahmanyam Chandrasekhar, the most distinguished mathematical physicist India has produced. In a long and remarkable career, Chandrasekhar has done many outstanding things but this book concentrates mostly on one of them, namely, the discovery of the Chandrasekhar Limit.

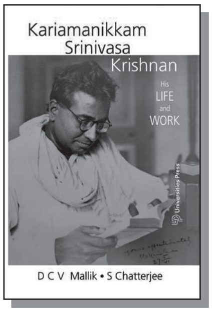
Available in print and e-book formats.
For details, visit www.universitiespress.com.

1992	144 pp.	Paperback
978-81-7371-035-3		₹ 325.00

Kariamanikkam Srinivasa Krishnan: His Life and Work

D C V Mallik
Formerly Professor, Indian Institute of Astrophysics, Bengaluru, India

S Chatterjee
Professor, Indian Institute of Astrophysics, Bengaluru, India



The first four decades of the 20th century were glorious years for science, especially physics. Our view of the physical world changed forever with the emergence of quantum mechanics and Einstein's formulation of the theory of relativity. India too contributed significantly to this scientific revolution with the discoveries made by S N Bose, C V Raman and M N Saha, all in the space of about a decade. *Kariamanikkam Srinivasa Krishnan (1898-1961)* belonged to the same illustrious group. He was perhaps the only Indian physicist of his generation who was equally adept in theory and experiment. Besides a life of excellence in science, Krishnan's destiny led him to be an able science policy maker and administrator. *He was also a great teacher, a humanist and a scholar of Sanskrit, Tamil literature and philosophy*.

This biography, besides being a detailed and meticulously documented account of Krishnan's life and his scientific work, is also an *exciting account of the history of Indian science of the period. The source material of this work, most of which are being used for the first time, comes from the private papers of K S Krishnan that had remained in the custody of his family*.

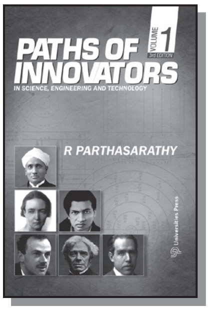
Contents: *Foreword* ◈ *Acknowledgement* ◈ *Prologue* ◈ Background ◈ Childhood and Schooling ◈ College Years ◈ Science Education and Its Beginnings in Calcutta ◈ Calcutta ◈ Scattering of Light ◈ Discovery of the Raman Effect ◈ Dacca ◈ Bonds of Magnetism I: The Dacca Phase ◈ Winds of Change ◈ Bonds of Magnetism II: The Calcutta Phase ◈ Graphite and Its anomalous Diamagnetism ◈ Honours and Offers ◈ The Physics Chair at Allahabad ◈ Rejuvenating Physics in Allahabad ◈ The Widening Vista ◈ Krishnan in Delhi ◈ NPL: The Initial Years ◈ Oscillating Lattices, Emitting Surfaces, Heated Tubes ◈ The Broader Stage ◈ Into the Twilight ◈ *Appendix* ◈ *Primary Sources* ◈ *Bibliography* ◈ *Index*

2012	516 pp.	Hardback
978-81-7371-748-2		₹ 1,450.00

2011	516 pp.	Paperback
978-81-7371-749-9		₹ 1,050.00

Paths of Innovators, Volume 1

R Parthasarathy
Formerly Professor, Department of Physics, IIT Madras, Chennai, India



This is the first volume of a set of two volumes. It comprises a collection of scientists' lives, their struggles, their achievements and their laurels. The scientists have been grouped under five disciplines—Engineering, Physics, Mathematics, Chemistry and Life Sciences. The reader meets people from various backgrounds—those with insufficient schooling, those with little money, those born into aristocracy, those with science in their blood, those battling with grave illnesses, those who moved from one discipline to another (as different as possible from each other); ultimately culminating in path-breaking scientific discoveries. *The aim of these brief biographical sketches is to inspire a wider audience to take up the noble pursuit of pure sciences.*

