Universities Press

Universities Press focusses on the publication of books in Science, Technology, Medicine and Management.

In addition to independent publishing, we collaborate with reputed organisations such as:

- Indian Academy of Sciences
- Jawaharlal Nehru Centre for Advanced Scientific Research
- Indian National Science Academy
- Indian Space Research Organisation
- Ramanujan Mathematical Society
- Indian Association for Research in Computing Sciences
- American Mathematical Society
- Indian Institute of Metals/Indira Gandhi Centre for Atomic Research

Several of our books are co-published for the international market by CRC Press and Springer Verlag. In addition to original publishing, we publish books selectively under license from reputed overseas publishers. Some of our overseas associates include:

- CRC Press
- The Institute of Materials
- Silicon Press
- American Mathematical Society
- Chartered Institute of Personnel and Development (CIPD)

Our books are distributed exclusively by **Orient Blackswan Private Limited.**

Invitation to authors
If you have a publishing proposal in your area of specialisation, we will be happy to hear from you. The publication proposal form can be accessed from our website www.universitiespress.com. Alternatively, you may please write to:

The Editorial Department
Universities Press (India) Private Limited
3-6-747/1/A and 3-6-754/1 Himayatnagar
Hyderabad 500 029, Telangana, India
Phone: 91-40-2766 2849/2850/5446/5447, 2761 0898
Fax: 91-40-2764 5046
Email: info@universitiespress.com

CONTENTS

Aeronautical Engineering

Basic Engineering Thermodynamics

A Venkatesh

See page 83

. . . .

Brief History of Rocketry in ISRO, A

P V Manoranjan Rao & P Radhakrishnan

This book attempts to showcase India's capabilities in rocketry developed over 40 years (1963–2003). Starting from scratch, the Indian Space Research Organisation (ISRO) painstakingly mastered this technology in a remarkably short time. *The book explains the complex technological developments in the field for the lay person*. It also records historical events and provides biographical sketches of legendary personalities like Bhabha, Sarabhai, Dhawan and Brahm Prakash, highlighting their contributions to building modern India.

Salient Features: Transcripts of interviews with key personnel ◆ Evocative photographs that chart the progress of the rocketry programme ◆ Extracts from biographical articles ◆ Comprehensive name and subject indexes

Contents: *Foreword ◆ Preface ◆ Acknowledgements ◆ Introduction ◆* The Background ◆ The Small Bang ◆ Sounding Rockets ◆ The Debut: SLV-3 ◆ The Technological Bridge: Augmented Satellite Launch Vehicle ◆ The Workhorse: Polar Satellite Launch Vehicle ◆ The Missing Link: Geosynchronous Satellite Launch Vehicle ◆ Profiles in Technology Development: Chemicals and Materials ◆ Profiles in Technology Development: Avionics and Aeronautics ◆ The Quartet ◆ Epilogue: Glimpses of the Future ◆ *Annexure I: SDSC-SHAR: The Spaceport of India ◆ Annexure II: Atomic Energy and Space Research: A Profile for the Decade 1970–80 ◆ Glossary ◆ Index: Name ◆ Index: Subject*

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

2012	416 pp.	Paperback
978-81-7371-764-2		₹ 605.00

Engineering Optimization: A Modern Approach

Ranjan Ganguli

See page 56

. . . .

First Course in Fluid Mechanics, A

S Narasimhan

See page 86

. . . .

Fuels and Combustion
(Third Edition)

Samir Sarkar

See page 15

. . . .

Fundamentals of Computational Fluid Dynamics

Tapan K Sengupta

See page 58

. . . .

NEW

Gas Tables
(Third Edition)

E Rathakrishnan

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.

Contents: *Preface to Third Edition* ⬧ *Preface to Second Edition* ⬧ *Preface to First Edition* ⬧ *Part One:* Fundamental Concepts ⬧ Introduction ⬧ Some useful gas dynamic relations ⬧ *Part Two:* Gas Tables ⬧ Properties of standard atmosphere ⬧ Insentropic tables ⬧ Normal shock tables ⬧ Oblique shock tables ⬧ One-dimensional flow with friction (Fanno flow table) ⬧ One-dimensional flow with change in stagnation temperature (Rayleigh flow table) ⬧ *Part Three:* Program Listing ⬧ Oblique shock charts

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

2013	192 pp	Paperback
978-81-7371-788-8		₹ 225.00

Heat Transfer

Y V C Rao

See page 86

Solutions Manual for Heat Transfer

Y V C Rao

See page 87

NEW

Industrial Psychology

Dipak Kumar Bhattacharyya

See page 77

Principles of Fluid Mechanics and Fluid Machines (Third Edition)

N Narayana Pillai

See page 88

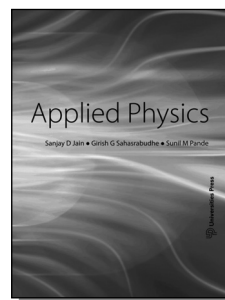### Revolution in Project Management

A Sivathanu Pillai

See page 79

APPLIED PHYSICS

NEW

Applied Physics

Sanjay D Jain, Girish G Sahasrabudhe & Sunil M Pande

- *Caters to the needs of first- and second-semester undergraduate engineering students and is fully syllabus-compliant*
- Rekindles the interest of engineering students in physics by bringing to the fore the close links between physics and engineering.
- Uses charts to facilitate a quick understanding of how different topics are related, thereby providing a comprehensive and holistic picture of the subject.
- Use of boxes and highlighted texts to draw readers' attention to important derivations, formulas and special topics that look beyond the syllabus.
- A wide selection of *numerical problems, many drawn from earlier examination papers, for providing adequate problem-solving practice.*

Contents: What is Light? ⬧ Interference ⬧ Polarisation ⬧ Quantum Physics ⬧ Semiconductor Physics ⬧ Diodes and Transistors ⬧ Crystal Structure ⬧ Charged Particles in Electric and Magnetic Fields ⬧ Lasers ⬧ Fibre Optics ⬧ Introduction to Nanotechnology

2013	360 pp.	Paperback
978-81-7371-773-4		₹ 325.00

Engineering Physics

Sanjay D Jain & Girish G Sahasrabudhe

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 5 special features:

Special Features: The historical development of the subject is traced to show interesting links between the various topics ◆ Theory and experiment are integrated and learning through scientific method is emphasised by seeking agreement between theory and experiment ◆ Experiments 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.

Contents: Physics and Engineering ◆ What is Light? ◆ Interference ◆ Diffraction ◆ Polarisation ◆ Quantum Physics ◆ Atomic Physics ◆ Nuclear Physics ◆ Structure and Properties of Matter ◆ Dielectric and Magnetic Materials ◆ Conductors, Semiconductors and Superconductors ◆ Diodes and Transistors ◆ Charged Particles in Electric and Magnetic Fields ◆ Lasers ◆ Fibre Optics ◆ Acoustics ◆ *Applications Index*

Introduction to Mechanics

Mahendra K Verma

Introduction to Mechanics offers a modern introduction to Newtonian dynamics and the basics of special relativity. Along with a discussion of standard topics—Newton's laws of motion, energy, linear and angular momentum, rigid body dynamics, oscillations—modern topics like symmetries, phase space, nonlinear dynamics and chaos have also been introduced.

Newton's equation of motion is presented as a differential equation—this brings out key issues like phase space and determinism in mechanical systems and helps introduce modern research topics like chaos theory in a natural way. Key assumptions of Newtonian mechanics have been highlighted and numerical solutions of many mechanical systems using Matlab have been incorporated.

Students are urged to work out the *exercises and projects given at the end of each chapter* so as to obtain a thorough understanding of the subject.

Contents: *Preface* ◆ Notation ◆ History of mechanics ◆ Newton's laws of motion ◆ Forces ◆ Kinematics vs. dynamics ◆ Motion in one dimension ◆ Phase space description of mechanical systems ◆ Symmetry properties of Newton's equation ◆ Two-dimensional motion; central force problem ◆ Three-dimensional motion ◆ Motion in a noninertial reference frame ◆ Energy ◆ Conservation of linear momentum and centre of mass ◆ Collisions ◆ Simple harmonic motion ◆ Nonlinear oscillations and chaos ◆ Waves: Oscillations in continuous media ◆ Angular momentum ◆ Rigid body dynamics ◆ Special theory of relativity: Kinematics ◆ Relativistic dynamics ◆ Epilogue ◆ *Appendix A: Present paradigm of physics and science* ◆ *Appendix B: Dimensional analysis and estimation* ◆ *Appendix C: Numerical solution of differential equations* ◆ *Appendix D: Matlab and Octave* ◆ *Appendix E: Vectors and tensors* ◆ *Appendix F: Vector operations on vector and scalar fields* ◆ *Appendix G: Important astronomical data* ◆ *Appendix H: Important physical constants* ◆ *References* ◆ *Index*

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

Optical Communication

M Mukunda Rao

Physics of Semiconductor Devices
(Revised Edition)

Dilip K Roy

Statistical Mechanics: An Elementary Outline
(Revised Edition)

Avijit Lahiri

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*

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

| 2008 | 290 pp. | Paperback |
| 978-81-7371-614-0 | | ₹ 325.00 |

Thermal Imaging Technology: Design and Applications

R N Singh

Thermal imaging technology, traditionally a favourite of the military, has made wide inroads into the civilian sector in recent years. The easy availability of a variety of infrared detectors has helped this proliferation. *Thermal Imaging Technology: Design and Applications is an up-to-date account of two important and often inadequately covered aspects of the subject—design of thermal imagers and applications of thermal imaging.* The book looks at all the aspects of design of thermal imagers—from the basic system requirements to factors affecting the choice of detectors, detector materials and types, modelling and development of various design equations/parameters such as sensitivity and resolution, and the associated techniques of infrared optics, signal processing, display, testing, optomechatronics and multisensor data fusion. The steps involved in the design are presented without the aid of design tools such as the NVTherm model or the FLIR-92 model. Examples of applications of thermal imaging in varied fields, primarily military, but increasingly in remote sensing, medical imaging, astronomy, space missions, fault detection and security in industry, etc., bring home the immense potential of this technology. The book provides an interesting insight into the phenomenon of mirages in IR and looks at the effect of the same on image quality. *The book adopts an engineering-oriented rather than a theoretical approach, but enough basic physics has been included to cater to the requirements of a beginner. Graduate students of physics, amateur designers and specialists in the*

area dealing with design, testing and fabrication of thermal imagers will find the wide ranging discussions on thermal imaging useful.

Contents: *Preface* ◈ *Acknowledgements* ◈ *Introduction* ◈ Thermal Targets, Backgrounds and Atmospheric Obscuration ◈ Thermal Imaging System: Types, Design and Analysis ◈ Optics Technologies: Salient Features of Infrared Optics ◈ IR Detectors in Thermal Imaging: State-of-the-Art ◈ Electronics Module: Signal and Image Processing ◈ Staring Array Thermal Imager Electronics ◈ System Evaluation and Performance Testing ◈ Applications of Thermal Imagers ◈ Multisensor Fusion and Tactical Battlefield ◈ *Reference* ◈ *Appendix* ◈ *Index*

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

2009	396 pp.	Paperback
978-81-7371-663-8		₹ 1095.00

Wavelets: Theory, Applications, Implementation

M V Altaisky

See page 75

AUTOMOBILE ENGINEERING

Computer Simulation of Compression-Ignition Engine Processes

V Ganesan

See page 84

Computer Simulation of Spark-Ignition Engine Processes

V Ganesan

See page 84

Engineering Optimization: A Modern Approach

Rangan Ganguli

See page 56

Industrial Psychology

Dipak Kumar Bhattacharyya

See page 77

BIOMEDICAL ENGINEERING

Principles of Medical Electronics and Biomedical Instrumentation

C Raja Rao & S K Guha

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*

2000	288 pp.	Paperback
978-81-7371-257-9		₹ 350.00

Short Introduction to Biomedical Engineering, A

S N Sarbadhikari

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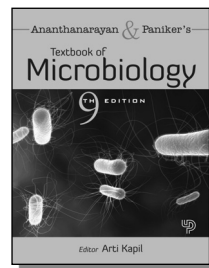
Distributed worldwide (except India) by CRC Press LLC, USA, Taylor and Francis Group

2006	276 pp.	Paperback
978-81-7371-558-7		₹ 310.00

Ananthanarayan and Paniker's Textbook of Microbiology
(Ninth Edition)

Arti Kapil (Ed.)

This famous textbook was conceived in the early 1970s by two of the renowned Indian educators and professors of Microbiology. The first edition, published in 1978, was a masterpiece of clarity and uniformity of style. Although the format and presentation have seen many changes in the eight subsequent editions, the authors' original vision and objectives remain. More than three and a half decades after its first publication, the book continues to inform and educate students and teachers.

The ninth edition has been completely updated and revised. In accordance with advances in the field, the sections on Immunology, Mycology and Clinical Microbiology have been given due prominence. To better prepare students for clinical situations, case studies, approach to treating common diseases and algorithms and flowcharts have been included. Practice questions that mirror those that frequently appear in examinations have been provided at the end of every chapter.

The presentation and layout has been tailored to help students absorb information quickly, as greater demands are placed on their time. Illustrations and photographs have been improved to enable ease of learning and retention of information.

Contents: *Part I:* General Microbiology: ◆ Introduction and Bacterial Taxonomy ◆ Morphology and Physiology of Bacteria ◆ Sterilisation and Disinfection ◆ Culture Media ◆ Culture Methods

◈ Identification of Bacteria ◈ Bacterial Genetics ◈ *Part II:* Immunology: Infection ◈ Immunity ◈ Antigens ◈ Antibodies—Immunoglobulins ◈ Antigen–Antibody Reactions ◈ Complement System ◈ Structure and Functions of the Immune System ◈ Immune Response ◈ Hypersensitivity ◈ Immunodeficiency Diseases ◈ Autoimmunity ◈ Immunology of Transplantation and Malignancy ◈ Immunohematology ◈ *Part III:* Bacteriology ◈ Staphylococcus ◈ Streptococcus ◈ Streptococcus Pneumoniae ◈ Neisseria ◈ Corynebacterium ◈ Bacillus ◈ Anaerobic Bacteria I: Clostridium ◈ Anaerobic Bacteria II: Non-sporing Anaerobes ◈ Enterobacteriaceae I: Coliforms–Proteus ◈ Enterobacteriaceae II: Shigella ◈ Enterobacteriaceae III: Salmonella ◈ Vibrio ◈ Pseudomonas ◈ Yersinia, Pasteurella, Francisella ◈ Haemophilus ◈ Bordetella ◈ Brucella ◈ Mycobacterium I: M.tuberculosis ◈ Mycobacterium II: Non-Tuberculous Mycobacteria (NTM) ◈ Mycobacterium III: M.leprae ◈ Spirochetes ◈ Mycoplasma ◈ Actinomycetes ◈ Miscellaneous Bacteria ◈ Rickettsiaceae ◈ Chlamydiae ◈ *Part IV:* Virology ◈ General Properties of Viruses ◈ Virus–Host Interactions: Viral Infections ◈ Bacteriophages ◈ Poxviruses ◈ Herpesviruses ◈ Adenoviruses ◈ Picornaviruses ◈ Orthomyxoviruses ◈ Paramyxoviruses ◈ Arboviruses ◈ Rhabdoviruses ◈ Hepatitis Viruses ◈ Miscellaneous Viruses ◈ Oncogenic Viruses ◈ Human Immunodeficiency Virus: AIDS ◈ *Part V:* Medical Mycology ◈ General Aspects ◈ Superficial and Subcutaneous Mycoses ◈ Systemic and Opportunistic Mycoses ◈ *Part VI:* Applied Microbiology ◈ Normal Microbial Flora of the Human Body ◈ Bacteriology of Water, Air, Milk and Food ◈ Laboratory Control of Antimicrobial Therapy ◈ Immunoprophylaxis ◈ Healthcare-associated Infections ◈ Biomedical Waste Management ◈ Emerging and Re-emerging Infections ◈ Recent Advances in Diagnostic Microbiology ◈ *Part VII:* Clinical Microbiology ◈ Bloodstream Infections ◈ Respiratory Tract Infections ◈ Meningitis ◈ Urinary Tract Infections ◈ Sexually Transmitted Infections ◈ Diarrhea and Food Poisoning ◈ Skin and Soft Tissue Infections ◈ Pyrexia of Unknown Origin ◈ Zoonoses ◈ *Further Reading* ◈ *Index*

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

2013	720 pp.	Paperback
978-81-7371-889-2		₹ 725.00

Bioinformatics and Bioprogramming in C

L N Chavali

Bioinformatics: Basics, Algorithms and Applications

Ruchi Singh & Richa Sharma

Cell Biology

Channarayappa

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*

2010	624 pp.	Paperback
978-81-7371-716-1		₹ 975.00

Concepts in Biotechnology
(Second Edition)

D Balasubramanian, C F A Bryce,
K Dharmalingam, J Green &
Kunthala Jayaraman

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		₹ 550.00

Molecular Biotechnology: Principles and Practices

Channarayappa

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		₹ 925.00

Plant Biotechnology: Methods in Tissue Culture and Gene Transfer

R Keshavachandran & K V Peter (Eds)

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		₹ 395.00

Plant Tissue Culture: Basic and Applied

Timir Baran Jha & Biswajit Ghosh

Plant tissue culture in one form or another has become one of the most promising branches of plant science. Arising from the totipotency of plant cells, it now occupies a key position in plant breeding, plant propagation and plant biotechnology.

Plant Tissue Culture: Basic and Applied brings to the student accessible, up-to-date information on this subject. Basic knowledge of tissue culture methods such as isolation of suitable tissues from the mother plant, maintenance of the tissues under *in vitro* condition in an undifferentiated or de-differentiated stage, methods of genetic engineering and gene transfer, chromosomal studies and the handling of *in vitro* micro plants are described in detail in this book. Similarly, application aspects of micropropagation, haploid cell culture, protoplast culture, embryo culture, somatic embryogenesis and artificial seeds are also discussed.

Contents: *Preface* ❖ History of Plant Tissue Culture ❖ Practical Aspects of Plant Tissue Culture ❖ Callus and Cell Suspension Culture ❖ Micropropagation ❖ Protoplast Culture and Somatic Hybridisation ❖ Anther Pollen and Ovary Culture ❖ Somatic Embryogenesis and Artificial Seeds ❖ Embryo and Endosperm Culture ❖ Somaclonal Variation ❖ Production of Natural Products by Plant Cell, Tissue and Organ Culture ❖ Biodiversity and Conservation of Germplasm ❖ Chromosome Analysis in Plant Tissue Culture ❖ Genetic Engineering ❖ Genetic Transformation ❖ Transgenics ❖ *Additional Reading* ❖ *Index*

2005	232 pp.	Paperback
978-81-7371-488-7		₹ 325.00

Practical Biotechnology: Methods and Protocols

S Janarthanan & S Vincent

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		₹ 195.00

Principles and Practice of Animal Tissue Culture (Second Edition)

Sudha Gangal

The technology of cell, tissue and organ culture is of primary importance in the development of the biotechnology industry. Major advances in the biological sciences have been possible, at least partially, due to this technology. *Principles and Practice of Animal Tissue Culture* provides basic information on the technology of animal tissue culture and discusses several specialised techniques. The book is well supported by relevant graphs and photographs of equipment and cultured tissues.