Contents: *Engineering:* Appleton, Edward ◈ Arago, Jean ◈ Babbage, Charles ◈ Baird, John ◈ Callendar, Hugh ◈ Carnot, Sadi ◈ Cotton, Arthur ◈ Diesel, Rudolf ◈ Esaki, Leo ◈ Faraday, Michael ◈ Fulton, Robert ◈ Giaever, Ivar ◈ Haber, Fritz ◈ Haggerty, Patrick ◈ Heaviside, Oliver d Henry, Joseph ◈ Hertz, Heinrich ◈ Karman, Theodore von ◈ Kelvin, Lord ◈ Krupp, Alfred ◈ Langmuir, Irving ◈ Marconi, Guglielmo ◈ Ohain, Hans von ◈ Shannon, Claude ◈ Taylor, GI ◈ Terzaghi, Karl ◈ Tesla, Nicola ◈ Steinmetz, Charles ◈ Stephenson, George ◈ Watt, James ◈ Whittle, Frank ◈ Zworykin, Vladimir

Physics: Becquerel, Henri ◈ Bohr, Niels ◈ Boltzmann, Ludwig ◈ Born, Max ◈ Bragg, William Lawrence ◈ Cavendish, Henry ◈ Chadwick, James ◈ Coulomb, Charles ◈ Crookes, William ◈ Dirac, Paul ◈ Doppler, Christian ◈ Fermi, Enrico ◈ Foucault, Jean ◈ Fraunhofer, Joseph ◈ Fresnel, August ◈ Heisenberg, Werner ◈ Helmholtz, Hermann ◈ Huygens, Christian ◈ Kapitza, Peter ◈ Mach, Ernst ◈ Millikan, Robert ◈ Pauli, Wolfgang ◈ Peltier, Jean Charles ◈ Planck, Max ◈ Raman, CV ◈ Roentgen, William ◈ Rutherford, Ernst ◈ Stefan, Josef ◈ van der Waals, Johannes ◈ Wien, Wilhelm ◈ Young, Thomas

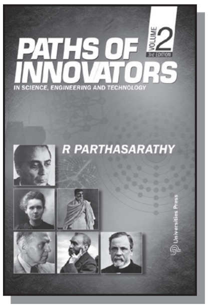
Mathematics: Abel, Henrik ◈ Bessel, Friedrich ◈ Boole, George ◈ Bradley, James ◈ Cantor, Georg ◈ Cauchy, Augustin ◈ Chandrasekar, S ◈ Descartes, Rene ◈ Erdos, Paul ◈ Euler, Leonhard ◈ Fourier, Joseph ◈ Galois, Evariste ◈ Gauss, Carl ◈ Halley, Edmund ◈ Hawking, Stephen ◈ Hilbert, David ◈ Herschel, John ◈ Herschel, William ◈ Lagrange, Joseph ◈ Laplace, Pierre ◈ Leibniz, Gottfried ◈ Pascal, Blaise ◈ Poincare, Henri ◈ Ramachandra, Yasudas ◈ Ramanujan, Srinivasa ◈ Riemann, Bernhard ◈ Wiener, Norbert

Chemistry: Arrhenius, Svante ◈ Avogadro, Amedeo ◈ Berthollet, Claude ◈ Berzelius, Jacob ◈ Black, Joseph ◈ Bunsen, Robert ◈ Dalton, John ◈ Dulong, Pierre ◈ Fourcroy, Antoine ◈ Gay-Lussac, Joseph ◈ Hodgkin, Dorothy ◈ Hofmann, August von ◈ Joliot-Curie, Irene ◈ Kekule, Friederich ◈ Lavoisier, Antoine ◈ Liebig, Justus von ◈ Mendeleev, Dmitri ◈ Perkin, William

2012	456 pp.	Paperback
978-81-7371-750-5		₹ 875.00

Paths of Innovators, Volume 2

R Parthasarathy
Formerly Professor, Department of Physics, IIT Madras, Chennai, India



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ultimately culminating in path-breaking scientific discoveries. *The aim of these brief biographical sketches is to inspire a wider audience to take up the noble pursuit of pure sciences.*

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Mathematics: Bolyai, Janos ◈ Bolyai, Wolfgang ◈ Carbano, Gerolomo ◈ Cayley, Arthur ◈ Chebyshev, Pafulty ◈ D'Alembert, Jean ◈ de Moivre, Abraham ◈ De Morgan, Augustus ◈ Dirichlet, Peter ◈ Galileo, Galilei ◈ Green, George ◈ Hamilton, William ◈ Hermite, Charles ◈ Hubble, Edwin ◈ Jacobi, Carl ◈ Klein, Felix ◈ Kronecker, Leopold ◈ Lefschetz, Solomon ◈ Legendre, AM ◈ Louisville, Joseph ◈ Lyapunov, Alexander ◈ Mahalanobis, PC ◈ Moebius, August ◈ Monge, Gaspard ◈ Nash, John ◈ Pierce, Charles ◈ Pluecker, Julius ◈ Poisson, Simon ◈ Ranganathan, SR ◈ Steiner, Jakob ◈ Sylvester, James ◈ Taylor, Brook ◈ Von Neumann, John ◈ Weierstrass, Karl ◈ Whitehead, AN

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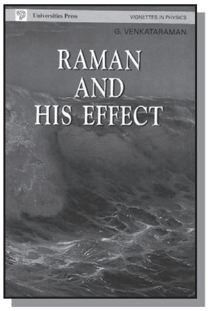
Life Science: Banting, Frederick ◈ Eijkman, Christian ◈ Elion, Gertrude ◈ Eysenek, Hans ◈ Fleming, Alexander ◈ Franklin, Rosalind ◈ Hopkins, Frederik ◈ Huxley, Thomas ◈ Jenner, Edward ◈ Koch, Robert ◈ Landsteiner, Karl ◈ Laveran, Alphonse ◈ Linnaeus, Carl ◈ Lister, Joseph ◈ Manson, Patrick ◈ McClintock, Barbara ◈ Mendel, Gregor ◈ Pasteur, Louis ◈ Perutz, Max ◈ Ross, Ronald ◈ Rao, Y Subba ◈ Sahni, Birbal ◈ Salk, Jonas ◈ Sircar, Mahendralal

2012 544 pp. Paperback
978-81-7371-751-2 ₹ 875.00

Raman and His Effect

G Venkataraman

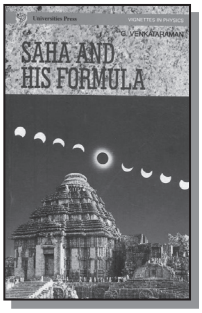


This book deals with the famous Scattering Effect discovered by Sir C. V. Raman. It gives us deep insights into the character of this famous scientist and vividly describes the circumstances surrounding the discovery.

1995 108 pp. Paperback
978-81-7371-008-7 ₹ 325.00

Saha and His Formula

G Venkataraman



A great leap forward in unravelling the mysteries of the Sun occurred way back in 1920 when Meghnad Saha made an important discovery that paved the way for a systematic study of stellar atmospheres in general. This book is about that great discovery and the man who made it.

Available in print and e-book formats.
For details, visit www.universitiespress.com.

1995	206 pp.	Paperback
978-81-7371-017-9		₹ 325.00

Wings of Fire: An Autobiography (Abridged, Special Student Edition with Exercises)

A P J Abdul Kalam
Former President of India

Arun Tiwari
Adjunct Professor, University of Hyderabad, Hyderabad, India

This simplified and abridged version now makes *Dr Kalam's* inspirational story accessible to students. A comprehensive glossary provides help in the understanding of technical terms. *This Special Student Edition includes exercises.*

2004	144 pp.	Paperback
978-81-7371-548-8		₹ 250.00

Wings of Fire: An Autobiography

A P J Abdul Kalam
Former President of India

Arun Tiwari
Adjunct Professor, University of Hyderabad, Hyderabad, India

Avul Pakir Jainulabdeen Abdul Kalam, the son of a little-educated boat-owner in Rameswaram, Tamil Nadu, had an unparalleled career as a defence scientist, culminating in the highest civilian award of India, the *Bharat Ratna*. As chief of the country's defence research and development programme, Kalam demonstrated the great potential for dynamism and innovation that existed in seemingly moribund research establishments. This is the *story of Kalam's rise from obscurity and his personal and professional struggles, as well as the story of Agni, Prithvi, Akash, Trishul and Nag*—missiles that have become household names in India and have raised the nation to the level of a missile power of international reckoning. This is also the saga of independent India's struggle for technological self-sufficiency and defensive autonomy—a story as much about politics (domestic and international) as it is about science.

Available in print and e-book formats.
For details, visit www.universitiespress.com.