The book is a comprehensive practical guide that emphasises 'good laboratory practices'. Protocols, aseptic techniques, media preparation and data have been systematically presented to be of help primarily to students of biotechnology. *The second edition of this book includes a new chapter on Primary Culture of Chick Embryo Fibroblasts written in the same lucid style.*

Special Features: The book explains: The principles of animal tissue culture in simple terms ⬩ How to set up a laboratory for tissue culture in India with the equipment and facilities available locally ⬩ The procedures for various experiments and specialised techniques in a clear and lucid manner ⬩ How to use a primary culture to help in the study of cell–cell interactions, maintenance of functional ability of cells and effect of external stimuli of cell functions (in the new chapter) ⬩ Various methods with the help of photographs and drawings of equipment in twenty colour plates

Contents: *Introduction* ⬩ Designing the tissue culture laboratory ⬩ Equipping the tissue culture laboratory ⬩ Glassware and plasticware used for tissue culture ⬩ Aseptic techniques ⬩ Sterilisation of materials to be used for tissue culture ⬩ Tissue culture media

❖ Types of tissue culture ❖ Organ and organotypic cultures ❖ Primary cultures ❖ Transformation, differentiation and dedifferentiation ❖ Culture of cell lines ❖ Protocols for routine characterisation of cell lines ❖ Specialised techniques in tissue culture ❖ Stem cells cultures ❖ Autoradiography of cultured cells ❖ Cytogenic analysis of cultured cells ❖ Flow cytometric analysis of lymphocytes and cultured cells ❖ Hybridoma cultures to generate monoclonal antibodies ❖ Laser confocal microcsopy and its application in cell biology ❖ Primary culture of chick embryo fibroblasts ❖ Troubleshooting

2010	248 pp.	Paperback
978-81-7371-719-2		₹ 295.00

Textbook of Basic and Clinical Immunology

Sudha Gangal & Shubhangi Sontakke

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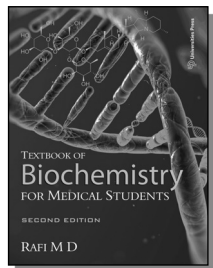
Available in print and e-book formats. For details, visit www.universitiespress.com.

2013	572 pp	Paperback
978-81-7371-829-8		₹ 800.00

Prices are subject to change without notice

NEW

Textbook of Biochemistry for Medical Students
(Second Edition)

Rafi MD

This second edition of this book is extensively revised. It now covers the complete syllabus prescribed by the Medical Council of India for the MBBS course. Although it is designed as a basic textbook for the undergraduate student, it has resource material for postgraduates and advanced learners in biochemistry and medicine.

The topics are developed in a manner that encourages the student to develop analytical ability as opposed to memory-based learning. Each chapter begins with At a glance which gives a bird's eye view of the content, thus facilitating better comprehension of the whole. At the end of each chapter, MCQs, Clinical case studies, Problem-based exercises and Riddles have been given. These will be of immense help to the students preparing for various competitive examinations in India and abroad that include USMLE, PLAB, and All India MD/MS entrance examinations.

Contents: *Preface to the Second Edition* ⬧ *Preface to the First Edition* ⬧ Section I: Prelude ⬧ Section II: Molecules of Life ⬧ Section III: Physiological Biochemistry ⬧ Section IV: Metabolism ⬧ Section V: Nutrition ⬧ Section VI: Clinical Biochemistry ⬧ Section VII: Molecular Biology and Nuclear Chemistry ⬧ Section VIII: Biotechnology and Biochemical Techniques ⬧ Section IX: Biochemical Perspective of Endocrinology ⬧ Section X: Contemporary Topics ⬧ *Key to MCQs* ⬧ *Appendix* ⬧ *Index*

2014	816 pp.	Paperback
978-81-7371-936-3		₹ 895.00

Textbook of Practical Physiology
(Third Edition)

G K Pal, Pravati Pal

For almost ten years, the Textbook of Practical Physiology has helped students acquire the knowledge and skills required to perform the investigations that form an intrinsic part of this subject. In the third edition, all the chapters have been thoroughly revised and the concepts updated. A new chapter on the spectral analysis of heart rate variability has been added. This is the first textbook in medicine to introduce this topic as a text for medical students. Apart from this, the feedback received from students and teachers has been given due importance and is reflected in this edition.

Special Features: New chapter on spectral analysis of heart rate variability ⬧ Updated chapters ⬧ Simple language ⬧ Numerous illustrations to enhance clarity ⬧ Viva and OSPE questions ⬧ Updated bibliography.

Content: Section I: Hematology ⬧ Introduction to Hematology ⬧ Collection of Blood Samples ⬧ Estimation of Hemoglobin Concentration ⬧ Determination of Hematocrit ⬧ Study of the Compound Microscope ⬧ Hemocytometry ⬧ Total RBC Count ⬧ Determination of Red Blood Cell Indices ⬧ Total Leucocyte Count ⬧ Preparation and Examination of Blood Smear ⬧ Differential Leucocyte Count ⬧ Arneth Count ⬧ Absolute Eosinophil Count ⬧ Determination of Erythrocyte Sedimentation Rate ⬧ Determination of Blood Group ⬧ Osmotic Fragility of Red Cells ⬧ Determination of Bleeding Time and Coagulation Time ⬧ Platelet Count ⬧ Reticulocyte Count ⬧ Section II: Human Experiments ⬧ General Principles of Clinical Examination ⬧ General Examination Respiratory System ⬧ Stethography ⬧ Clinical Examination of the Respiratory System ⬧ Effect of Posture on Vital Capacity ⬧ Pulmonary Function Tests Gastrointestinal System ⬧ Clinical Examination of the Gastrointestinal System Cardiovascular System ⬧ Electrocardiography ⬧ Clinical Examination of the Radial Pulse ⬧ Arterial Pulse Tracing ⬧ Measurement of Blood Pressure ⬧ Effect of Posture on Blood Pressure and Heart Rate ⬧ Effect of Exercise on Blood Pressure and Heart Rate ⬧ Clinical Examination of the Cardiovascular System ⬧ Systolic Time Intervals Nerve and Muscle ⬧ Nerve Conduction Study ⬧ Electromyography ⬧ Mosso's

Ergography Nervous System ❖ Clinical Examination of the Sensory System ❖ Clinical Examination of the Motor System ❖ Clinical Examination of the Cranial Nerves ❖ Autonomic Function Tests ❖ Spectral Analysis of Heart Rate Variability ❖ Brainstem Auditory Evoked Potential ❖ Visual Evoked Potential ❖ Somatosensory Evoked Potential ❖ Motor Evoked Potential Special Senses ❖ Perimetry ❖ Visual Acuity ❖ Colour Vision ❖ Hearing Tests ❖ Examination of Taste and Smell Reproductive System ❖ Semen Analysis ❖ Pregnancy Diagnostic Tests ❖ Section III: Amphibian Experiments ❖ Experiments on Frog's Nerve and Muscle ❖ Appliances ❖ Nerve–Muscle Preparation ❖ Study of Reactivity of Tissues ❖ Simple Muscle Twitch ❖ Effect of Temperature on Simple Muscle Twitch ❖ Effect of Increasing Strength of Stimuli on Muscle Contraction ❖ Effect of Two Successive Stimuli on Muscle Contraction ❖ Genesis of Tetanus ❖ Genesis of Fatigue ❖ Effect of Load on Muscle Contraction ❖ Isometric Contraction ❖ Conduction Velocity of Nerves in Frogs Experiments on Frog's Heart and Blood Vessels ❖ Normal Cardiogram of Frog ❖ Effect of Temperature on Frog's Heart ❖ Effect of Stannius Ligature on Frog's Heart ❖ Properties of the Cardiac Muscle ❖ Effect of Stimulation of Vagosympathetic Trunk on Frog's Heart ❖ Effect of Nicotine and Atropine on Frog's Heart ❖ Perfusion of Frog's Heart and Effect of Drugs and Ions ❖ Perfusion of Blood Vessels of the Frog ❖ Capillary Circulation in the Frog Experiments on Frog's Nervous System ❖ Postural Reflexes in the Frog ❖ Section IV: Mammalian Experiments ❖ Perfusion of Isolated Heart of Rabbit by Langendorff's Method ❖ Effect of Drugs and Ions on Isolated Mammalian Intestine ❖ Effect of Drugs on Mammalian Uterine Contraction ❖ Estrus Cycle in Rats ❖ Demonstrations of Experiments in the Anesthetised Dog ❖ Index of normal values ❖ Bibliography ❖ Index

| 2010 | 452 pp. | Paperback |
| 978-81-7371-671-3 | | ₹ 395.00 |

FORTHCOMING

Textbook of Molecular Biology

Channarayappa

The study of molecular biology should proceed from an understanding of the flow of information through the genetic systems in cells. This approach, or through the 'central dogma', provides a firm grasp of the molecular processes that are involved in various cellular operations like protein synthesis and cancer mutagenesis.

- -

CHEMICAL ENGINEERING

Basic Engineering Thermodynamics

A Venkatesh

See page 83

. . . .

Chemical and Electrochemical Energy Systems

R Narayan & B Viswanathan

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

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-t relations 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		₹ 550.00

Solutions Manual for Chemical Engineering Thermodynamics

Y V C Rao

This book is a very useful reference that *contains worked-out solutions for all the exercise problems in the book Chemical Engineering Thermodynamics* by the same author. Step-by-step solutions to all exercise problems are provided and solutions are explained with detailed and extensive illustrations. It will come in handy for all teachers and users of *Chemical Engineering Thermodynamics*.

1998	264 pp.	Paperback
978-81-7371-087-2		₹ 275.00

Chemical Process Calculations

K Asokan

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		₹ 350.00

Engineering Chemistry

NB Singh, SS Das & Kalpana Singh

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.

Contents: Chemical Bonding and States of Matter ❖ Reaction Kinetics, Phase Rule and Electrochemistry ❖ Structural and Mechanistic Concepts of Organics ❖ Polymers and Organometallics ❖ Analytical Methods and Fuels

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

2012	456 pp	Paperback
978-81-7371-810-6		₹ 175.00

Engineering Optimization: A Modern Approach

Ranjan Ganguli

Fuel Cells: Principles and Applications

B Viswanathan & M Aulice Scibioh

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		₹ 650.00

Fuels and Combustion
(Third Edition)

Samir Sarkar

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		₹ 410.00

Industrial Psychology

Dipak Kumar Bhattacharyya

See page 77

Mass Transfer Concepts

K Asokan

- 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 homogenous 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 | | ₹ 450.00 |

Understanding Combustion
(Second Edition)

H S Mukunda

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.

Contents: *Preface to the Second Edition* ◆ *Preface to the First Edition* ◆ *Symbols* ◆ Why should One Attempt to Understand Combustion? ◆ What Do We Burn and Why? ◆ Chemistry and Stoichiometry ◆ How Much Heat? How High a Temperature? ◆ How Does a Reaction Proceed? At What Rate? ◆ Premixed Flames ◆ Inflammability, Quenching ◆ Ignition ◆ Stability, Extinction and Blow-Off of Flames ◆ Diffusion Flames-Gaseous Burner Flames, Droplet Combustion, Boundary Layer Combustion ◆ Flames-Premixed or Diffusion ◆ Combustion in

Rocket ◆ Stoves, Burners, Combustors and Their Efficiency ◆ Fire Spread and Fire Prevention ◆ Solid Fuels: Combustion and Gasification ◆ Emissions from Combustion Systems ◆ Explosives - Solid and Liquid ◆ Is There More to Understand? ◆ *Further Reading*
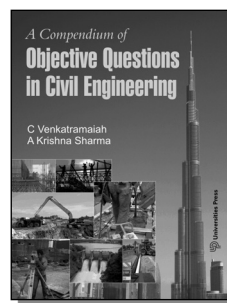
| 2009 | 184 pp. | Paperback |
| 978-81-7371-685-0 | | ₹ 295.00 |

CIVIL ENGINEERING

NEW

Compendium of Objective Questions in Civil Engineering, A

C Venkatramaiah and A Krishna Sharma

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 ◆ 2 Strength of Materials and Elements of Structural Analysis ◆ 3 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
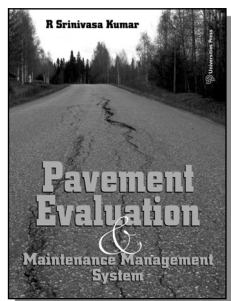
◆ Mechanics of Fluids ◆ Hydraulic Machinery ◆ Hydrology and Irrigation Engineering

2014	496 pp.	Paperback
978-81-7371-933-2		₹ 475.00

Pavement Evaluation and Maintenance Management System

R Srinivasa Kumar

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		₹ 995.00

Transportation Engineering: Railways, Airports, Docks and Harbours

R Srinivasa Kumar
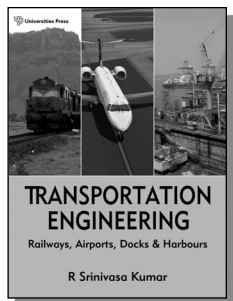
In a first course in transportation engineering at the undergraduate level, the various aspects of road transportation, particularly highway engineering, are generally covered in detail. This book extends the discussion to other critical components of the transportation system, namely railways, airways 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		₹ 370

Civil Engineering Contracts and Estimates (Third Edition)

B S Patil

Contracts and estimates, two important aspects of civil engineering, are dealt with here. Thoroughly revised and updated, the book deals in the first part with legal aspects, project scheduling, and updated material on tenders and contracts. The second part deals with costs and prices, and discusses a variety of projects such as residential construction, building of bridges and laying of railway tracks.

Contents: *Volume 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* ◆ *Bibliography*

Volume 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 ◆ *Estimates II:* A Two Span Arch Bridge ◆ *Estimates III:* Estimates of Earthwork and Roads ◆ *Estimates IV:* Estimates of Canals

2006	516 pp.	Paperback
978-81-7371-559-4		₹ 495.00

Disaster Management

Harsh K Gupta (Ed.)

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		₹ 470.00

Disaster Management: Global Challenges and Local Solutions

Rajib Shaw & R R Krishnamurthy

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 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		₹ 695.00

Engineering Geology

Kanithi Vasudev

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		₹ 350.00

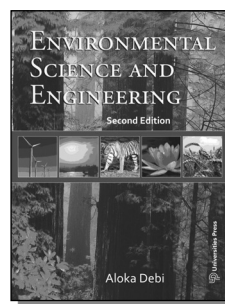## Engineering Mechanics

M V Seshagiri Rao & D Ramadurgaiah

Engineering Optimization: A Modern Approach

Ranjan Ganguli

Environmental Science and Engineering
(Second Edition)

Aloka Debi

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.

This book discusses the *acts and laws* that govern pollution and provides a number of relevant *case studies*. It also

• suggests *solutions* to the environmental problems and provides *extensive exercises*. It is based on the *undergraduate syllabus prescribed by the UGC* for engineering students throughout India.

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		₹ 275.00

Finite Element Analysis and Procedures in Engineering

H V Lakshminarayana

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		₹ 325.00

Finite Element Analysis for Engineering and Technology

With CD-ROM

Tirupathi R Chandrupatla

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		₹ 350.00

First Course in Fluid Mechanics, A

S Narasimhan

See page 86

Foundations of Engineering Geology
(Second Edition)

Tony Waltham

The second edition of this well-established book provides a readable and highly-illustrated overview of the aspects of geology that are significant to civil engineers. Sections in the book include those devoted to the main rock types, weathering, ground investigation, rock mass strength, failure of old mines, subsidence on peats and clays, sinkholes on limestone and chalk, water in landslides, slope stabilisation and understanding ground conditions. The roles of both natural and man-induced processes are assessed, and this understanding is developed into an appreciation of the geological environments potentially hazardous to civil engineering and construction projects. For each style of difficult ground, available techniques of site investigation and remediation are reviewed and evaluated. Each topic is presented as a double page spread with a careful mix of text and diagrams, with tabulated reference material on parameters such as bearing strength of soils and rocks.

Contents: Geology ❖ Igneous Rocks ❖ Surface Processes ❖ Sedimentary Rocks ❖ Metamorphic Rocks ❖ Geological Structures ❖ Geological Maps ❖ Map Interpretation ❖ Tectonics ❖ Boundary Hazards ❖ Rocks of Britain ❖ Rocks of the US ❖ Weathering and Soils ❖ Floodplains and Alluvium ❖ Glacial Deposits ❖ Climatic Variants ❖ Coastal Processes ❖ Groundwater ❖ Ground Investigation ❖ Desk Study ❖ Ground Investigation Boreholes ❖ Geophysical Surveys ❖ Assessment of Difficult Ground ❖ Rock Strength ❖ Rock Mass Strength ❖ Soil Strength ❖ Ground Subsidence ❖ Subsidence on Clays ❖ Subsidence on Limestone ❖ Subsidence Over Old Mines ❖ Mining Subsidence ❖ Slope Failure and Landslides ❖ Water in Landslides ❖ Soil Failures and Flowslides ❖ Landslide Hazards ❖ Slope Stabilization ❖ Ground Conditions ❖ Rock Excavation ❖ Tunnels in Rock ❖ Stone and Aggregate. Appendices ❖ Rock Mass Quality Q

System ❖ Abbreviations and Notation ❖ *Further Reading* ❖ *Index*

2002	102 pp.	Paperback
978-04-154-6959-3		₹ 485.00

Fundamentals of Computational Fluid Dynamics

Tapan K Sengupta

See page 58

Fundamentals of Remote Sensing
(Second Edition)

George Joseph

This book presents the fundamental concepts covering various stages of remote sensing from data collection to end utilisation, so that it can be appreciated irrespective of the discipline in which the reader has graduated. The physical principles on which remote sensing are based has been explained without getting into complicated mathematical equations. The *second edition* has major additions in Chapter 11, dealing with the applications of remote sensing. Four more themes have been added. Some basic concepts of advanced data classification techniques have been added in Chapter 10. The latest advancement in IRS series has also been reflected. In order to benefit those who are familiarising themselves with the subject for the first time, a list of acronyms and abbreviations has been added.

Contents: *Foreword* ❖ *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 ❖ Platform ❖ Data Reception and Data Products ❖ Data Analysis ❖ Application of Remote Sensing for Earth Resource Management ❖ GIS

2005	488 pp.	Paperback
978-81-7371-535-8		₹ 475.00

Gas Tables
(Third Edition)

Ethirajan Rathakrishnan

See page 2

Geographical Information Science

Narayan Panigrahi

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		₹ 350.00

Graphical Methods in Structural Analysis

D S Prakash Rao

The book deals with the graphical analysis of various structures such as beams, plane and space trusses, and arches. Deflection analysis of beams and plane trusses is also included in this book. Mohr's stress and strain circles are discussed along with the extension to three-dimensional problems. The application of Mueller–Breslau's principle to develop influence lines to a large range of structures (beams, arches, trusses and

frames) is discussed in detail. Both statically determinate and indeterminate structures are included in the discussions.