1999	212 pp.	Paperback
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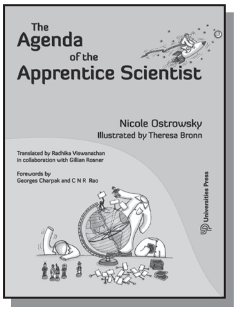
GENERAL INTEREST

Agenda of the Apprentice Scientist, The

Nicole Ostrowsky
Professor Emeritus, University of Nice Sophia Antipolis, France


The Agenda of the Apprentice Scientist
Nicole Ostrowsky
Illustrated by Theresa Bronn
Translated by Radhika Viswanathan in collaboration with Gillian Rosner
Forewords by Georges Charpak and C N R Rao
Universities Press

Here are *365 activities* to discover that science is a part of our daily life, that you can take part in it with pleasure, that it can be easy, sometimes surprising and funny, and always *accessible to everyone, from 7 to 107.* All you need to have is a curiosity about the world around you.

Throw yourself into this adventure across the sciences, go at your own pace, follow your fancy and don't necessarily stick to the days of the year. Keep in mind, however, that some activities take place over a couple of days—you will see this as you go. Set your imagination free, do or redo the experiments as you wish, and try and invent better ways to make them work. If you have problems, if you need a clearer explanation, or if you want to share your ideas, you can write to *Nicole.Ostrowsky@unice.fr* or visit *http://apprenticescientist.com*

But most importantly, don't hesitate to play, draw, cut, construct, write and think—there is no better way to learn than through this maxim:

> Tell me and I'll forget,
> Show me and I may remember,
> Involve me and I'll understand.

We recommend that you visit the link:
http://apprenticescientist.com/#/topics/3922325

Available in print and e-book formats.
For details, visit www.universitiespress.com.

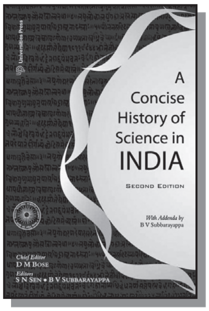
2012	396 pp.	Paperback
978-81-7371-753-6		₹ 925.00

Concise History of Science in India, A
(Second Edition)

D M Bose (Ed.)
Formerly Director, Bose Institute, Kolkata, India

S N Sen (Ed.)
Formerly Registrar, Indian Association for the Cultivation of Science, Kolkata, India

B V Subbarayappa (Ed.)
Formerly Executive Secretary, Indian National Science Academy, New Delhi; Project Coordinator and Member Secretary, National Commission for the History of Science in India; Director, Discovery of India Project, at Nehru Centre, Mumbai, India


A Concise History of Science in INDIA
Second Edition
With Addenda by B V Subbarayappa
Chief Editor D M Bose
Editors S N Sen • B V Subbarayappa

India's contributions in the field of science have been very influential in the development of human civilisation. The decimal place value system and the Ayurvedic way of life are just two well-known legacies of this ancient culture. Yet there are only a few books which provide an unbiased and authentic view of this world. One reason for this is that the study of Indian science through the ages involves the complex integration of the knowledge of many languages and diverse scientific disciplines. Through the years, there has been growing interest in this study as an important aspect in understanding man's interaction with nature, his material life and cultural patterns. The Indian National Science Academy, through its History of Science Board (1958) and the National Commission for the Compilation of History of Sciences in India (1967) renamed in 1989 as the Indian National Commission for History of Science sought further means to stimulate this interest among universities and scholars. The result was the publication of *A Concise History of Science in India.*

This book attempts to present a brief account of the development of science from early times to Independence, in one of the most ancient civilisations of the world. After nearly four decades since its publication, A Concise History of Science in India remains one of the most extensive and authentic account of Indian science through the ages. Yet further studies in the field have brought to light new material. This revised edition, taken up by B V Subbarayappa, one of the three original editors, seeks to integrate the new information with the knowledge already at hand.