Contents: Equilibrium of forces ⬧ Flexural analysis of beams ⬧Analysis of trusses ⬧ Deflections in plane trusses ⬧ Deflections in beams ⬧ Arches ⬧ Space structures ⬧ Influence lines ⬧ Stress and strain analysis ⬧ *Answers to problems* ⬧ *References* ⬧ *Index*

1997	200 pp.	Paperback
978-81-7371-046-9		₹ 275.00

Guide to Soil Mechanics, A

Malcolm D Bolton

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		₹ 495.00

Handbook of Fire Technology, A

R S Gupta

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		₹ 395.00

Introduction to Geomorphology

Vishwas S Kale and Avijit Gupta

This book is an introductory text on geomorphology, the science of land reforms. The purpose of this book is to introduce modern geomorphology to the University students in India. The authors have explained the state-of-the art concepts and methodology, using, so far as possible, case studies from India. In that sense this book is probably unique, being a departure from the other available textbooks that use examples from outside the tropics , and mostly from North America and Western Europe.

In the last fifty years, geomorphology has discarded the traditional approach and revitalised itself with a greater understanding of processes. The book reflects this change by explaining both process geomorphology and its application. *This book is designed to be comparable with other textbooks in the international market but at the same time, is tailored specifically for India. The book is profusely illustrated with line drawings and photographs. All the chapters end with a set of probing questions.*

The book is an essential reading for all students of geography, geology and environmental sciences, with a special interest in tropical world.

Contents: *Preface* ◆ *Introduction* ◆ Geomorphology: A brief history of geomorphology ◆ Geomorphology in the tropics ◆ Types and tools ◆ Basic concepts ◆ *References* ◆ *Questions* ◆ Structure, Lithology and Time: *Introduction* ◆ Interior of the Earth ◆ Rocks and minerals ◆ Rock deformation and weakness ◆ Plate tectonics and Earth's surface configurations ◆ Geologic time ◆ *References* ◆ *Questions* ◆ Weathering and Soil Formation: *Introduction* ◆ Processes of weathering ◆ Products of weathering ◆ Vertical zonation ◆ Soil and its formation ◆ *Conclusion* ◆ *References* ◆ *Questions* ◆ *Introduction to Hydrology:* Hydrology ◆ The hydrologic cycle ◆ Hydrological

input and output ❖ Stream flow ❖ Ground water ❖ *Conclusion* ❖ *References* ❖ *Questions*

2010	274 pp.	Paperback
978-81-7371-720-8		₹ 350.00

Introduction to Soil Reinforcement and Geosynthetics, An

G L Sivakumar Babu

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		₹ 325.00

Introduction to Strength of Materials

D S Prakash Rao

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		₹ 225.00

Manual of Tropical Housing and Building: Climatic Design

O H Koenigsberger, T G Ingersoll, Alan Mayhew & S V Szokolay

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		₹ 395.00

Mechanics of Composite Materials and Structures

Madhujit Mukhopadhyay

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		₹ 495.00

Mine Disasters and Mine Rescue

M A Ramlu

This book provides a comprehensive treatment of the subject of mine disasters and mine rescue. It draws on the author's nearly thirty years of teaching and research experience and his abiding interest in mine safety. It deals with the hazards constantly posed by fires, explosions, coal and gas outbursts and inundations in mines. It is a self-contained reference manual accommodating recent developments in mine rescue equipment in India and abroad.

Contents: *Preface to Second edition* ◆ *Preface to First edition* ◆ Mine Fires ◆ Mine Explosions ◆ Mine Gases ◆ Outbursts of Coal and Gas ◆ Sampling of Mine Atmospheres and Interpretation of their Analyses ◆ Reopening of Sealed-off Areas in Mines ◆ Mine Rescue ◆ Water Inundations ◆ *APPENDIX 1 Coalmines Regulations 1957* ◆ *APPENDIX 2 Mines Rescue Rules, 1985* ◆ *Reference* ◆ *Index*

2006	460 pp.	Paperback
978-81-7371-573-0		₹ 695.00

Numerical Examples, Problems and Objective Questions in Geotechnical Engineering

A V Narasimha Rao & C Venkatramaiah

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

Compendium of Objective Questions in Civil Engineering, A

C Venkatramaiah and A Krishna Sharma

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 ◆

www.universitiespress.com

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		₹ 475.00

NEW

Pavement Design

R Srinivasa Kumar

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		₹ 350.00

Principles of Fluid Mechanics and Fluid Machines
(Third Edition)

N Narayana Pillai

Recent Advances in Structural Engineering

K S Jagadish & R N Iyengar (Eds)

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		₹ 725.00

Remote Sensing and Its Applications

L R A Narayan

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	234 pp.	Paperback
978-81-7371-268-5		₹ 450.00

Strength of Materials
(Third Edition)

B S Basavarajaiah & P Mahadevappa

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		₹ 475.00

Strength of Materials: A Practical Approach
(Volume 1)

D S Prakash Rao

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		₹ 550.00

Structural Analysis: A Unified Approach

D S Prakash Rao

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		₹ 575.00

Structural Design and Drawing
(Third Edition)

N Krishna Raju

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	248 pp.	Paperback
978-81-7371-670-6		₹ 425.00

Textbook of Environmental Studies for Undergraduate Courses
(Second Edition)

Erach Bharucha

'Environmental studies' has become an undisputed requirement in the **syllabi of all undergraduate courses**. The first edition of this textbook was the outcome of the efforts of the Expert Committee constituted by the UGC in response to the directive given by the

Supreme Court of India, on the necessity for a basic course on the environment. The Second Edition has incorporated the feedback from the students and faculty to make it more user-friendly.

Salient Features: Tailored precisely to suit the curriculum set down by the UGC ◆ Relevant new case studies, *examples, photographs and figures* make the book student and teacher-friendly ◆ The subject matter is presented in very simple and lucid language which makes the concepts clear to *Engineering, Arts, Science and Commerce students* alike ◆ The important aspect of *fieldwork* is included in Unit 8 ◆ *Flowcharts* have been introduced wherever required so that concepts are clearer in the students' minds ◆ The refrain of 'sustainable living' runs though the entire book, thus awakening the students to reality and suggests solutions for commonly encountered environmental issues ◆ *Questions* are provided at the end of each chapter to test comprehension.

Contents: *Foreword* ◆ *Preface to the Second Edition* ◆ *Preface to the First Edition* ◆ *Acknowledgements* ◆ Vision Core Module Syllabus for Environmental Studies for Undergraduate Courses of all Branches of Higher Education ◆ The Multidisciplinary Nature of Environmental Studies ◆ Natural Resources ◆ Ecosystems ◆ Biodiversity ◆ Pollution ◆ Social Issues and the Environment ◆ Human Population and the Environment ◆ Field Work ◆ The Need for Sustainable Development and Biodiversity Conservation for a New Emerging India ◆ *Multiple Choice Questions* ◆ *Websites* ◆ *Further Reading* ◆ *Index*

2013	324 pp.	Paperback
978-81-7371-862-5		₹ 225.00

Textbook of Highway Engineering

R Srinivasa Kumar

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		₹ 450.00

Textbook of Surveying
(Second Edition)

C Venkatramaiah

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

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

2011	616 pp	Paperback
978-81-7371-740-6		₹ 575.00

Theory of Plates

K Chandrashekhara

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		₹ 750.00

Thin Shells: Theory and Problems

J Raamachandran

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		₹ 475.00

FORThCOMING

Transportation Engineering, Volume 1: Highway and Traffic Engineering

C. Venkatramaiah

This is the first of the two-volume set on transportation engineering, a subject which is offered as a core paper in undergraduate civil engineering programmes in India. Volume 1 is devoted to highway engineering and covers survey, plan, design, construction and maintenance of highway roads. It also covers the economics of highway infrastructure and traffic engineering.

Electrical Engineering

Analysis of Thyristor Power-Conditioned Motors

S K Pillai

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 | | ₹ 295.00 |

Electromagnetic Fields

Y Mallikarjuna Reddy

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 | | ₹ 350.00 |

Engineering Optimization: A Modern Approach

Ranjan Ganguli

FORToming FORTHCOMING

Generalised Electrical Machine Theory, The
(Second Edition)

K Venkataratnam

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 generalised machine equations. The various machines are treated using the connecting matrices, transformation matrices, etc., and the small perturbation theory applied to study analytically the transients in such machines. Park's and Lewis transformations are introduced to convert the synchronous machine to primitive machine for the study of symmetrical and asymmetrical short circuits and other transients in synchronous machines. The concepts of motional impedance, synchronous and damping torques and hunting frequency calculations are included. The induction machine is treated in depth in various reference frames to study the starting transients, sudden short circuit and vector control. Symmetrical component theory is also developed in appropriate place to cover the unbalanced steady state operation of induction and synchronous machines. *Each major section in the book is followed by a set of solved and unsolved problems.*

Handbook of Electrical Power Distribution
(Second Edition)

Gorti Ramamurthy

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		₹ 825.00

FORTHCOMING

Handbook of Power and Distribution Transformer Practices

H Kailasaraman

This book, primarily aimed at practising power systems engineers, provides a complete body of information on practical aspects of power transformers. The book also includes a detailed review of the theory of transformers, which makes it suitable for an elective course in power systems. It contains in-depth coverage of the design and structural features of power transformers, practical aspects

of transportation, erection and commissioning of power transformers, tests to be performed on site before and after commissioning, principles of maintenance and operation as well as schemes for protecting transformers. The book *includes case studies* derived from the author's field experience, which provide valuable practical insights on the possible performance enhancements through design features and adherence to prescribed practices.

- -

Introductory AC Circuit Theory

K Mann & G J Russell

Oscillations play a very important part in modern physics, and AC theory, important as it is in its own right, provides the best introduction to the techniques common to all oscillatory problems. For this reason, this *text is oriented towards the needs of science students, and also provides a first course for electrical engineering students*. An elementary knowledge of field and DC circuit theory is assumed. The text provides two courses. A short course, covered in Chapters One to Six, is for those students who do not wish to proceed to the operator j methods treated in later chapters. The complete course provides the minimum requirements for a graduate in physics. The book gives a thorough grounding in the fundamental concepts as the basis of such a course.

Contents: *List of Symbols* ◆ Introduction ◆ Generation and Measurement of A.C. ◆ The Addition of Alternating Quantities ◆ Single Element Circuits ◆ Series Circuits ◆ Parallel Circuits ◆ Complex Methods ◆ Theorems ◆ A.C. Bridges ◆ Ideal Transformer ◆ *Appendices* ◆ *Answers* ◆ *Index*

2000	224 pp.	Paperback
978-81-7371-325-5		₹ 275.00

Physics of Semiconductor Devices
(Second Edition)

Dilip K Roy

Special Electrical Machines

K Venkataratnam

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		₹ 375.00

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

H W Whittington, B W Flynn & D E Macpherson,

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 ◆ Bodediagrams ◆ 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		₹ 375.00

Thermal Imaging Technology: Design and Applications

R N Singh

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*

1971	392 pp.	Paperback
978-81-7371-700-0		₹ 395.00

FOResignCOMING

Utilisation of Electric Energy in SI Units *(Second Edition)*

Openshaw Taylor, V V L Rao and Vivek Agarwal

This book, originally published in 937, was revised in 1971 by V V L Rao to convert the FPS system of measuremnts to SI units. But, over the last eight decades there has been revolutionary development in new technologies, particularly power electronics, which has resulted in a new paradigm for DC and AC drives. The techniques for starting, speed control and braking (regenerative braking, dynamic braking and plugging) have changed dramatically. In this thoroughly revised edition, all the existing topics have been updated with regard to the new developments in technology.. Besides that, new topics have been added, particularly economic aspects of power generation, electric hybrid vehicles, refrigeration and air conditioning and energy conservation, and the coverage expanded to meet the requirements of the present day curriculum.

Basic Electrical Engineering

N K De and Dipu Sarkar

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.

- -

Electromagnetics and Transmission Lines

Y Mallikarjuna Reddy

This book deals with time varying electromagnetics and transmission lines employed in carrying electromagnetic energy efficiently from one location to another. The principles of transmission lines find wide applications in high frequency circuit design. The book has been prepared according to JNTU syllabus.

ELECTRONICS AND COMMUNICATION ENGINEERING

FORTHCOMING

Basic Electronics for VTU

B Basavaraj and H N Shivashankar

Basic Electronics for VTU caters to the needs of first- and second-semester students of engineering courses offered by Visvesvaraya Technological University. Conforming to the revised VTU syllabus of 2014, the book walks the student through all the prescribed topics with clarity and academic rigour. Rich with fully solved problems and chapter-end exercises for practice, the book focuses on approaches that could maximise examination performance, while also going into the details to drive home core concepts.

Contents: *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 ◆ Electro-statics and capacitance ◆ Transformers ◆ DC machines ◆ Three-

phase induction motors ◆ Synchronous Machines ◆ Electrical measuring instruments

NEW

Getting Started with Stellaris ARM Cortex-M Embedded Processors: A Lab Manual for the Stellaris Guru Evaluation Kit

Dhananjay V Gadre, Rohit Dureja and Shanjit S Jajmann
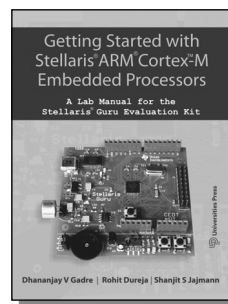
ARM microprocessors from Texas Instruments have a dominant presence in the technological devices of today. This is a lab manual that lets users get familiar with the ARM Stellaris Cortex-M3 microcontroller family using a hands-on approach with the help of a hardware evaluation kit named 'Guru'. Using the Guru kit it is possible to perform a range of experiments—basic to advanced—and develop familiarity with the various on-chip hardware features of the microcontroller. The Guru kit comes with an onboard 'Arduino' connector that offers expansion options via connections to external interface circuits called 'shields'. With shields, many more experiments than what is possible with just the basic kit can be performed. Also, by choosing an appropriate combination of a shield and software, small projects can also be executed.

In all, the lab manual discusses 26 experiments that can be performed on the Guru kit apart from the several suggested experiments. The Guru kit can also be used as a useful resource for full-fledged projects, including the mandatory final-year BTech projects.

Contents: *Preface* ◆ *Acknowledgments* ◆ *Introduction* ◆ Peripherals ◆ Stellaris®Guru Evaluation Kit ◆

GNU ARM®Toolchain ❖ Anatomy of a C Program ❖ StellarisWare API ❖ Digital Input/Output ❖ Interrupts ❖ Timer and Counter ❖ Serial Communication with the UART ❖ Analog-to-Digital Converter ❖ Power Management and System Control ❖ *Index*

2013	160 pp.	Paperback
978-81-7371-881-6		₹ 195.00

Analog Communications Systems: Principles and Practices
(Special Edition for Universities in Kerala)

K C Raveendranathan
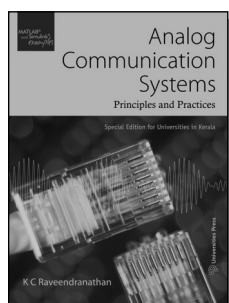
This edition of Analog Communication Systems: Principles and Practices addresses the requirements of undergraduate engineering students of Kerala University, Mahatma Gandhi University and Calicut University. The book introduces the recent and most promising developments in the domain of analog communications. The methodology adopted relies on a simple and lucid approach to analysis without compromising mathematical rigour. The book includes several worked-out examples and chapter-end exercises. Concepts in modulation and signal processing are illustrated using MATLAB® as a simulation tool, which makes the book suitable for use in programming and simulation lab as well.

In this edition, several new topics, additional solved examples and exercises, including multiple-choice questions, and a new chapter on pulse modulation systems have been included to make the contents thoroughly compliant with the present-day curriculum requirements of technical universities.

The MATLAB source code for the examples included in the book is available at www.universitiespress.com/anabook/sourcecode.zip

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

2014	320 pp.	Paperback
978-81-7371-938-7		₹ 295.00

Analog Communications Systems: Principles and Practices

K C Raveendranathan

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		₹ 350.00

Communications System Modelling and Simulation Using MATLAB and Simulink

K C Raveendranathan
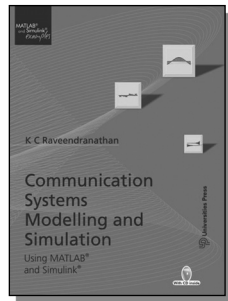
This book employs the technique of simulation experiments as a means of reinforcing the basic concepts of communication theory. Undergraduate students are generally exposed to a mathematically rigorous treatment of communications theory but seldom to modelling and simulation as an approach to better 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	480 pp.	Paperback
978-81-7371-722-2		₹ 425.00

Digital Communications and Signal Processing
(Second Edition)

K Vasudevan

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		₹ 425.00

Digital Electronics and Logic Design

Jaydeep Chakravorty

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		₹ 350.00

Digital Microwave Communication Systems with Selected Topics in Mobile Communications

P V Sreekanth

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		₹ 675.00

Digital Transmission Hierarchies and Networks: PDH, SDH and OTH

P V Sreekanth

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		₹ 595.00

Effective E-learning: Design, Development and Delivery

Madhuri Dubey

NEW

Electromagnetic Fields

Y Mallikarjuna Reddy

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		₹ 350.00

Embedded Systems Engineering

C R Sarma

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*.

www.universitiespress.com

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 Advanced Architectures ⬧ *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		₹ 275.00

NEW

Industrial Psychology

Dipak Kumar Bhattacharyya

- -

Introduction to MATLAB Programming

Jaydeep Chakravorty

- -

Optical Communication

M Mukunda Rao

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		₹ 275.00

Physics of Semiconductor Devices
(Second Edition)

Dilip K Roy

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		₹ 475.00

Principles of Electronic Communications: Analog and Digital

Pradip Kumar Ghosh

The book covers the syllabus of electronic communications systems at UG level. It starts with classification of signals, the concept of probability theory and random variables in communication systems. Apart from the two major sections on analog and digital communications, spread spectrum techniques and optical fibre communications are also covered. *All sections are supported with detailed mathematical analysis, solved problems and exercises.*

Contents: *Preface* ◈ *Signal Analysis* ◈ Signal Transmission Through Linear Systems and Filtering ◈ Continuous-Wave (CW) 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 ◈ *Bibliography* ◈ *Index*

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

2007	600 pp.	Paperback
978-81-7371-601-0		₹ 475.00

Probability Theory and Stochastic Processes
(Fourth Edition)

Y Mallikarjuna Reddy

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		₹ 400.00

Solid State Microelectronic and Optoelectronic Devices

Angsuman Sarkar & Chandan Kumar Sarkar

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		₹ 410.00

Theory of Probability and Stochastic Processes

Pradip Kumar Ghosh

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		₹ 295.00

FORTHCOMING

Engineering Electromagnetics Essentials

B N Basu

This book, developed according to BTech Electrical Engineering syllabus, attempts to make electromagnetics interesting and simple by first providing a concise and clear understanding of vector calculus, the backbone of electromagnetics. Armed with this knowledge, the development of the em theory concepts from first principles is shown to be both enjoyable and meaningful. The topics in the book are chosen carefully to ensure that readers are able to grasp most of the essence of engineering electromagnetics within a reasonable time. Students, after reading the book, would become ready to apply these concepts to understand and design electromagnetics-based devices and systems for engineering applications. Several interesting and thought-provoking worked out problems are included in the book, making it suitable for self-study.

Basic Electrical Engineering

N K De and Dipu Sarkar

See page 35

. . . .

Basic Electronics for VTU

B Basavaraj and H N Shivashankar

See page 36

. . . .

Engineering and Applied Mathematics

Actuarial Statistics: An Introduction Using R

Shailaja R Deshmukh

Actuarial science is an interdisciplinary science comprising four subjects—mathematics, statistics, economics and finance. Statistics plays a key role in laying the foundation of actuarial calculations in the presence of uncertainty in the mortality pattern of society and under varying economical conditions. *Actuarial calculations mainly involve determination of premium rates and computation of reserves*.

This book discusses the application of various basic concepts and statistical techniques in the determination of premiums and reserves for a variety of standard insurance and annuity products, under a variety of conditions. *Topics dealt with include* application of utility theory to establish the feasibility of the insurance business, short-term risk models, distribution theory related to the future life time random variable, construction of aggregate and select life table, important concepts of financial mathematics, annuities certain, terms, endowment and whole life insurance products, monthly, quarterly, semi-annual and annual life annuities.

Contents: *Preface* ◆ Insurance Business ◆ Introductory Statistics ◆ Feasibility of Insurance Business and Risk Models for Short Term ◆ Future Lifetime Distribution and Life Tables ◆ Actuarial Present Values of Benefit in Life Insurance Products

◆ Annuities ◆ Premiums ◆ Reserves ◆ Multiple Life Contracts ◆ *Answers to Exercises* ◆ *References* ◆ *Index*

2010	472 pp.	Paperback
978-81-7371-690-4		₹ 550.00

NEW

Advanced Modern Algebra: Second Edition

Joseph J. Rotman
Series: Indian Editions of AMS Titles
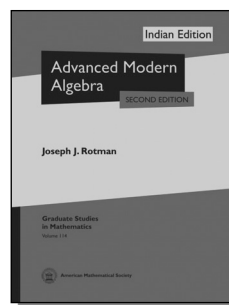
This book is designed as a text for the first year of graduate algebra, but it can also serve as a reference since it contains more advanced topics as well. This second edition has a different organization than the first. It begins with a discussion of the cubic and quartic equations, which leads into 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
97-81-4704-1916-5		₹ 1400.00

Algebra

Mark R Sepanski

Series: Indian Editions of AMS Titles

Mark Sepanski's Algebra is a readable introduction to the delightful world of modern algebra. Beginning with concrete examples from the study of integers and modular arithmetic, the text steadily familiarizes the reader with greater levels of abstraction as it moves through the study of groups, rings, and fields. *The book is equipped with over 750 exercises suitable for many levels of student ability*. There are standard problems, as well as challenging exercises, that introduce students to topics not normally covered in a first course. Difficult problems are broken into manageable subproblems and come equipped with hints when needed. *Appropriate for both self-study and the classroom*, the material is efficiently arranged so that milestones such as the Sylow theorems and Galois theory can be reached in one semester

Contents: *Preface* ❖ Arithmetic: Integers Modular Arithmetic ❖ Groups: Definitions and Examples ❖ Basic Properties and Order ❖ Subgroups and Direct Products ❖ Morphisms ❖ Quotients ❖ Fundamental Theorem of Finite Abelian Groups ❖ The Symmetric Group ❖ Group Actions ❖ Sylow Theorems ❖ Simple Groups and Composition Series ❖ Rings: Examples and Basic Properties ❖ Morphisms and Quotients ❖ Polynomials and Roots ❖ Polynomials and Irreducibility ❖ Factorization ❖ Principal Ideal and Euclidean Domains ❖ Field Theory: Finite and Algebraic Extensions ❖ Splitting Fields ❖ Finite Fields ❖ Galois Theory ❖ Famous Impossibilities ❖ Cyclotomic Fields ❖ *Index*

2013	272 pp.	Paperback
978-1-4704-0911-1		₹ 795.00

Algebra
(Third Edition)

Saunders Mac Lane and Garrett Birkhoff

Series: Indian Editions of AMS Titles

This book presents modern algebra from first principles and is accessible to undergraduates or graduates. It combines standard materials and necessary algebraic manipulations with general concepts that clarify meaning and importance.

Prices are subject to change without notice

This conceptual approach to algebra starts with a description of algebraic structures by means of axioms chosen to suit the examples, for instance, axioms for groups, rings, fields, lattices, and vector spaces. This axiomatic approach--emphasized by Hilbert and developed in Germany by Noether, Artin, Van der Waerden, et al., in the 1920s—was popularized for the graduate level in the 1940s and 1950s to some degree by the authors' publication of A Survey of Modern Algebra. The present book presents the developments from that time to the first printing of this book. This third edition includes corrections made by the authors.

Contents: Sets, functions, and integers ❖ Groups ❖ Rings ❖ Universal constructions ❖ Modules ❖ Vector spaces ❖ Matrices ❖ Special fields ❖ Determinants and tensor products ❖ Bilinear and quadratic forms ❖ Similar matrices and finite abelian groups ❖ Structure of groups ❖ Galois theory ❖ Lattices ❖ Categories and adjoint functors ❖ Multilinear algebra ❖ *Appendix: Affine and projective spaces* ❖ *Bibliography* ❖ *Index*

2013	648 pp.	Paperback
978-1-4704-0933-3		₹ 920.00

Algebraic Geometry for Scientists and Engineers

Shreeram S Abhyankar

Series: Indian Editions of AMS Titles

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		₹ 755.00

NEW

Analysis
(Second Edition)

Elliott H Lieb, Michael Loss

Series: Indian Editions of AMS Titles

Significantly revised and expanded, *this new Second Edition provides readers at all levels—from beginning students to practicing analysts*—with the basic concepts and standard tools necessary to solve problems of analysis, and how to apply these concepts to research in a variety of areas.

Authors *Elliott Lieb* and *Michael Loss* take you quickly from basic topics to methods that work successfully in mathematics and its applications. While omitting many usual typical textbook topics, *Analysis includes all necessary definitions, proofs, explanations, examples, and*

exercises to bring the reader to an advanced level of understanding with a minimum of fuss, and, at the same time, doing so in a rigorous and pedagogical way. Many topics that are useful and important, but usually left to advanced monographs, are presented in Analysis, and these give the beginner a sense that the subject is alive and growing.

This edition includes:

• a new chapter on eigenvalues that covers the min-max principle, semi-classical approximation, coherent states, Lieb-Thirring inequalities, and more

• extensive additions to chapters covering Sobolev Inequalities, including the Nash and Log Sobolev inequalities

• new material on Measure and Integration

• many new exercises

• and much more . . .

This edition is an authoritative, straightforward volume that readers—*from the graduate student, to the professional mathematician, to the physicist or engineer using analytical methods--will find useful both as a reference and as a guide to real problem solving.*

Contents: Measure and integration ⋄ L p-spaces ⋄ Rearrangement inequalities ⋄ Integral inequalities ⋄ The Fourier transform ⋄ Distributions ⋄ The Sobolev spaces H 1 and H 1/2 ⋄ Sobolev inequalities ⋄ Potential theory and Coulomb energies ⋄ Regularity of solutions of Poisson's equation ⋄ Introduction to the calculus of variations ⋄ More about eigenvalues ⋄ Part Title ⋄ *List of symbols* ⋄ *References* ⋄ *Index*

2013	376 pp.	Paperback
978-1-4704-0932-6		₹ 760.00

Analytical Solid Geometry

S Pirzada & T A Chishti

This books brings to life the mathematics of perfect solid structures with a special emphasis on difficulties felt by students in imagining three-dimensional solids.

The contents of this book cover a one-year course in Analytical Solid Geometry for BSc (mathematics) students and will be of great use to Civil Engineering, Architecture and Computer Science students in their Applied Mathematics course.

The book is rich in exercise problems and solved examples.

Contents: Coordinates ⋄ Plane ⋄ Straight Line ⋄ Change of Axes ⋄ Sphere ⋄ Cone ⋄ Cylinder ⋄ Central Conicoids ⋄ Plane Sections of a Conicoid ⋄ Generating Lines ⋄ General Equations of Second Degree ⋄ Confocal Conicoids ⋄ Systems of Conicoids ⋄ General Surfaces

2007	336 pp.	Paperback
978-81-7371-580-8		₹ 395.00

NEW

Partial Differential Equations
(Second Edition)

Lawrence C. Evans
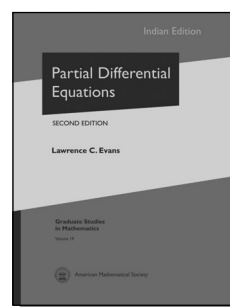
This is the second edition of the now definitive text on partial differential equations (PDE). It offers a comprehensive survey of modern techniques in the theoretical study of PDE with particular emphasis on nonlinear equations. Its wide scope and clear exposition make it a great text for a graduate 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
97-81-4704-1497-9		₹ 995.00

Basic Course in Partial Differential Equations, A

Qing Han

Series: Indian Editions of AMS Titles

This is a textbook for an introductory graduate course on partial differential equations. Han focuses on linear equations of first and second order. An important feature of his treatment is that the majority of the techniques are applicable more generally. In particular, *Han* emphasizes a priori estimates throughout the text, even for those equations that can be solved explicitly. Such estimates are indispensable tools for proving the existence and uniqueness of solutions to PDEs, being especially important for nonlinear equations. The estimates are also crucial to establishing properties of the solutions, such as the continuous dependence on parameters.

Han's book is suitable for students interested in the mathematical theory of partial differential equations, either as an overview of the subject or as an introduction leading to further study.

Contents: *Preface* ❖ *Introduction* ❖ First-Order Differential Equations ❖ An Overview of Second-Order PDEs ❖ Laplace Equations ❖ Heat Equations ❖ Wave Equations ❖ First-Order Differential Systems ❖ *Epilogue* ❖ *Bibliography* ❖ *Index*

2013	304 pp.	Paperback
978-1-4704-0921-0		₹ 720.00

NEW

Basic Set Theory

A. Shen and N. K. Vereshchagin

Series: Indian Editions of AMS Titles
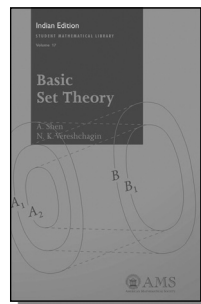
The main notions of set theory (cardinals, ordinals, transfinite induction) are fundamental to all mathematicians, not only to those who specialize in mathematical logic or set-theoretic topology. Basic set theory is generally given a brief overview in courses on analysis, algebra, or topology, even though it is sufficiently important, interesting, and simple to merit its own dedicated treatment.

This book provides just that in the form of a leisurely exposition for a diversified audience. It is suitable for a broad range of readers, from undergraduate students to professional mathematicians who want to finally find out what transfinite induction is and why it is always replaced by Zorn's Lemma.

The text introduces all main subjects of "naive" (nonaxiomatic) set theory: functions, cardinalities, ordered and well-ordered sets, transfinite induction and its applications, ordinals, and operations on ordinals. Included are discussions and proofs of the Cantor-Bernstein Theorem, Cantor's diagonal method, Zorn's Lemma, Zermelo's Theorem, and Hamel bases. With over 150 problems, the book is a complete and accessible introduction to the subject.

Contents: Sets and their cardinalities ❖ Ordered sets ❖ Bibliography ❖ *Glossary* ❖ *Index*

2014	128 pp.	Paperback
978 1 4704 1918 9		₹ 640.00

Calculus of Finance, The

Amber Habib

This book is broadly about the mathematical aspects of finance. It introduces the reader to the basic concepts and products of modern finance and explores various mathematical models dealing with quantification of risk, which form the backbone of modern financial analysis. The emphasis is not so much on the details of the financial world as the basic principles by which one seeks an understanding of it. No prior knowledge of economics or finance is called for—an exposure to basic calculus and probability is all that is required of the reader. The appendix covers this ground in fair detail and would itself serve as a comprehensive primer of mathematics for finance for a beginner.

The book is peppered with examples that use real-life data to ground the theory covered in the book. The exercises to be worked out are also interspersed in the text—their purpose varies from simple practice in applying formulas to extending the ideas learnt to new situations. *Solutions to all the exercise problems are included as Appendix C*, a feature that will be welcomed by both students and faculty.

The book will serve well as an *introductory book on applied mathematics in finance*, of interest to students of mathematics, finance and financial management. For those starting out as practitioners of mathematical finance, this is an ideal introduction.

Contents: Basic Concepts ◆ Deterministic Cash Flows ◆ Random Cash Flows ◆ Forwards and Futures ◆ Stock Price Models ◆ Options ◆ The Black–Scholes Model ◆ Value at Risk ◆ *Appendix A: Calculus* ◆ *Appendix B: Probability and Statistics* ◆ *Appendix C: Solutions to Selected Exercises* ◆ *Bibliography* ◆ *Index*

2011	296 pp.	Paperback
978-81-7371-723-9		₹ 425.00

Classical and Quantum Computation

A Yu Kitaev, A H Shen and M N Vyalyi

Series: Indian Editions of AMS Titles

This book is an introduction to a new rapidly developing theory of quantum computing. It begins with the basics of classical theory of computation: Turing machines, Boolean circuits, parallel algorithms, probabilistic computation, NP-complete problems, and the idea of complexity of an algorithm. The second part of the book provides an exposition of quantum computation theory. It starts with the introduction of general quantum formalism (pure states, density matrices, and superoperators), universal gate sets and approximation theorems. Then the authors study various quantum computation algorithms: Grover's algorithm, Shor's factoring algorithm, and the Abelian hidden subgroup problem. In concluding sections, several related topics are discussed (parallel quantum computation, a quantum analog of NP-completeness, and quantum error-correcting codes).

Rapid development of quantum computing started in 1994 with a stunning suggestion by Peter Shor to use quantum computation for factoring large numbers--an extremely difficult and time-consuming problem when using a conventional computer. Shor's result spawned a burst of activity in designing new algorithms and in attempting to actually build quantum computers. Currently, the progress is much more significant in the former: A sound theoretical basis of quantum computing is under development and many algorithms have been suggested.

In this concise text, the authors provide solid foundations to the theory--in particular, a careful analysis of the quantum circuit model--and cover selected topics in depth. Included are a complete proof of the Solovay-Kitaev theorem with accurate algorithm complexity bounds, approximation of unitary operators by circuits of doubly logarithmic depth. Among other interesting topics are toric codes and their relation to the anyon approach to quantum computing.

Prerequisites are very modest and include linear algebra, elements of group theory and probability, and the notion of a formal or an intuitive algorithm. *This text is suitable for a course in quantum computation for graduate students in mathematics, physics, or computer science. More than 100 problems (most of them with complete solutions) and an appendix summarizing the necessary results are a very useful addition to the book.*

Contents: *Introduction* ❖ Classical computation ❖ Quantum computation ❖ *Solutions* ❖ Elementary number theory ❖ *Bibliography* ❖ *Index*

2013	272 pp.	Paperback
978-1-4704-0927-2		₹ 680.00

Classical Methods in Ordinary Differential Equations: With Applications to Boundary Value Problems

Stuart P Hastings

Series: Indian Editions of AMS Titles

This text emphasizes rigorous mathematical techniques for the analysis of boundary value problems for ODEs arising in applications. The emphasis is on proving existence of solutions, but there is also a substantial chapter on uniqueness and multiplicity questions and several chapters which deal with the asymptotic behavior of solutions with respect to either the independent variable or some parameter. These equations may give special solutions of important PDEs, such as steady state or traveling wave solutions. *Often two, or even three, approaches to the same problem are described. The advantages and disadvantages of different methods are discussed.*

The book gives complete classical proofs, while also emphasizing the importance of modern methods, especially when extensions to infinite dimensional settings are needed. There are some new results as well as new and improved proofs of known theorems. The final chapter presents three unsolved problems which have received much attention over the years.

Both graduate students and more experienced researchers will be interested in the power of classical methods for problems which have also been studied with more abstract techniques. *The presentation should be more accessible to mathematically inclined researchers from other areas of science and engineering than most graduate texts in mathematics.*

Contents: *Preface* ❖ *Introduction* ❖ An introduction to shooting methods ❖ Some boundary value problems for the Painlev´e transcendents ❖ Periodic solutions of a higher order system ❖ A linear example ❖ Homoclinic orbits of the Fitz ❖ Hugh-Nagumo equations ❖ Singular perturbation problems—

rigorous matching ❖ Asymptotics beyond all orders ❖ Some solutions of the Falkner-Skan equation ❖ Poiseuille flow: Perturbation and decay ❖ Bending of a tapered rod; variational methods and shooting ❖ Uniqueness and multiplicity ❖ Shooting with more parameters ❖ Some problems of A. C. Lazer ❖ Chaotic motion of a pendulum ❖ Layers and spikes in reaction-diffusion equations, I ❖ Uniform expansions for a class of second order problems ❖ Layers and spikes in reaction-diffusion equations, II ❖ Three unsolved problems ❖ *Bibliography* ❖ *Index*

2013	392 pp.	Paperback
978-1-4704-0924-1		₹ 760.00

Collected Papers of Srinivasa Ramanujam

G H Hardy, P V Seshu Aiyar & B M Wilson

Series: Indian Editions of AMS Titles

The influence of Ramanujan on number theory is without parallel in mathematics. His papers, problems, and letters have spawned a remarkable number of later results by many different mathematicians. Here, his 37 published papers, most of his first two and last letters to Hardy, the famous 58 problems submitted to the Journal of the Indian Mathematical Society, and the commentary of the original editors (Hardy, Seshu Aiyar and Wilson) are reprinted again, after having been unavailable for some time.

In this printing of Ramanujan's collected papers, Bruce Berndt provides an annotated guide to Ramanujan's work and to the mathematics it inspired over the last three-quarters of a century. The historical development of ideas is traced in the commentary and by citations to the copious references. The editor has done the mathematical world a tremendous service that few others would be qualified to do.