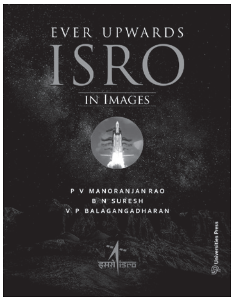
2009	980 pp.	Paperback
978-81-7371-619-5		₹ 1,395.00

Ever Upwards: ISRO in Images
NEW

P V Manoranjan Rao
Formerly Group Director, Vikram Sarabhai Space Centre, ISRO

B N Suresh
Chancellor, Indian Institute of Space Science and Technology, Thiruvanthapuram, India; Formerly Director, Vikram Sarabhai Space Centre, ISRO

V P Balagangadharan
Formerly Scientist, Vikram Sarabhai Space Centre, ISRO



The Indian space programme has the unique distinction of being born in a place of worship: the St. Mary Magdalene Church in Thumba, a fishing hamlet near Thiruvananthapuram, the capital of Kerala. From those humble beginnings in 1963, the national space programme grew under the visionary guidance of Vikram Sarabhai and Satish Dhawan to become a technological giant, known today as the Indian Space Research Organisation (ISRO). Sarabhai created ISRO in 1969.

This year, 2019, marks the birth centenary of Sarabhai and the 50th anniversary of ISRO. This book celebrates the double anniversary through over 370 photographs, lovingly curated by the authors from a collection of 2000. Some of them have never before been seen by the public, while others are eye-catchingly beautiful.

The authors have worked on this book for over five years, always keeping abreast with the latest developments in ISRO: from its birth in a church in 1963 to Chandrayaan-2, whose launchis imminent.

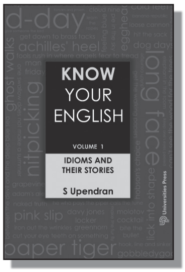
This is the story of ISRO told through images. The pictures speak for themselves!

2019	304 pp.	Hardback
978-93-89211-13-9		₹ 3,500.00

Know Your English, Volume 1: Idioms and Their Stories

S Upendran

Professor, Department of Materials Development, Testing and Evaluation, English and Foreign Languages University, Hyderabad, India



Idioms and Their Stories is the first of our four volume series based on *Know Your English*, the popular weekly column published in *The Hindu* since 1982.

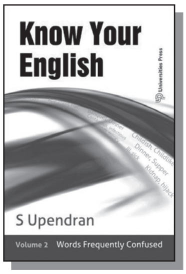
Teachers, students and those who are keen on honing their speaking and writing skills will find the series useful. This volume contains a selection of more than 300 idioms, and each entry gives the meaning of the idiom, provides examples of its use, and wherever possible, traces its origin.

2011	216 pp.	Paperback
978-81-7371-729-1		₹ 350.00

Know Your English, Volume 2: Words Frequently Confused

S Upendran

Professor, Department of Materials Development, Testing and Evaluation, English and Foreign Languages University, Hyderabad, India



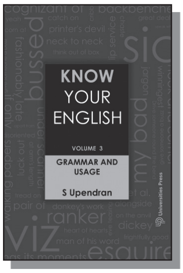
When an Indian decides to settle down in America, does he 'emigrate' or 'immigrate' to that country? What is the difference between 'it's' and 'its'? Should you refer to your fellow coworker as 'my elder colleague', or 'my older colleague'? *Words Frequently Confused*, the second volume in the four volume series, *Know Your English*, clears doubts such as these.

Like the first volume, *Idioms and Their Stories*, this book is based on S Upendran's popular weekly column *Know Your English*, published in *The Hindu*. It contains a selection of about 480 pairs of words that are frequently confused. Each entry gives the meaning of the words and points out the difference between them. Examples are also provided showing how the words can be used in everyday contexts. Some of the entries also contain information about the pronunciation and the etymology (origin) of the word.

2013	416 pp.	Paperback
978-81-7371-730-7		₹ 550.00

Know Your English, Volume 3: Grammar and Usage

S Upendran



Do you enjoy being in 'crowdy' places? What is the plural of 'aircraft' and 'cattle'? Is it 'media are' or 'media is'? Do you have a 'soft spot' or a 'soft corner' for someone? Are you 'good at' or 'good in' cricket? Were you a 'topper' or 'ranker' in school? Why do software engineers want us to 'revert back' to them? Do you pay 'in cash' or 'by cash'? Does your house have a big backside?

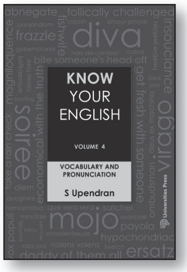
Grammar and Usage, is a practical reference guide that provides answers to such questions. The selections included in the book highlight some of the common errors that we Indians make when we use English.

Like the first and second volumes, this book is based on Upendran's popular weekly column, *Know Your English*, published in *The Hindu*. It contains a selection of over 650 entries, each dealing with an aspect of grammar/usage. Explanations have been provided in simple, jargon-free language.