Contents: Some properties of Bernoulli's numbers ❖ On Question 330 of Prof. Sanjana ❖ Note on a set of simultaneous equations ❖ Irregular numbers ❖ Squaring the circle ❖ Modular equations and approximations to $\prod$ ❖ On the integral $\int x^0 \tan^{-1} t/t \, dt$ ❖ On the number of divisors of a number ❖ On the sum of the square roots of the first n natural numbers ❖ On the product $\prod_{n=\infty}^{n=0}[1+(x/a+nd)3]$ ❖ *Some definite integrals* ❖ Some definite integrals connected with Gauss's sums ❖ Summation of a certain series ❖ New expressions for Riemann's functions $\xi(s)$

and $\Xi(t)$ ⬧ Highly composite numbers ⬧ On certain infinite series ⬧ Some formulæ in the analytic theory of numbers ⬧ On certain arithmetical functions ⬧ A series for Euler's constant γ ⬧ On the expression of a number in the form $ax^2+by^2+cz^2+du^2$ ⬧ On certain trigonometrical sums and their applications in the theory of numbers ⬧ Some definite integrals ⬧ A proof of Bertrand's postulate ⬧ Some properties of p(n), the number of partitions of n ⬧ Proof of certain identities in combinatory analysis ⬧ A class of definite integrals ⬧ Congruence properties of partitions ⬧ Algebraic relations between certain infinite products ⬧ Congruence properties of partitions ⬧ Une formule asymptotique pour le nombre des partitions de n ⬧ Proof that almost all numbers n are composed of about $\log \log n$ prime factors ⬧ Asymptotic formulae in combinatory analysis ⬧ Asymptotic formulae for the distribution of integers of various types ⬧ The normal number of prime factors of a number n ⬧ Asymptotic formulae in combinatory analysis ⬧ On the coefficients in the expansions of certain modular functions ⬧ *Questions and solutions* ⬧ *Appendix I: Notes on the papers* ⬧ *Appendix II: Further extracts from Ramanujan's letters to G. H. Hardy* ⬧ *Commentary on Ramanujan's collected papers*

2013	464 pp.	Paperback
978-1-4704-0918-0		₹ 800.00

Complex Variables

Joseph L Taylor

Series: Indian Editions of AMS Titles

The text covers a broad spectrum between basic and advanced complex variables on the one hand and between theoretical and applied or computational material on the other hand. With careful selection of the *emphasis put on the various sections, examples, and exercises, the book can be used in a one- or two-semester course for undergraduate mathematics majors, a one-semester course for engineering or physics majors, or a one-semester course for first-year mathematics graduate students. It has been tested in all three settings at the University of Utah*.

The exposition is clear, concise, and lively. There is a clean and modern approach to Cauchy's theorems and Taylor series expansions, with rigorous proofs but no long and tedious arguments. This is followed by the rich harvest of easy consequences of the existence of power series expansions.

Through the central portion of the text, there is a careful and extensive treatment of residue theory and its application to computation of integrals, conformal mapping and its applications to applied problems, analytic continuation, and the proofs of the Picard theorems.

Chapter 8 covers material on infinite products and zeroes of entire functions. This leads to the final chapter which is devoted to the Riemann zeta function, the Riemann Hypothesis, and a proof of the Prime Number Theorem.

Contents: Preface ⬧ The Complex Numbers ⬧ Analytic Functions ⬧ Power Series Expansions ⬧ The General Cauchy Theorems ⬧ Residue Theory Conformal Mappings ⬧ Analytic Continuation and the Picard Theorems ⬧ Infinite Products The Gamma and Zeta Functions ⬧ *Bibliography* ⬧ *Index*

2013	320 pp.	Paperback
978-1-4704-0915-9		₹ 720.00

Computational Topology: An Introduction

Herbert Edelsbrunner & John L Harer

Series: Indian Editions of AMS Titles

Combining concepts from topology and algorithms, this book delivers what its title promises: an introduction to the field of computational topology. Starting with motivating problems in both mathematics and computer science and building up from classic topics in geometric and algebraic topology, the third part of the text advances to persistent homology. This point of view is critically important in turning a mostly theoretical field of mathematics into one that is relevant to a multitude of disciplines in the sciences and engineering.

The main approach is the discovery of topology through algorithms. The book is ideal for teaching a graduate or advanced undergraduate course in computational topology, as it develops all the background of both the mathematical and algorithmic aspects of the subject from first principles. *Thus the text could serve equally well in a course taught in a mathematics department or computer science department*.

Contents: *Preface* ◆ A Computational Geometric Topology: Graphs ◆ Surfaces ◆ Complexes ◆ B Computational Algebraic Topology: Homology ◆ Duality ◆ Morse Functions ◆ C Computational Persistent Topology: Persistence ◆ Stability ◆ Applications ◆ *References* ◆ *Index*

2013	256 pp.	Paperback
978-1-4704-0928-9		₹ 680.00

Computer Arithmetic Algorithms
(Second Edition)

Israel Koren

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		₹ 450.00

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

N Datta

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	512 pp.	Paperback
978-81-7371-451-1		₹ 495.00

Convex Optimization Theory

Dimitri P Bertsekas

The book *Convex Optimization Theory* provides an insightful, concise and rigorous treatment of the basic theory of convex sets and functions in finite dimensions and the analytical/geometrical foundations of convex optimization and duality theory. The convexity theory is developed first in a simple accessible manner using easily visualized proofs. The focus then shifts to a transparent geometrical line of analysis to develop the fundamental duality between descriptions of convex sets and functions in terms of points and in terms of hyperplanes. Finally, convexity theory and abstract duality are applied to problems of constrained optimization, Fenchel and conic duality and game theory to develop the sharpest possible duality results within a highly visual geometric framework.

The Indian edition of the book alone carries a supplementary chapter containing the most popular convex optimization algorithms and some of the

new optimization algorithms otherwise available at http://www.athenasc.com/convexduality.html.

Key Features: Rigorous and comprehensive development of the theory of convex sets and functions in the classical tradition of Fenchel and Rockafellar ❖ A geometric and highly visual treatment of convex optimization problems including duality, existence of solutions, and optimality conditions ❖ An insightful and comprehensive presentation of minimax theory and zero sum games and its connection with duality ❖ Contains many examples and illustrations in the text ❖ Inclusion of many examples, illustrations, exercises with complete solutions and a supplementary chapter on the most popular convex optimization algorithms ❖ Useable as a standalone text for a theoretically-oriented class on convex analysis and optimization, or as a theoretical supplement to either an applications/convex optimization models class or a nonlinear programming class

Contents: Basic Concepts of Convex Analysis ❖ Basic Concepts of Polyhedral Convexity ❖ Basic Concepts of Convex Optimization ❖ Geometric Duality Framework ❖ Duality and Optimization ❖ *Appendix A: Mathematical Background & Notes and Sources* ❖ *Supplementary Chapter 6 on Convex Optimization Algorithms*

2010	420 pp.	Paperback
978-81-7371-714-7		₹ 625.00

NEW

Course in Operator Theory, A

John B Conway

Series: Indian Editions of AMS Titles

Operator theory is a significant part of many important areas of modern mathematics: functional analysis, differential equations, index theory, representation theory, mathematical physics, and more. This text covers the central themes of operator theory, presented with the excellent clarity and style that readers have come to associate with *Conway's* writing.

Early chapters introduce and review material on C*-algebras, normal operators, compact operators and non-normal operators. The topics include the spectral theorem, the functional calculus and the Fredholm index. Also, some deep connections between operator theory and analytic functions are presented.

Later chapters cover more advanced topics, such as representations of C*-algebras, compact perturbations and von Neumann algebras. Major results, such as the Sz.-Nagy Dilation Theorem, the Weyl-von Neumann-Berg Theorem and the classification of von Neumann algebras, are covered, as is a treatment of Fredholm theory. These advanced topics are at the heart of current research.

The last chapter gives an introduction to reflexive subspaces, i.e., subspaces of operators that are determined by their invariant subspaces. These, along with hyperreflexive spaces, are one of the more successful episodes in the modern study of asymmetric algebras.

Professor Conway's authoritative treatment makes this a compelling and rigorous course text, suitable for graduate students who have had a standard course in functional analysis.

Contents: Introduction to C*-algebras ❖ Normal operators ❖ Compact operators ❖ Some non-normal operators ❖ More on C*-algebras ❖ Compact perturbations ❖ Introduction to von Neumann algebras ❖ *Reflexivity* ❖ *Bibliography* ❖ *Index* ❖ *List of symbols*

2013	392 pp.	Paperback
978-1-4704-0925-8		₹ 760.00

Cross Disciplinary Advances in Quantum Computing

Kazem Mahdavi, Deborah Koslover & Leonard L. Brown III (Eds)

Series: Indian Editions of AMS Titles

This volume contains a *collection of papers*, written by physicists, computer scientists, and mathematicians, from the Conference on Representation Theory, Quantum Field Theory, Category Theory, and Quantum Information Theory, which was held at the University of Texas at Tyler from October 1–4, 2009.

Quantum computing is a field at the interface of the physical sciences, computer sciences and mathematics. As such, advances in one field are often overlooked by practitioners in other fields. This volume brings together articles from each of these areas to make students, researchers and others interested in quantum computation

aware of the most current advances. It is hoped that this work will stimulate future advances in the field.

Contents: *Preface* ◆ *List of Participants* ◆ Cartan Decomposition and Entangling Power of Braiding Quantum Gates ◆ A Unified Approach to Universality for Three Distinct Types of 2-qubit Quantum Computing Devices ◆ Efficient Algorithm for a Quantum Analogue of 2-SATS ◆ Quantum Computational Curvature and Jacobi Fields ◆ A Quantum Model for the Jones Polynomial, Khovanov Homology and Generalized Simplicial Homology ◆ Oriented Quantum Algebras and Coalgebras, Invariants of Oriented 1–1 Tangles, Knots and Links ◆ Space and Time Lattices in Frame Fields of Quantum Representations of Real and Complex Numbers

2013	160 pp.	Paperback
978-1-4704-0920-3		₹ 640.00

Cryptography: An Introduction

V V Yaschenko

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		₹ 620.00

Differential Equations with Applications and Programs

S Balachandra Rao & H R Anuradha

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		₹ 425.00

Discrete Mathematical Structures with Applications to Combinatorics

V Ramaswamy

Meant to serve as an introduction to discrete mathematical structures, this book covers the

topics taught in a one-semester course at the undergraduate level. *Students of BE computer science, information science and other engineering branches as well as students of MCA programme will find the book useful.* The few chapters included on combinatorics will bring home the practical utility of the various concepts introduced in the book and enable appreciation of the myriad applications that apparently simple concepts such as relations, functions and the pigeon-hole principle have.

Contents: *Preface* ◆ Elements of Mathematical Logic ◆ Fundamentals of Set Theory ◆ Principles of Mathematical Induction ◆ Permutations and Combinations ◆ Recurrence Relations ◆ Relations ◆ Functions ◆ Lattices and Finite Boolean Algebra ◆ Elements of Graph Theory ◆ Algebraic Structures ◆ More on Algebraic Structure ◆ More on Recurrence Relations ◆ More on Functions ◆ Partitions ◆ *Miscellaneous Applications* ◆ *Index*

2006	264 pp.	Paperback
978-81-7371-500-6		₹ 275.00

NEW

Elements of Combinatorial and Differential Topology

V.V.Prasolov

Series: Indian Editions of AMS Titles
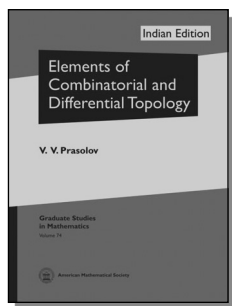
Modern topology uses very diverse methods. This book is devoted largely to methods of combinatorial topology, which reduce the study of topological spaces to investigations of their partitions into elementary sets, and to methods of differential topology, which deal with smooth manifolds and smooth maps. 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
97-81-4704-1915-8		₹ 720.00

Engineering Mathematics
(Second Edition)

Koneru Sarveswara Rao

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		₹ 475.00

Engineering Optimization: A Modern Approach

Ranjan Ganguli

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		₹ 375.00

Fourier Analysis

Javier Duoandikoetxea

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_r 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		₹ 640.00

Fourier Analysis and Its Applications

Gerald B Folland

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		₹ 970.00

Functional Analysis: An Introduction

Yuli Eidelman, Vitali Milman & Antonis Tsolomitis

Series: Indian Editions of AMS Titles

This textbook provides an introduction to the methods and language of functional analysis, including Hilbert spaces, Fredholm theory for compact operators, and spectral theory of self-adjoint operators. It also presents the basic theorems and methods of abstract functional analysis and a few applications of these methods to Banach algebras and the theory of unbounded self-adjoint operators. *The text corresponds to material for two semester courses (Part I and Part II, respectively) and is essentially self-contained*. Prerequisites for the first part are minimal amounts of linear algebra and calculus. For the second part, some knowledge of topology and measure theory is recommended. Each of the 11 chapters is followed by *numerous exercises, with solutions given at the end of the book. The text is ideal for a one-year course*. It will also provide a sound basis for further study. It is *suitable for graduate students and researchers interested in operator theory and functional analysis*.

Contents: Hilbert spaces and basic operator theory—Linear spaces ◈ Normed spaces ◈ First examples ◈ Hilbert Spaces ◈ The dual space ◈ Bounded linear operators ◈ Spectrum ◈ Fredholm theory of compact operators ◈ Self-adjoint operators ◈ Functions of operators ◈ Spectral decomposition ◈ Basics of functional analysis—Spectral theory of unitary operators ◈ The fundamental theorems and the basic methods ◈ Banach algebras ◈ Unbounded

self-adjoint and symmetric operators in H ⬧ *Solutions to exercises* ⬧ *Bibliography* ⬧ *Symbols index* ⬧ *Subject index*

2011	344 pp.	Paperback
978-0-8218-6879-9		₹ 755.00

Fundamentals of Computational Fluid Dynamics

Tapan K Sengupta

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 ⬧ 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		₹ 775.00

Gentle Introduction to Game Theory, A

Saul Stahl

Series: Indian Editions of AMS Titles

The mathematical theory of games was first developed as a model for situations of conflict, whether actual or recreational. It gained widespread recognition when it was applied to the theoretical study of economics by von Neumann and Morgenstern in Theory of Games and Economic Behavior in the 1940s. The later bestowal in 1994 of the Nobel Prize in economics on Nash underscores the important role this theory has played in the intellectual life of the twentieth century. *This volume is based on courses given by the author at the University of Kansas.* The exposition is "gentle" because it requires only some knowledge of coordinate geometry; linear programming is not used. It is "mathematical" because it is more concerned with the mathematical solution of games than with their applications. Existing textbooks on the topic tend to focus either on the applications or on the mathematics at a level that makes the works inaccessible to most non-mathematicians. This book nicely fits in between these two alternatives. *It discusses examples and completely solves them with tools that require no more than high school algebra.* In this text, proofs are provided for both von Neumann's Minimax Theorem and the existence of the Nash Equilibrium in the 2×2 case. Readers will gain both a sense of the range of applications and a better understanding of the theoretical framework of these two deep mathematical concepts.

Contents: *Introduction* ⬧ The formal definitions ⬧ Optimal responses to specific strategies ⬧ The maximin strategy ⬧ The minimax strategy ⬧ Solutions of zero-sum games ⬧ 2×n and m×2 games ⬧ Dominance ⬧ Symmetric games ⬧ Poker-like games ⬧ Pure maximin and minimax strategies ⬧ Pure nonzero-sum games ⬧ Mixed strategies for nonzero-sum games ⬧ Finding mixed Nash equilibria for 2×2 nonzero-sum games ⬧ *Bibliography* ⬧ *Solutions to selected exercises* ⬧ *Index*

2012	176 pp.	Paperback
978-0-8218-9182-7		₹ 640.00

Introduction to Differential Equations

Michael E Taylor

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		₹ 720.00

Introduction to Fourier Analysis and Wavelets

Mark A Pinsky

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		₹ 760.00

Introduction to Game-Theoretic Modelling, An
(Second Edition)

Michael Mesterton-Gibbons

Series: Indian Editions of AMS Titles

This book is about using game theory in mathematical modelling. It is an introductory text, covering the basic ideas and methods of game theory as well as the necessary ideas from the vast spectrum of scientific study where the methods are applied. It has by now become generally apparent that game theory is a fascinating branch of mathematics with both serious and recreational applications. Strategic behavior arises whenever the outcome of an individual's action depends on actions to be taken by other individuals—whether human, as in the Prisoners' Dilemma, or otherwise, as in the 'duels of damselflies'. As a result, game-theoretic mathematical models are applicable in both the social and natural sciences. In reading this book, you can learn not just about game theory, but also about how to model real situations so that they can be analyzed mathematically. *Mesterton-Gibbons* includes the familiar game theory examples where they are needed for explaining the mathematics or when they provide a valuable application. There are also plenty of new examples, in particular from biology, such as competitions for territory or mates, games among kin versus games between kin, and cooperative wildlife management.

Prerequisites are modest. Students should have some mathematical maturity and a familiarity with basic calculus, matrix algebra, probability, and some differential equations. As *Mesterton-Gibbons* writes, 'The recurring theme is that game theory is fun to learn, doesn't require a large amount of mathematical rigor, and has great potential for application. This new edition contains a significant amount of updates and new material, particularly on biological games. An important chapter on population games now has virtually all new material. The book is absolutely up-to-date with numerous references to the literature. Each chapter ends with a commentary which surveys current developments.

Contents: Noncooperative games ◈ Evolutionary stability and other selection criteria ◈ Cooperative games in strategic form ◈ Characteristic function games ◈ Cooperation and the prisoner's dilemma ◈ More population games ◈ Appraisal ◈ The tracing procedure ◈ *Solutions to selected exercises* ◈ *Bibliography* ◈ *Index*

2012	368 pp.	Paperback
978-0-8218-9186-5		₹ 760.00

Introduction to MATLAB Programming

Jaydeep Chakravorty

See page 100

- -

Introduction to Probability
(Second Edition)

Charles M Grinstead & J Laurie Snell

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		₹ 1020.00

Introduction to the Mathematics of Finance

R J Williams

Series: Indian Editions of AMS Titles

The modern subject of mathematical finance has undergone considerable development, both in theory and practice, since the seminal work of Black and Scholes appeared a third of a century ago. This book is intended as *an introduction to some elements of the theory that will enable students and researchers* to go on to read more advanced texts and research papers.

The book begins with the development of the basic ideas of hedging and pricing of European and American derivatives in the discrete (i.e., discrete time and discrete state) setting of binomial tree models. Then a general discrete finite market model is introduced, and the fundamental theorems of asset pricing are proved in this setting. Tools from probability such as conditional expectation, filtration, (super)martingale, equivalent martingale measure, and martingale representation are all

used first in this simple discrete framework. This provides a bridge to the continuous (time and state) setting, which requires the additional concepts of Brownian motion and stochastic calculus. The simplest model in the continuous setting is the famous Black-Scholes model, for which pricing and hedging of European and American derivatives are developed. *The book concludes with a description of the fundamental theorems for a continuous market model that generalizes the simple Black-Scholes model in several directions*.