2017	444 pp.	Paperback
978-81-7371-731-4		₹ 550.00

Know Your English, Volume 4: Vocabulary and Pronunciation

S Upendran



Is 'tier' pronounced the same way as 'tyre'? Which syllable is stressed in 'baton'– the first or the second? How is the word 'danseuse' pronounced? Are you friends with the 'big cheese' on campus? When you watch a film, do youhave a sense of 'déjàvu'?

Vocabulary and Pronunciation is a practical reference guide that provides answers to such questions. The selections included in the book highlight some of the everyday words that we mispronounce when speaking in English. In addition, the book familiarises the reader with several hundred words and expressions used by native speakers of English in formalandinformal contexts.

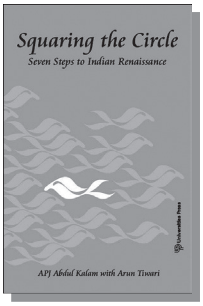
Like the earlier three volumes, this book is based on Upendran's popular weekly column, *Know Your English*, published in *The Hindu*. It contains a selection of over 800 entries; an explanation of the meaning, pronunciation and etymology of each word has been provided.

2018	500 pp.	Paperback
978-81-7371-732-1		₹ 550.00

Squaring the Circle: Seven Steps to Indian Renaissance

A P J Abdul Kalam
Former President of India

Arun Tiwari
Adjunct Professor, University of Hyderabad,
Hyderabad, India



Dr Kalam calls for an Indian Renaissance, which he describes in seven steps involving the common people of the land, and in particular, the youth. He urges people to arise out of servitude to a vested ruling class, awake from the slumber of a passive democracy, and advance to manifest our destiny of a developed nation. He recommends that by turning inward and listening to the voice of our conscience, we can live a virtuous life and thereby build a strong and secure India.

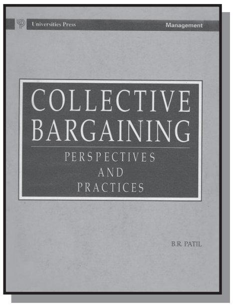
Contents: *Prologue* ◈ *Introduction* ◈ *Acknowledgements* ◈ The Story of Socrates ◈ We Are All One ◈ Truth and Reconciliation ◈ Beyond Narrow Domestic Walls ◈ A World View is a Lens ◈ Ignited Minds ◈ Know Thyself ◈ Social Enterprise ◈ Istikhara ◈ Good to Great ◈ Re-energizing Relations ◈ Strength respects Strength ◈ Work, Bread, Water and Salt for All ◈ Livable Planet ◈ *Epilogue* ◈ *Index*

2013	304 pp.	Paperback
978-81-7371-891-5		₹ 475.00

MANAGEMENT

Collective Bargaining

B R Patil



This book outlines the concept of collective bargaining as it has developed in many industrial countries. It does not restrict itself to the development and present status of collective bargaining in the industrialised market economies alone, but analyses its development and practice in Indian industries too.

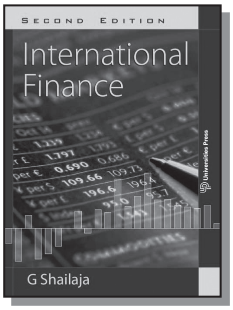
2014	564 pp.	Paperback
978-81-7371-688-1		₹ 875.00

Industrial Psychology

Dipak Kumar Bhattacharyya & Sutapa Bhattacharya
See page 67

International Finance
(Second Edition)

G Shailaja
Associate Professor, Osmania University, Hyderabad



It is a textbook for management students and a reference for practicing managers. In this revised edition, all the chapters have been updated. New chapters on global strategic alliances, international taxation, international project management and currency crises have been added. The approach has been to blend theory with practical aspects of decision-making. Latest policy changes in the Indian scenario have been included.