Contents: *Preface* ❖ Financial Markets and Derivatives ❖ Binomial Model ❖ Finite Market Model ❖ Black-Scholes Model ❖ Multi-dimensional Black-Scholes Model ❖ *Appendix A: Conditional Expectation and Lp-Spaces* ❖ *Appendix B: Discrete Time Stochastic Processes* ❖ *Appendix C: Continuous Time Stochastic Processes* ❖ *Appendix D: Brownian Motion and Stochastic Integration* ❖ *Bibliography* ❖ *Index*

2011	160 pp.	Paperback
978-0-8218-6882-9		₹ 465.00

Introduction to the Mathematical Theory of Waves, An

Roger Knobel

Series: Indian Editions of AMS Titles

This book is based on an undergraduate course taught at the IAS/Park City Mathematics Institute (Utah) on linear and nonlinear waves. The *first part* of the text overviews the concept of a wave, describes one-dimensional waves using functions of two variables, provides an introduction to partial differential equations, and discusses computer-aided visualization techniques.

The *second part* of the book discusses traveling waves, leading to a description of solitary waves and soliton solutions of the Klein-Gordon and Korteweg-deVries equations. The wave equation is derived to model the small vibrations of a taut string, and solutions are constructed via d'Alembert's formula and Fourier series.

The *last part* of the book discusses waves arising from conservation laws. After deriving and discussing the scalar conservation law,

its solution is described using the method of characteristics, leading to the formation of shock and rarefaction waves. Applications of these concepts are then given for models of traffic flow.

The intent of this book is to create a text suitable for independent study by undergraduate students in mathematics, engineering, and science. The content of the book is meant to be self-contained, requiring no special reference material. Access to computer software such as Mathematica®, MATLAB®, or Maple® is recommended, but not necessary. *Scripts for MATLAB applications will be available via the Web. Exercises are given within the text to allow further practice with selected topics.*

Contents: *Introduction* ◆ Introduction to waves ◆ A mathematical representation of waves ◆ Partial differential equation ◆ Traveling and standing waves ◆ Traveling waves ◆ The Korteweg-de Vries equation ◆ The Sine-Gordon equation ◆ The wave equation ◆ D'Alembert's solution of the wave equation ◆ Vibrations of a semi-infinite string ◆ Characteristic lines of the wave equation ◆ Standing wave solutions of the wave equation ◆ Standing waves of a nonhomogeneous string ◆ Superposition of standing waves ◆ Fourier series and the wave equation ◆ Waves in conservation laws ◆ Conservation laws ◆ Examples of conservation laws ◆ The method of characteristics ◆ Gradient catastrophes and breaking times ◆ Shock waves ◆ Shock wave example: Traffic at a red light ◆ Shock waves and the viscosity method ◆ Rarefaction waves ◆ An example with rarefaction and shock waves ◆ Nonunique solutions and the entropy condition ◆ Weak solutions of conservation laws ◆ *Bibliography* ◆ *Index*

2012	196 pp.	Paperback
978-0-8218-8729-5		₹ 640.00

Introduction to Representation Theory

Pavel Etingof et al.

Series: Indian Editions of AMS Titles
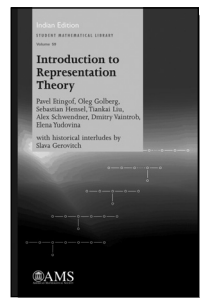
Very roughly speaking, representation theory studies symmetry in linear spaces. It is a beautiful mathematical subject which has many applications, ranging from number theory and combinatorics to geometry, probability theory, quantum mechanics, and quantum field theory.

The goal of this book is to give a "holistic" introduction to representation theory, presenting it as a unified subject which studies representations of associative algebras and treating the representation theories of groups, Lie algebras, and quivers as special cases. Using this approach, the book covers a number of standard topics in the representation theories of these structures. Theoretical material in the book is supplemented by many problems and exercises which touch upon a lot of additional topics; the more difficult exercises are provided with hints.

The book is designed as a textbook for advanced undergraduate and beginning graduate students. It should be accessible to students with a strong background in linear algebra and a basic knowledge of abstract algebra.

Contents: Introduction ◆ Basic notions of representation theory ◆ What is representation theory? ◆ Algebras ◆ Representations ◆ Ideals ◆ Quotients ◆ Algebras defined by generators and relations ◆ Examples of algebras ◆ Quivers ◆ Lie algebras ◆ Historical interlude: Sophus Lie's trials and transformations ◆ Tensor products ◆ The tensor algebra ◆ Hilbert's third problem ◆ Tensor products

and duals of representations of Lie algebras ◆ Representations of sl(2)

2014	240 pp.	Paperback
97-81-4704-1919-6		₹ 640.00

Introductory Course on Mathematical Game Theory, An

Julio González-Díaz, Ignacio García-Jurado & M Gloria Fiestras-Janeiro

Series: Indian Editions of AMS Titles

Game theory provides a mathematical setting for analyzing competition and cooperation in interactive situations. *The theory has been famously applied in economics, but is relevant in many other sciences, such as political science, biology, and, more recently, computer science*. This book presents an introductory and up-to-date course on game theory addressed to *mathematicians and economists, and to other scientists having a basic mathematical background*. The book is self-contained, providing a formal description of the classic game-theoretic concepts together with rigorous proofs of the main results in the field. *The theory is illustrated through abundant examples, applications, and exercises*. The style is distinctively concise, while offering motivations and interpretations of the theory to make the book accessible to a wide readership. The basic concepts and results of game theory are given a formal treatment, and the mathematical tools necessary to develop them are carefully presented. Cooperative games are explained in detail, with bargaining and TU-games being treated as part of a general framework. *The authors stress the relation between game theory and operations research. The book is suitable for a graduate or an advanced undergraduate course on game theory*.

Contents: *Preface* ◆ Introduction to Decision Theory ◆ Strategic Games ◆ Extensive Games ◆ Games with Incomplete Information ◆ Cooperative Games ◆ *Bibliography* ◆ *Notations* ◆ *Index of Authors* ◆ *Index of Solution Concepts* ◆ *Subject Index*

2012	324 pp.	Paperback
978-0-8218-9180-3		₹ 720.00

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
978-81-7371-524-7		₹ 750.00

Mathematical Modelling: A Case Studies Approach

Reinhard Illner, C Sean Bohun, Samantha McCollum & Thea van Roode

Series: Indian Editions of AMS Titles

Mathematical Modelling is a subject without boundaries. It is the means by which mathematics becomes useful to virtually

any subject. Moreover, modelling has been and continues to be a driving force for the development of mathematics itself. This book explains the process of modelling real situations to obtain mathematical problems that can be analyzed, thus solving the original problem.

The *presentation is in the form of case studies*, which are developed much as they would be in true applications. In many cases, an initial model is created, then modified along the way. Some cases are familiar, such as the evaluation of an annuity. Others are unique, such as the fascinating situation in which an engineer, armed only with a slide rule, had 24 hours to compute whether a valve would hold when a temporary rock plug was removed from a water tunnel.

Each chapter ends with a set of exercises and some suggestions for class projects. Some projects are extensive, as with the explorations of the predator-prey model; others are more modest.

The text was *designed to be suitable for a one-term course for advanced undergraduates*. The selection of topics and the style of exposition reflect this choice. The authors have also succeeded in demonstrating just how enjoyable the subject can be.

This is an ideal text for classes on modelling. It can also be used in seminars or as preparation for mathematical modelling competitions.

Contents: Crystallization Dynamics ◆ Will the Valve Hold? ◆ How much will that Annuity Cost Me? ◆ Dimensional Analysis ◆ Predator-Prey Systems ◆ A Control Problem in Fishery Management ◆ Formal Justice ◆ Traffic Dynamics: A Microscopic Model ◆ Traffic Dynamics: A Microscopic Modelling

2011	216 pp.	Paperback
978-0-8218-6891-1		₹ 450.00

Mathematics of Finance, The: Modeling and Hedging

Victor Goodman & Joseph Stampfli

Series: Indian Editions of AMS Titles

This book is ideally suited for an introductory undergraduate course on financial engineering. It explains the basic concepts of financial derivatives, including put and call options, as well as more complex derivatives such as barrier options and

options on futures contracts. Both discrete and continuous models of market behavior are developed in this book. In particular, the *analysis of option prices developed by Black and Scholes is explained* in a self-contained way, using both the probabilistic Brownian motion method and the analytical differential equations method. The book begins with binomial stock price models, moves on to multistage models, then to the *Cox-Ross-Rubinstein* option pricing process, and then to the Black-Scholes formula. Other topics presented include *Zero Coupon Bonds, forward rates, the yield curve, and several bond price models. The book continues with foreign exchange models and the Keynes Interest Rate Parity Formula, and concludes with the study of country risk*, a topic not inappropriate for the times. In addition to theoretical results, numerical models are presented in much detail. *Each of the eleven chapters includes a variety of exercises. An instructor's manual for this title is available in an electronic format. Please email textbooks@ams.org for more information.*

Contents: Financial Markets ◆ Binomial Trees, Replicating Portfolios, and Arbitrage ◆ Tree Models for Stocks and Options ◆ Using Spreadsheets to Compute Stock and Option Trees ◆ Continuous Models and the Black-Scholes Formula ◆ The Analytic Approach to Black-Scholes ◆ Hedging ◆ Bond Models and Interest Rate Options ◆ Computational Methods for Bonds

2012	256 pp.	Paperback
978-0-8218-9178-0		₹ 680.00

Mathematics of Financial Obligations

A V Mel'nikov, S N Volkov & M L Nechaev

Series: Indian Editions of AMS Titles

Contemporary finance and actuarial calculations have become so mathematically complex that a rigorous exposition is required for an accurate and complete presentation. This volume delivers just that. It gives a comprehensive and up-to-date methodology for financial pricing and modelling. Also included are special cases useful for practical applications. Beyond the traditional areas of hedging and investment on complete markets (*the Black-Scholes and Cox-Ross-Rubinstein models*), the book includes topics

that are not currently available in monograph form, such as incomplete markets, markets with constraints, imperfect forms of hedging, and the convergence of calculations in finance and insurance. *The book is geared toward specialists in finance and actuarial mathematics, practitioners in the financial and insurance business, students, and post-docs in corresponding areas of study*. Readers should have a foundation in probability theory, random processes, and mathematical statistics.

Contents: Financial systems: Innovations and the risk calculus ⬥ Random processes and the stochastic calculus ⬥ Hedging and investment in complete markets ⬥ Hedging and incomplete markets ⬥ Markets with structural constraints and transaction costs ⬥ Imperfect forms of hedging ⬥ Dynamic contingent claims and American options ⬥ Analysis of "bond" contingent claims ⬥ Economics of insurance and finance: Convergence of quantitative methods of calculations ⬥ *Bibliographical notes* ⬥ *Bibliography* ⬥ *Subject index*

2012	196 pp.	Paperback
978-0-8218-9184-1		₹ 640.00

Models of Conflict and Cooperation

Rick Gillman & David Housman

Series: Indian Editions of AMS Titles

Models of Conflict and Cooperation is a comprehensive, introductory, game theory text for general undergraduate students. *As a textbook, it provides a new and distinctive experience for students working to become quantitatively literate.* Each chapter begins with a "dialogue" that models quantitative discourse while previewing the topics presented in the rest of the chapter. Subsequent sections develop the key ideas starting with basic models and ending with deep concepts and results. *Throughout all of the sections, attention is given to promoting student engagement with the material through relevant models, recommended activities, and exercises*. The general game models that are discussed include deterministic, strategic, sequential, bargaining, coalition, and fair division games. A separate, essential chapter discusses player preferences. All of the chapters are designed to strengthen the fundamental mathematical

skills of quantitative literacy: logical reasoning, basic algebra and probability skills, geometric reasoning, and problem solving. A distinctive feature of this book is its emphasis on the process of mathematical modeling.

Contents: Deterministic Games ⬥ Player Preferences ⬥ Strategic Games ⬥ Probabilistic Strategies ⬥ Strategic Game Cooperation ⬥ Negotiation and Arbitration ⬥ Coalition Games ⬥ Fair Division ⬥ *Epilogue* ⬥ *Bibliography* ⬥ *Index*

2012	420 pp.	Paperback
978-0-8218-9183-4		₹ 800.00

Numerical Analysis: Mathematics of Scientific Computing
(Third Edition)

David Kincaid & Ward Cheney

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		₹ 1375.00

Numerical Methods

W Boehm & H Prautzsch

The development and analysis of constructive algorithms in Numerical Mathematics has become a focus of applied mathematics since the practical realization of these algorithms by electronic computers is no longer restricted to trivial examples. *This book describes algorithmic solutions whose basic ideas are common to a variety of mathematical problems.* By means of the methods presented, the reader will acquire the skills besides a fundamental knowledge to successfully work on related subjects in this field.

Contents: Fundamental Concepts: Algorithms and Error Propagation ◆ Matrices ◆ Linear Equations And Inequalities: Gaussian Elimination ◆ The LU Factorization ◆ The Exchange Algorithm ◆ The Cholesky Factorizaton ◆ The QU Factorization ◆ Relaxation Methods ◆ Data Fitting ◆ Linear Optimization ◆ Iteration: Vector Iteration ◆ The KR Algorithm ◆ One-Dimensional Iteration ◆ Multi-dimensional Iteration ◆ Roots of Polynomials ◆ Bernoulli's Method ◆ The QD Algorithm ◆ Interpolation and Discrete Approximation: Interpolation ◆ Discrete Approximation ◆ Polynomials in Bezier Form ◆ Splines ◆ Numerical Differentiation And Integration ◆ Numericals Differentiation and Integration: Extrapolation ◆ One-Step Methods for Differential Equations ◆ Linear Multi-Step Methods for Differential Equations ◆ The Methods by Ritz And Galerkin ◆ The Finite Element Method ◆ *Bibliography* ◆ *Index*

2005	196 pp.	Paperback
978-81-7371-534-1		₹ 310.00

Numerical Methods with Programs in BASIC, FORTRAN, Pascal and C++
(Revised Edition)

S Balachandra Rao & C K Shantha

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		₹ 450.00

Partial Differential Equations

Jeffrey Rauch

Series: Low Priced Edition of Springer Mathematics Titles

The objective of this book is to present an introduction to the ideas, phenomena, and methods of partial differential equations. This material can be presented in one semester and requires no previous knowledge of differential equations, but assumes the reader to be familiar with advanced calculus, real analysis, the rudiments of complex analysis, and the language of functional analysis. Topics discussed in the text include elliptic, hyperbolic, and parabolic equations, the energy method, maximum principle, and the Fourier Transform. The text features many historical and scientific motivations and applications. *Included throughout are exercises, hints, and discussions which form an important and integral part of the course.*

Contents: Power Series Methods ◆ Some Harmonic Analysis ◆ Solution of Initial Value Problems by Fourier Synthesis ◆ Propagators and x-Space Methods ◆ The Dirichlet Problem *Appendix: A Crash Course in Distribution* ◆ *Theory* ◆ *References* ◆ *Index*

2010	280 pp.	Paperback
978-81-7371-623-7		₹ 495.00

Partial Differential Equations

Lawrence C Evans

Series: Indian Editions of AMS Titles

This text gives a *comprehensive survey of modern techniques* in the theoretical study of partial differential equations (PDEs), with particular emphasis on nonlinear equations. The exposition is divided into three parts:
- representation formulas for solutions
- theory for linear partial differential equations, and
- theory for nonlinear partial differential equations.

Included are complete treatments of the method of characteristics; energy methods within Sobolev spaces; regularity for second-order elliptic, parabolic, and hyperbolic equations; maximum principles; the multidimensional calculus of variations; viscosity solutions of Hamilton-Jacobi equations; shock waves and entropy criteria for conservation laws; and much more.

The author summarizes the relevant mathematics required to understand current research in PDEs, especially nonlinear PDEs. While he has reworked and simplified much of the classical theory (particularly the method of characteristics), he primarily emphasizes the modern interplay between functional analytic insights and calculus type estimates within the context of Sobolev space. Treatment of all topics is complete and self-contained. *The book's wide scope and clear exposition make it a suitable text for a graduate course in PDEs*.

Contents: *Part I:* Representation Formulas for Solutions: Nonlinear First-Order PDE v Introduction to Hamilton ⬥ Other Ways to Represent Solutions ⬥ *Part II:* Theory for Linear Partial Differential Equations: Second-Order Elliptic Equations ⬥ Linear Evolution Equations ⬥ *Part III:* Theory for Nonlinear Partial Differential Equations: Nonvariational Techniques ⬥ Hamilton–Jacobi Equations ⬥ Systems of Conservation Laws ⬥ Nonlinear Wave Equations ⬥ *Appendices ⬥ Bibliography ⬥ Index*

2009	680 pp.	Paperback
978-0-8218-4859-3		₹ 900.00

Partial Differential Equations and Boundary-Value Problems with Applications
(Third Edition)

Mark A Pinsky

Series: Indian Editions of AMS Titles

Building on the basic techniques of separation of variables and Fourier series, *the book presents the solution of boundary-value problems for basic partial differential equations: the heat equation, wave equation, and Laplace equation, considered in various standard coordinate systems--rectangular, cylindrical, and spherical*. Each of the equations is derived in the three-dimensional context; the solutions are organized according to the geometry of the coordinate system, which makes the mathematics especially transparent. Bessel and Legendre functions are studied and used whenever appropriate throughout the text. The notions of steady-state solution of closely related stationary solutions are developed for the heat equation; applications to the study of heat flow in the earth are presented. The problem of the vibrating string is studied in detail both in the Fourier transform setting and from the viewpoint of the explicit representation (*d'Alembert formula*). *Additional chapters* include the numerical analysis of solutions and the method of Green's functions for solutions of partial differential equations. The exposition also includes asymptotic methods (Laplace transform and stationary phase).

With more than 200 working examples and 700 exercises (more than 450 with answers), the book is suitable for an undergraduate course in partial differential equations.

Contents: Preliminaries ⬥ Fourier Series ⬥ Boundary-Value Problems In Rectangular Coordinates ⬥ Boundary-Value Problems in Cylindrical Coordinates ⬥ Boundary-Value Problems in Spherical Coordinates ⬥ Fourier Transforms and Applications ⬥ Asymptotic Analysis ⬥ Numerical Analysis ⬥ Green's Functions ⬥ *Appendices ⬥ Answers to Selected Exercises ⬥ Index about the Author*

2013	544 pp.	Paperback
978-1-4704-0914-2		₹ 840.00

NEW

Prime Numbers and Their Distribution, The

Gérald Tenenbaum and Michel Mendès France

Series: Indian Editions of AMS Titles
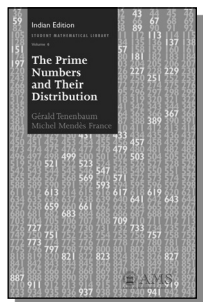
We have been curious about numbers--and prime numbers--since antiquity. One notable new direction this century in the study of primes has been the influx of ideas from probability. The goal of this book is to provide insights into the prime numbers and to describe how a sequence so tautly determined can incorporate such a striking amount of randomness.

There are two ways in which the book is exceptional. First, some familiar topics are covered with refreshing insight and/or from new points of view. Second, interesting recent developments and ideas are presented that shed new light on the prime numbers and their distribution among the rest of the integers.

The book begins with a chapter covering some classic topics, such as quadratic residues and the Sieve of Eratosthenes. Also discussed are other sieves, primes in cryptography, twin primes, and more.

Two separate chapters address the asymptotic distribution of prime numbers. In the first of these, the familiar link between(s) and the distribution of primes is covered with remarkable efficiency and intuition. The later chapter presents a walk through an elementary proof of the Prime Number Theorem. To help the novice understand the "why" of the proof, connections are made along the way with more familiar results such as Stirling's formula.

A most distinctive chapter covers the stochastic properties of prime numbers. The authors present a wonderfully clever interpretation of primes in arithmetic progressions as a phenomenon in probability. They also describe Cramér's model, which provides a probabilistic intuition for formulating conjectures that have a habit of being true. In this context, they address interesting questions about equipartition modulo 1 for sequences involving prime numbers. The final section of the chapter compares geometric visualizations of random sequences with the visualizations for similar sequences derived from the primes. The resulting pictures are striking and illuminating. The book concludes with a chapter on the outstanding big conjectures about prime numbers.

This book is suitable for anyone who has had a little number theory and some advanced calculus involving estimates. Its engaging style and invigorating point of view will make refreshing reading for advanced undergraduates through research mathematicians. This book is the English translation of the French edition.

Contents: Genesis: From Euclid to Chebyshev ◈ The Riemann zeta function ◈ Stochastic distribution of prime numbers ◈ An elementary proof of the prime number theorem ◈ The major conjectures ◈ Further reading

2014	136 pp.	Paperback
97-81-4704-1917-2		₹ 640.00

Primer on the Calculus of Variations and Optimal Control Theory, A

Mike Mesterton-Gibbons

Series: Indian Editions of AMS Titles

The calculus of variations is used to find functions that optimize quantities expressed in terms of integrals. Optimal control theory seeks to find functions that minimize cost integrals for systems described by differential equations.

This book is an introduction to both the classical theory of the calculus of variations and the more modern developments of optimal control theory from the perspective of an applied mathematician. It focuses on understanding concepts and how to apply them. The range of potential applications is broad: *the calculus of variations and optimal control theory have been widely used in numerous*

ways in biology, criminology, economics, engineering, finance, management science, and physics. Applications described in this book include cancer chemotherapy, navigational control, and renewable resource harvesting.

The prerequisites for the book are modest: the standard calculus sequence, a first course on ordinary differential equations, and some facility with the use of mathematical software. *It is suitable for an undergraduate or beginning graduate course, or for self study.* It provides excellent preparation for more advanced books and courses on the calculus of variations and optimal control theory.

Contents: The Brachistochrone ◆ The fundamental problem. Extremals ◆ The insufficiency of extremality ◆ Important first integrals ◆ The du Bois-Reymond equation ◆ The corner conditions ◆ Legendre's necessary condition ◆ Jacobi's necessary condition ◆ Weak versus strong variations ◆ Weierstrass's necessary condition ◆ The transversality conditions ◆ Hilbert's invariant integral ◆ The fundamental sufficient condition ◆ Jacobi's condition revisited ◆ Isoperimetrical problems ◆ Optimal control problems ◆ Necessary conditions for optimality ◆ Time-optional control ◆ A singular control problem ◆ A biological control problem ◆ Optimal control to a general target ◆ Navigational control problems ◆ State variable restrictions ◆ Optimal harvesting ◆ Afterword ◆ Solutions or hints for selected exercises ◆ *Bibliography ◆ Index*

2012	252 pp.	Paperback
978-0-8218-8734-9		₹ 680.00

Probability

Davar Khoshnevisan

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		₹ 640.00

NEW

Probability Theory

S. R. S. Varadhan

Series: Indian Editions of AMS Titles
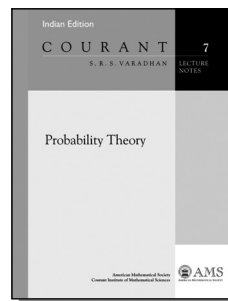
S. R. S. Varadhan is recognized as a top expert in probability theory. This volume presents topics in probability theory covered during a first-year graduate course given by Varadhan at the Courant Institute of Mathematical Sciences. The necessary background material in measure theory is developed, including 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
97-81-4704-1914-1		₹ 640.00

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

Michael A Bean

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		₹ 800.00

Probability and Statistics

Mohan Delampady, T Krishnan, S Ramasubramanian (Eds)

This book covers probability, statistical decision theory, stochastic processes, sampling, model building, etc. *It can be used by students of Mathematics and Statistics to complement what they learn in their regular courses. It will also be of*

interest to students of other sciences like Biology and Physics for understanding the role that probability and statistics play in their respective fields.

Contents: *Foreword* ⬧ *Editorial* ⬧ The Theory of Probability ⬧ On Randomness and Probability: How to Model Uncertain Events Mathematically ⬧ Sampling, Probability Models and Statistical Reasoning: Statistical Inference ⬧ The Normal Distribution: From Binomial to Normal ⬧ The Normal Distribution: Some Roles of Normality ⬧ Buffon's Needle Problem: Think it over ⬧ Buffon's Needle Problem: Discussion ⬧ Buffon's Needle Problem: Revisited ⬧ How Negative Can the Product-Moment Correlation Coefficient be? ⬧ Stratified Sampling-When the Optimum Allocation Demands more than 100 percent Sampling ⬧ Increases of Entropy and the Arithmetic-Geometric Mean ⬧ The Vacillating Mathematician: Where Does She End Up? ⬧ The Vacillating Mathematician: A Stochastic Version ⬧ Ohm's Law, Kirchoff's Law and the Drunkard's Walk: Related Electrical Networks ⬧ Ohm's Law, Kirchoff's Law and the Drunkard's Walk: The Drukard's Walk ⬧ How Low Can You Sink?: In Search of Global Minima ⬧ Why Do Clocks Move Clockwise? : The Dynamic of Collective Learning ⬧ There's No Such Thing as a Free Lunch: The Bias-Variance Dilemma ⬧ The Secretary Problem: Optional Stopping ⬧ A Simple Experiment to Study the Statistical Properties of a Molecular Assembly with Two or Three State Dynamics ⬧ Who Will Win the Toss? ⬧ Andrei Nikolaevich Kolmogorov ⬧ Contributions of Kolmogorov to the Foundations of Probability Theory ⬧ Fisher's Contributions to Statistics ⬧ Sir R A Fisher and the Evolution of Genetics ⬧ When and Where the Articles Appeared in Resonance ⬧ *Index*

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

2000	200 pp.	Paperback
978-81-7371-289-0		₹ 250.00

Probability and Statistics for Science and Engineering

G Shankar Rao

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		₹ 425.00

NEW

Probability Theory and Stochastic Processes
(Fourth Edition)

Y Mallikarjuna Reddy

Probability Theory in Finance: A Mathematical Guide to the Black-Scholes Formula

Seán Dineen

Series: Indian Editions of AMS Titles

The use of the Black-Scholes model and formula is pervasive in financial markets. *There are very few undergraduate textbooks available on the subject and, until now, almost none written by mathematicians. Based on a course given by the author, the goal of this book is to introduce advanced undergraduates and beginning graduate students studying the mathematics of finance to the Black-Scholes formula.* The author uses a first-principles approach, developing only the minimum background necessary to justify mathematical concepts and placing mathematical developments in context.

The book skillfully draws the reader toward the art of thinking mathematically and then proceeds to lay the foundations in analysis and probability theory underlying modern financial mathematics. It rigorously reveals the mathematical secrets of topics such as abstract measure theory, conditional expectations, martingales, Wiener processes, the It calculus, and other ingredients of the Black-Scholes formula. In explaining these topics, the author uses examples drawn from the universe of finance. The book also *contains many exercises*, some included to clarify simple points of exposition, others to introduce new ideas and techniques, and a few containing relatively deep mathematical results.

With the modest prerequisite of a first course in calculus, *the book is suitable for undergraduates and graduate students in mathematics, finance, and economics* and can be read, using appropriate selections, at a number of levels.

Contents: Money and markets ❖ Fair games ❖ Set theory ❖ Measurable functions ❖ Probability spaces ❖ Expected values ❖ Continuity and integrability ❖ Conditional expectation ❖ Martingales ❖ The Black-Scholes formula ❖ Stochastic integration ❖ *Solutions* ❖ *Bibliography* ❖ *Index*

2011	312 pp.	Paperback
978-0-8218-6881-2		₹ 755.00

Real Analysis and Applications: Including Fourier Series and the Calculus of Variations

Frank Morgan

Series: Indian Editions of AMS Titles

Real Analysis and Applications starts with a streamlined, but complete, approach to real analysis. It finishes with a wide variety of applications in Fourier series and the calculus of variations, including minimal surfaces, physics, economics, Riemannian geometry, and general relativity. The basic theory includes all the standard topics: limits of sequences, topology, compactness, the Cantor set and fractals, calculus with the Riemann integral, a chapter on the Lebesgue theory, sequences of functions, infinite series, and the exponential

and Gamma functions. The applications conclude with a computation of the relativistic precession of Mercury's orbit, which Einstein called "convincing proof of the correctness of the theory [of General Relativity]." The text not only provides clear, logical proofs, but also shows the student how to derive them. *The excellent exercises come with select solutions in the back. This is a text that makes it possible to do the full theory and significant applications in one semester. Frank Morgan is the author of six books and over one hundred articles on mathematics. He is an inaugural recipient of the Mathematical Association of America's national Haimo award for excellence in teaching. With this applied version of his Real Analysis text, Morgan brings his famous direct style to the growing numbers of potential mathematics majors who want to see applications along with the theory. The book is suitable for undergraduates interested in real analysis.*

Contents: Real numbers and limits ❖ Topology ❖ Calculus ❖ Fourier series ❖ The calculus of variations ❖ Index

2012	200 pp.	Paperback
978-0-8218-9185-8		₹ 640.00

Statistical Mechanics: An Elementary Outline
(Second Edition)

Avijit Lahiri

NEW

Tensors: Geometry and Applications

J. M. Landsberg

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		₹ 800.00

Theory of Matrices, The
(Volume 1)

F R Gantmacher

Series: Indian Editions of AMS Titles

This treatise, by one of Russia's leading mathematicians, gives in easily accessible form a coherent account of matrix theory with a view

to *applications in mathematics, theoretical physics, statistics, electrical engineering, etc. The individual chapters have been kept as far as possible independent of each other, so that the reader acquainted with the contents of Chapter 1 can proceed immediately to the chapters of special interest.* Much of the material has been available until now only in the periodical literature.

Contents: Matrices and operations on matrices ◆ The algorithm of Gauss and some of its applications ◆ Linear operators in an n-dimensional vector space ◆ The characteristic polynomial and the minimal polynomial of a matrix ◆ Functions of matrices ◆ Equivalent transformations of polynomial matrices. Analytic theory of elementary divisors ◆ The structure of a linear operator in an n-dimensional space ◆ Krylov's method of transforming the secular equation ◆ Matrix equations: Linear operators in a unitary space ◆ Quadratic and hermitian forms ◆ *Bibliography* ◆ *Index*

2013	384 pp.	Paperback
978-1-4704-0916-6		₹ 760.00

Theory of Matrices, The
(Volume 2)

F R Gantmacher

Series: Indian Editions of AMS Titles

This treatise, by one of Russia's leading mathematicians, gives in easily accessible form a coherent account of matrix theory with a view to *applications in mathematics, theoretical physics, statistics, electrical engineering, etc. The individual chapters have been kept as far as possible independent of each other, so that the reader acquainted with the contents of Chapter 1 can proceed immediately to the chapters of special interest.* Much of the material has been available until now only in the periodical literature.

Contents: Complex symmetric, skew-symmetric, and orthogonal matrices: Some formulas for complex orthogonal and unitary matrices ◆ Polar decomposition of a complex matrix ◆ The normal form of a complex symmetric matrix ◆ The normal form of a complex skew-symmetric matrix ◆ The normal form of a complex orthogonal matrix ◆ Singular pencils of matrices: Introduction ◆ Regular pencils of matrices ◆ Singular pencils. The reduction

theorem ◆ The canonical form of a singular pencil of matrices ◆ The minimal indices of a pencil. Criterion for strong equivalence of pencils ◆ Singular pencils of quadratic forms ◆ Application to differential equations ◆ Matrices with non-negative elements: General properties ◆ Spectral properties of irreducible non-negative matrices ◆ Reducible matrices ◆ The normal form of a reducible matrix ◆ Primitive and imprimitive matrices ◆ Stochastic matrices ◆ Limiting probabilities for a homogeneous Markov chain with a finite number of states ◆ Totally non-negative matrices ◆ Oscillatory matrices ◆ Applications of the theory of matrices to the investigation of systems of linear differential equations: Systems of linear differential equations with variable coefficients. General concepts ◆ Lyapunov transformations ◆ Reducible systems ◆ The canonical form of a reducible system. Erugin's theorem ◆ The matricant ◆ The multiplicative integral. The infinitesimal calculus of Volterra ◆ Differential systems in a complex domain. General properties ◆ The multiplicative integral in a complex domain ◆ Isolated singular points ◆ Regular singularities ◆ Reducible analytic systems ◆ Analytic functions of several matrices and their application to the investigation of Differential systems. The papers of Lappo-Danilevskii ◆ The problem of Routh-Hurwitz and related questions: Introduction ◆ Cauchy indices ◆ Routh's algorithm ◆ The singular case. Examples ◆ Lyapunov's theorem ◆ The theorem of Routh-Hurwitz ◆ Orlando's formula. Singular cases in the Routh-Hurwitz theorem ◆ The method of quadratic forms. Determination of the number of distinct real roots of a polynominal ◆ Infinite Hankel matrices of finite rank ◆ Determination of the index of an arbitrary rational fraction by the coefficients of numerator and denominator ◆ Another proof of the Routh-Hurwitz theorem ◆ Some supplements to the Routh-Hurwitz theorem. Stability criterion of Liénard and Chipart ◆ Some properties of Hurwitz polynomials. Stieltjes' theorem. Representation of Hurwitz polynomials by continued fractions ◆ Domain of stability. Markov parameters ◆ Connection with the problem of moments ◆ Theorems of Markov and Chebyshev ◆ The generalized Routh-Hurwitz problem ◆ *Bibliography* ◆ *Index*

2013	276 pp.	Paperback
978-1-4704-0917-3		₹ 680.00

Theory of Probability and Stochastic Processes

Pradip Kumar Ghosh

Topics in Applied Abstract Algebra

S R Nagpaul & S K Jain

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		₹ 775.00

Understanding Probability and Statistics: A Book of Problems

Ruma Falk

Understanding Probability and Statistics is a book of creative statistical problems intended to allay the mathematical fears of the average students through "experiencing the revelation of understanding." The collection encompasses a range of problems from high-school to graduate level and *takes the active, hands-on approach to the assimilation of basic concepts*. Through the use of humor and the familiar, the author has made an often overwhelming subject less intimidating. Because neither calculus nor other techniques of higher mathematics are required for arriving at solutions, the book is quite appropriate for non-mathematicians. However, this text may be of benefit to the more mathematically inclined as well, because although technically elementary, it is conceptually advanced.

Contents: *Preface* ❖ Problems to Solve: Descriptive Statistics I ❖ Probability I ❖ Reasoning across Domains ❖ Multiple-choice Problems: Descriptive Statistics II ❖ Probability II ❖ Normal Distribution, Sampling Distribution, and Inference ❖ Answers: Answers for Part I: Problem to Solve; Answer for Part II: Multiple-Choice Problems ❖ *References* ❖ *Index*

2003	256 pp.	Paperback
978-81-7371-440-5		₹ 275.00

Wavelets: Theory, Applications, Implementation

M V Altaisky

Wavelet analysis has been at the centre stage of applied mathematics over the last two decades. It is the preferable alternative to Fourier analysis in signal processing when the signals are random and comprised of fluctuations of different scales. The beauty of wavelets reveals itself when applied to fractals or self-similar objects. This book aim*s at presenting a deductive scheme to show where and when the scale-invariance of Nature meets the representations of the affine group. It includes standard trends in wavelet analysis and discrete wavelet transform, some results obtained by the author in collaboration with different people in data processing, and a number of C++ programs which can be used by physicists, economists or biologists for the analysis of the time series.* The general mathematical and physical ideas of wavelets are presented without sinking into details of elaborate numeric schems; at the same time it enables the reader to solve wavelet-related problems on the computer. *The book also contains some new ideas developed by the author for non-standard applications of wavelets in quantum mechanics, quantum field theory and biology.*

Contents: *Mathematical Symbols and Notations* ❖ *Introduction* ❖ Fundamental Concepts of Wavelets Transform ❖ The Method of Wavelet Transform ❖ Wavelets and Fractals ❖ Wavelets and Functional Analysis ❖ Discretization ❖ Applications ❖ Wavelets in Mathematical Physics ❖ Conclusion ❖ *Index*

2004	164 pp.	Paperback
978-81-7371-503-7		₹ 295.00

ENVIRONMENTAL ENGINEERING

Dimensions in Environmental and Ecological Economics

Amita Kumari Choudhury & Nirmal Chandra Sahu (Eds)

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

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		₹ 275.00

Fundamentals of Remote Sensing
(Second Edition)

George Joseph

Geographical Information Science

Narayan Panigrahi

Questions and Answers in Environmental Science

S K Basu & A K De

The sustainable future of humanity lies in understanding the earth and its environment. For this reason, environmental science has a purview that overlaps several other disciplines; from biology to economics, geology to sociology, every subject has a significant relationship with some area of environmental science. However, it is often difficult, time-consuming and exhaustive to keep pace with new trends in such a broad-based field.

Contents: *Preface* ⬦ Ecology and Ecosystems ⬦ Forestry and Agriculture ⬦ Environmental Biology ⬦ Environmental Chemistry ⬦ Environmental physics ⬦ Biostatistics ⬦ Environmental Geology ⬦ Disaster Management ⬦ Population Biology ⬦ Conventional Energy Resources ⬦ Non-Conventional Energy Resources ⬦ Population Studies ⬦ Conversation Methods ⬦ Environmental Legislation and Planning ⬦ *Abbreviations* ⬦ *Test your Knowledge* ⬦ *Selected Reading*

2005	396 pp.	Paperback
978-81-7371-547-1		₹ 395.00

Remote Sensing and Its Applications

L R A Narayan

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	234 pp.	Paperback
978-81-7371-268-5		₹ 450.00

Textbook of Environmental Studies for Undergraduate Courses
(Second Edition)

Erach Bharucha

'Environmental studies' has become an undisputed requirement in the syllabi of all undergraduate courses. The first edition of this textbook was the outcome of the efforts of the Expert Committee constituted by the UGC in response to the directive given by the Supreme Court of India, on the necessity for a basic course on the environment. *The Second Edition has incorporated the feedback from the students and faculty to make it more user-friendly.*

Salient Features: Tailored precisely to suit the curriculum set down by the *UGC.* ◆ Relevant new *case studies, examples, photographs and figures* make the book student and teacher-friendly. ◆ The *subject matter is presented in very simple and lucid language which makes the concepts clear to Engineering, Arts, Science and Commerce students alike.* ◆ The important aspect of '*fieldwork*' is included in Unit 8. ◆ *Flowcharts* have been introduced wherever required so that concepts are clearer in the students' minds. ◆ The refrain of 'sustainable living' runs though the entire book, thus awakening the students to reality and *suggests solutions for commonly encountered environmental issues.* ◆ *Questions* are provided at the end of each chapter to test comprehension.