Salient features:

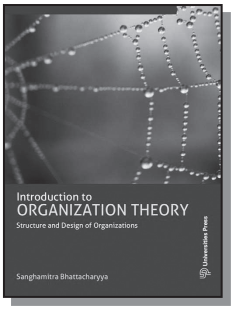
◈, Learning objectives, keypoints and glossary are provided for each chapter
◈, Illustrative examples and solved problems will improve the learners' orientation for numerical work
◈, Self-assessment questions of different types like MCQs, fill in the blanks and descriptive answers
◈, Interesting case studies that will sharpen analytical skills

Contents: Introduction to International Finance ◈ Financial Markets ◈ Foreign Exchange Market ◈ Foreign Exchange Quotes ◈ Currency Derivatives ◈ Eurocurrency Market ◈ Sources of Finance ◈ International Financing Agencies ◈ Theories of Exchange Rates ◈ Currency Convertibility ◈ Evolution of the International Financial System ◈ Balance of Payments ◈ Types of Foreign Exchange Exposure ◈ Hedging Currency Risk ◈ Capital Budgeting for Overseas Investment ◈ Cross-border Mergers and Acquisitions ◈ International Portfolio Investment ◈ Documentation in International Trade ◈ Financing of International Trade ◈ International Accounting ◈ Transfer Pricing ◈ Multinational Tax Planning ◈ International Banking ◈ Multinational Corporations and Corporate Governance ◈ Financial Crises

2011	528 pp.	Paperback
978-81-7371-747-5		₹ 625.00

Introduction to Organization Theory

Sanghamitra Bhattacharyya
Feedback Foundation


Introduction to
ORGANIZATION THEORY
Structure and Design of Organizations
Sanghamitra Bhattacharyya
Universities Press

Introduction to Organization Theory is a textbook for students and scholars of business management, aspiring to be practicing managers in the corporate world. It introduces them to the concept of organization theory, structure and design. The focus is on the structure and design of organizations, the theories underlying the design of structures, the effectiveness of organizational design in ensuring organizational survival and growth, and the management of organizational restructuring and change to prevent corporate decline and failure. Most standard textbooks on organizational theory currently in use are by foreign authors, and cite predominantly US or European examples. To address this lacuna, at least two Indian case studies have been discussed in each chapter and numerous examples of Indian organizations and their experiences have been included to explain concepts and theories.

Contents: Chapter 1: Understanding Organizations Organizational Insight ◈ Chapter 2: Organizational Effectiveness Organizational Insight ◈ Chapter 3: Organization Structure Organizational Insight ◈ Chapter 4: Organizational Strategy Organizational Insight ◈ Chapter 5: Organizational Environment Organizational Insight ◈ Chapter 6: Technology in Organizations Organizational Insight ◈ Chapter 7: Organizational Culture Organizational Insight ◈ Chapter 8: Organizational Failure Organizational Insight ◈ Chapter 9: Managing Organizational Change Organizational Insight ◈ *Chapter Summary* ◈ *Review Questions* ◈ *Project Assignment* ◈ *Case Illustration: Downsizing in a manufacturing organization Critical enquiry* ◈ *References* ◈ *Index*

2011	208 pp.	Paperback
978-81-7371-737-6		₹ 475.00

Managerial Economics and Financial Analysis

Shailaja Gajjala & Usha Munipalle
See page 67

Production and Operations Management: Theory and Practice

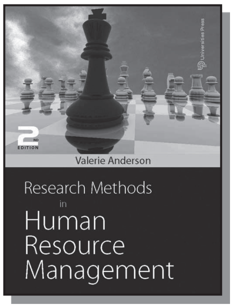
Dipak Kumar Bhattacharyya
See page 68

Research Methodology

Ratan Khasnabis & Suvasis Saha
See page 69

Research Methods in Human Resource Management

Valerie Anderson
Principal lecturer, HRM, Portsmouth Business School, UK



This book addresses the needs of HRM and CIPD students writing a management report or dissertation, providing both theoretical frameworks and practical guidance. Providing an accessible guide to the planning and execution of HRM research projects, this text seeks to develop the knowledge and skills of first-time researchers for effective research into HRM issues in organisations.

Contents: The nature of research in HR, and how to use this book ◆ First stages in the HR project ◆ Ethics and HR research ◆ Reviewing and evaluating existing knowledge ◆ Approaches to gathering data in HR research ◆ Finding and using documentary and organisational evidence ◆ Collecting and recording qualitative data ◆ Analysing qualitative data ◆ Collecting and recording quantitative data ◆ Analysing quantitative data and formulating conclusions ◆ Communicating your research ◆ Final reflections

2011	385 pp.	Paperback
978-81-7371-733-8		₹ 850.00

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