Contents: *Foreword* ◆ *Preface to the Second Edition* ◆ *Preface to the First Edition* ◆ *Acknowledgements* ◆ Vision ◆ Core Module Syllabus for Environmental Studies for Undergraduate Courses of all Branches of Higher Education ◆ The Multidisciplinary Nature of Environmental Studies ◆ Natural Resources ◆ Ecosystems ◆ Biodiversity ◆ Pollution ◆ Social Issues and the Environment ◆ Human Population and the Environment ◆ Field Work ◆ The Need for Sustainable Development and Biodiversity Conservation for a New Emerging India ◆ *Multiple Choice Questions* ◆ *Websites* ◆ *Further Reading* ◆ *Index*

2013	324 pp.	Paperback
978-81-7371-862-5		₹ 225.00

Textbook of Environmental Studies for Undergraduate Courses
(Special Edition for JNTU-H)

Erach Bharucha

'Environmental studies' has become an undisputed requirement in the syllabi of all undergraduate courses. The first edition of this textbook was the outcome of the efforts of the Expert Committee constituted by the UGC in response to the directive given by the Supreme Court of India, on the necessity for a basic course on the environment. This special edition is tailored to suit the requirements of the first-year syllabus at JNTU, Hyderabad.

MANAGEMENT IN ENGINEERING

Industrial Psychology

Dipak Bhattacharyya & Sutapa Bhattacharya

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		₹ 225.00

Knowledge Management: Classic and Contemporary Works

*Daryl Morey, Mark Maybury &
Bhavani Thuraisingham*

This book provides an introduction to the field of knowledge management. Taking a learning-centric rather than an information-centric approach, it emphasizes the continuous acquisition and application of knowledge. The book is *organized into three sections—Strategy, Process and Metrics*—each opening with a classic work from a leader in the field and contains unpublished works that further develop the foundational concepts and strategies.

Contents: *Preface* ◆ *Acknowledgments* ◆ Introduction: Can Knowledge Management Succeed Where Other Efforts Have Failed? ◆ *I.* Strategy - Introduction: Strategy: Compelling Word, Complex Concept ◆ Classic Work: The Leader's New Work: Building Learning Organizations ◆ Reflection on "A Leader's New Work: Building Learning Organizations" ◆ Developing a knowledge Strategy: From Management to Leadership ◆ Building Intangible Assets: A Strategic Framework for Investing in Intellectual Capital ◆ Knowledge Sharing Is a Human Behaviour ◆ *II.* Process - Introduction: Sharing and Building Context ◆ Classic Work: Theory of Organizational Knowledge Creation ◆ Reflection on Knowledge Management: Linking Theory with Practice ◆ Knowledge Management: Linking Theory with Practice ◆ Tacit Knowledge, Unarticulated Needs, and Empathic Design in New Product Development ◆ Endbling Complex Adaptive Processes through Knowledge Management ◆ Knowledge Sharing Shifts the Power Paradigm ◆ From Capitalizing on Company Knowledge to Knowledge Management ◆ Evolution through Knowledge Management: A Case Study ◆ *III.* Metrics - Introduction: Metrics: Separating KM Fact from Fiction ◆ Classic Work: The Balanced Scorecard: Learning and Growth Perspective ◆ Measuring Intangibles and Intellectual Capital ◆ New Measures for a New Era ◆ Managing Organizational Knowledge by Diagnosing Intellectual Capital ◆ Knowledge

Sharing Metrics for Large Organizations ◆ *Appendix* ◆ *Contact the Authors* ◆ *Index*

2001	456 pp.	Paperback
978-81-7371-390-3		₹ 550.00

Managerial Economics and Financial Analysis

Shailaja Gajjala & Usha Munipalle

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		₹ 295.00

Production and Operations Management: Theory and Practice

Dipak Kumar Bhattacharyya

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 ❖ Pro-

duction 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		₹ 475.00

Revolution in Project Management

A Sivathanu Pillai

Most projects have many stakeholders with different aspirations from the project—the customer demands quality, the investor wants fair return on investments, the project manager wants timely completion of the project. All of these sometimes conflicting objectives have to be satisfied at the same time.

With the proper management and control mechanism, a holistic view of how a project is running can be obtained and its likely performance in future determined. This is to avoid a drain of resources in projects which are no longer viable, or to continue such projects which show promise of completion.

Revolution in Project Management reviews the steps in organising and managing projects, from how to build a realistic schedule to how to measure both success and failure. *India's successful Integrated Guided Missile Development Programme (IGMDP) is provided as a case study.*

Contents: *Preface* ❖ *Introduction* ❖ Learning from project failure ❖ Life cycle of Project ❖ Criteria for project success ❖ Merit of project ❖ Category Bias ❖ Risk Ranking Model ❖ Decision Effectiveness ❖ User Commitment ❖ Progress Deviation ❖ Cost Deviation ❖ Cost Effectiveness ❖ Production Preparedness ❖ Integrated Project Performance Index ❖ Validation of Integrated Project Performance Index ❖ *Summary* ❖ *Case Studies* ❖ *Bibliography* ❖ *Index*

2009	252 pp.	Paperback
978-81-7371-683-6		₹ 395.00

MATERIALS SCIENCE

Basic Course in Crystallography, A

J A K Tareen & T R N Kutty

Crystallography is a multidisciplinary subject, forming a *part of courses in Materials Science, Chemistry, Condensed Matter Physics, Metallurgy, Ceramics, Geology, Mineralogy, and some disciplines in Engineering*. The most important feature of this book is the logical development of the subject, the crucial key word being symmetry in point groups as well as the translational distribution of molecules to generate the long-range order. A *large number of illustrations* complement the lucid narration. *Worked examples and exercises are included* in most *chapters*.

Contents: External Symmetry ◆ Description of Crystals ◆ Internal Symmetry and Crystal Lattice ◆ Structural Principles in Crystals ◆ The Physical Properties of Crystals ◆ Diffraction By Crystals – X-ray Crystallography ◆ *Bibliography* ◆ *Subject* ◆ *Index*

2000	176 pp.	Paperback
978-81-7371-360-6		₹ 350.00

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 Manufacturing Technology

Baldev Raj, T Jayakumar, P V Sivaprasad, B P C Rao, G Sasikala (Eds)

The book covers a broad spectrum of topics spanning the entire world of manufacturing—from the development of technologies to the realisation of products—their inspection and enterprise, from the selection of raw materials to product-testing and from methods in welding to artificial intelligence and robotics.

It is *organised thematically* into four sections:
• Trends in manufacturing technology
• Modelling and simulation
• Non-destructive evaluation
• Product development and technology enterprise

Latest breakthroughs in the development of processes and products have been presented.

A total of 40 contributions are included from world-renowned experts from around the world.

Contents: *Foreword* ◆ *Preface* ◆ *About the Series* ◆ *Editorial Advisory Board* ◆ A Perspective on Engineering Manufacturing ◆ Recent Developments in Automotive Manufacturing using Advanced High-strength Steels ◆ Hydroforming: An Emerging Manufacturing Technology ◆ Review of Recent Developments in Deep Drawing Process ◆ Advances in Metal Forming Technology in the Manufacture of Reactor Core Components ◆ Mechanical Micromachining: Technology and Future ◆ Development of Investment Casting Dies for Aerospace Turbine Blades and Vanes using CAD/CAM Techniques ◆ Semisolid Metal Processing for Near Net Shape Forming ◆ Hybrid Layered Manufacturing of Metallic Objects ◆ The Importance of Interdisciplinary Research and Vision in the Evolution of New Engineering Technologies ◆ Investigations on Machining of Microchannels on Silicon Water using Micro EDM ◆ The Diamond Pyramid Structure Observed on the Surface of Electroless Copper Deposit and Its Atom Model ◆ Finite Element Simulation of Crack Growth in Metal Forming Process using Gurson Model ◆ Numerical Investigation of Ramp and Constant Pressurization System during Tube Crushing Process ◆ In Pursuit of Efficient Industrial Thermal Processing: Innovative Concepts, Integrated Models and Process Optimization ◆ Optimization of Process Parameters for Abrasive Water Jet Machining of Kevlar–Epoxy Composites Using Taguchi Method and Response

Surface ❖ NDT-aided Production Processes I Advances in Manufacturing Technology—Role of NDE ❖ Advanced NDE Techniques for Manufacturing Applications Ultrasonic Examination of Austenitic Stainless Steel Welds using EMATs ❖ Real-time Processing of NDT Data for Inline Control of Production Processes ❖ Multi-NDEInvestigations on Zircaloy-4 Rods for ensuring Manufacturing Quality ❖ Non-Contact Ultrasound Sensors for Process Measurements in Composite Fabrication ❖ Meeting the Challenges in Closing the Nuclear Fuel Cycle with Automation, Robotics and Remote Handling Technology ❖ Aluminium-based in situ Composites for Automotive and Other Light-Weight High-Strength Applications ❖ The Factory of the Future in the Knowledge Economy ❖ The Role of Manufacturing in the Internationalization Strategies of Multinationals from Emerging Economies ❖ Cost Reduction Measures in Mega Projects ❖ Development and Automation of High-Performance Arc Welding Processes ❖ Materials Science and Engineering for the Next Generation ❖ Challenges in Design and Manufacturing Technology Development of Grid Plate for PFBR ❖ Manufacture of Sodium Rig Components ❖ Alternative Approach in the Manufacture of the Steering Knuckle of an Axle with Independent Suspension ❖ Development of Manufacturing Technology for High-speed Centrifuges ❖ ISI Systems for Fast Reactor Fuel Reprocessing Plants—A Collective Panorama ❖ Manufacture of Sodium-to-Air Heat Exchangers ❖ Challenges Faced in Local PWHT of Tube-to-tube Sheet Joints for Prototype Fast Breeder Reactor Steam Generator ❖ Optimization of Friction Stir Welding Parameters for Precipitation-Hardenable Aluminium Alloys 7020 and 6061 505 ❖ Electroless Ni–P Microcoatings: Processing, Optimization and Characterization Techniques ❖ Development of Rotor for Rotary Engine: A Challenge

2012	556 pp.	Hardback
978-81-7371-755-0		₹ 1,475.00

Functional Materials: A Chemist's Perspective

Vijayamohanan K Pillai & Meera Parthasarathy

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*.

Salient 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

This book lucidly explains various aspects of functional materials, beginning from fundamental definitions to specific applications and methods of introducing functions, emerging synthetic tools and many attendant challenges. The authors admirably unravel the subject's multi-disciplinary breadth and convey their smart understanding of the new innovative trends in the design, synthesis and manufacture of new materials. They elegantly combine various aspects of molecular design, material preparation, organization, characterization and applications with many fascinating, real-life examples.

— R A Mashelkar

National Research Professor, CSIR Bhatnagar Fellow & President, Global Research Alliance National Chemical Laboratory, Pune, India

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

2012	408 pp.	Paperback
978-81-7371-768-0		₹ 450.00

NEW

India's Legendary Wootz Steel

Sharada Srinivasan & Srinivasa Ranganathan
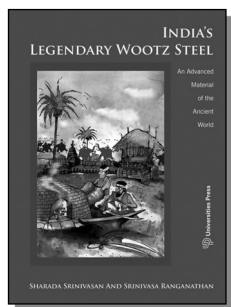
This book is reissued under the Universities Press-IIM Series in Metallurgy and Materials Science.

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		₹ 1,175.00

Powder Metallurgy: Science, Technology and Materials

Anish Upadhyaya & G S Upadhyaya

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		₹ 595.00

Textbook of Nanoscience and Nanotechnology

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

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

2011	254 pp.	Paperback
978-81-7371-738-3		₹ 375.00

Mechanical Engineering

Advances in Manufacturing Technology

*Baldev Raj, T Jayakumar, P V Sivaprasad,
B P C Rao & G Sasikala*

Basic Engineering Thermodynamics

A Venkatesh

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		₹ 425.00

Brief History of Rocketry in ISRO, A

P V Manoranjan Rao & P Radhakrishnan

NEW

Computer-Aided Engineering Design

Trymbaka Murthy
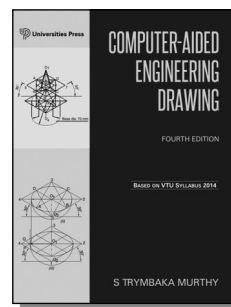
Engineering drawing is a compulsory subject for all disciplines as it is the graphical language engineers use to convey ideas of objects, systems and their analyses. The use of computer software for engineering drawing is a well established today, with several software offering advanced features for 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 ◆ Incorporate 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		₹ 225.00

Computer Simulation of Compression-Ignition Engine Processes

V Ganesan

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		₹ 350.00

Computer Simulation of Spark-Ignition Engine Processes

V Ganesan

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		₹ 350.00

NEW

Elements of Mechanical Engineering
(Fourth Edition)

Trymbaka Murthy
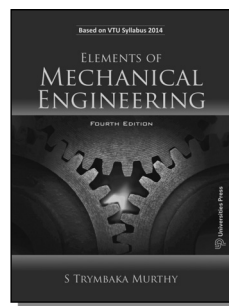
An understanding of the fundamentals of mechanical systems is a prerequisite for engineering studies. This book encapsulates the basic concepts of varied fields of mechanical engineering, particularly fuel and steam energy,

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		₹ 195.00

Engineering Mechanics

M V Seshagiri Rao & D Rama Durgaiah

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		₹ 350.00

Engineering Optimization: A Modern Approach

Ranjan Ganguli

Engineering Thermodynamics Through Examples: More than 765 Solved Examples

Y V C Rao

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		₹ 675.00

First Course in Fluid Mechanics, A

S Narasimhan

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 | | ₹ 425.00 |

Fuels and Combustion
(Third Edition)

Samir Sarkar

Fundamentals of Computational Fluid Dynamics

Tapan K Sengupta

This book aims to provide a foundation to CFD which finds application in solving leading 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 comparison to finite element methods. In the last chapter, 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 ⬧ 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*

Gas Tables
(Third Edition)

E Rathakrishnan

Heat Transfer

Y V C Rao

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		₹ 410.00

Solutions Manual for Heat Transfer

Y V C Rao

This manual contains complete and detailed worked-out solutions for all the problems given at the end of each chapter in the book *Heat Transfer* (hereinafter referred to as 'the Text'). All the problems can be solved by direct application of the principle presented in the Text. *This manual will serve as a handy reference to users of the Text*. Data presented in the charts and tables in the Text are made use of in solving the problems. The notation used in this manual is identical to that used in the Text.

2002	184 pp.	Paperback
978-81-7371-407-8		₹ 200.00

NEW

Industrial Psychology

Dipak Kumar Bhattacharyya

Introduction to Strength of Materials

D S Prakash Rao

Introduction to Thermodynamics, An
(Second Edition)

Y V C Rao

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		₹ 475.00

Solutions Manual for Introduction to Thermodynamics, An

Y V C Rao

This manual contains the complete solutions for all the 505 chapter-end problems in the textbook An Introduction to Thermodynamics, and will serve as a handy reference to teachers as well as students. The data presented in the form of tables and charts in the main textbook are made use of in this manual for solving the problems. The notation used in this manual is identical to that used in the main textbook. Readers are advised to refer to the solutions in this manual only after attempting the problems on their own.

2004	368 pp.	Paperback
978-81-7371-516-7		₹ 550.00

Mechanics of Composite Materials and Structures

Madhujit Mukhopadhyay

NEW

Operations Research, Models and Methods

Chandrasekhar Salimath and Bhupender Parashar

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		₹ 350.00

Principles of Fluid Mechanics and Fluid Machines
(Third Edition)

N Narayana Pillai

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		₹ 450.00

Principles of Metal Cutting

G Kuppuswamy

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		₹ 325.00

Production and Operations Management: Theory and Practice

Dipak Kumar Bhattacharyya

See page 79

. . . .

Robotics Primer, The

Maja J Mataric

. . . .

Textbook on Heat Transfer, A
(Fourth Edition)

S P Sukhatme

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		₹ 395.00

Thermodynamics

Y V C Rao

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		₹ 195.00

FORExtCOMING

Mechanics

P C Dumir, S Sengupta and Srinivas Veeravalli

In this book, the subject of mechanics is developed in an integrated manne, in the spirit of modern continuum mechanics, as the classical model is only physically valid for systems of finite size. Euler's two axioms of momentum and moment of momentum form the basis of

this theory. The logical sequence of kinematics, axioms, dynamics and statics has been followed, and statics has been treated as a special case of dynamics and presented later so as curb the tendency to treat equations of dynamics like the equations of equilibrium through pseudo-forces. Thus the development is from the general to the particular, at all times making the reader aware of the assumptions underlying each move and therefore, its limitations. This approach ensures that the student does not have to learn each concept twice or thrice over (e.g. 1D, 2D and 3D) and also ensures that he/she does not shy away from complex problems, which are all too common in the field.

Since this text is meant primarily for students of engineering, care has been taken to include examples that mimic real-life engineering systems in addition to those that illustrate basic concepts. Wherever possible, problems with a design component have also been included.

Pneumatics – Concepts, Design and Applications

Jagadeesha, T.

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, 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 pneumatic power, and provides physical interpretations of mathematical analysis for comprehending solutions of complex problems.

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 of technical universities in India ◆ The production, drying, cooling, conditioning and distribution of compressed air is discussed in

detail ◆ Provides substantive 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

---

METALLURGY

Basic Course in Crystallography, A

J A K Tareen & T R N Kutty

See page 80

NEW

Principles of Metallurgical Thermodynamics

S K Bose and S K Roy
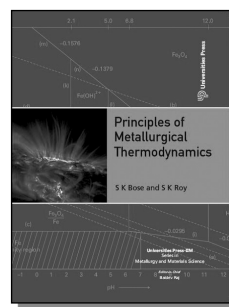
The Series in Metallurgy and Materials Science was initiated during the Diamond Jubilee of the Indian Institute of Metals (IIM). This book is the third textbook in the series.

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		₹ 650.00

India's Legendary Wootz Steel

Sharada Srinivasan & Srinivasa Ranganathan

- -

Introduction to Metallurgy, An
(Second Edition)

Alan Cottrell

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		₹ 675.00

Powder Metallurgy: Science, Technology and Materials

Anish Upadhyaya & G S Upadhyaya

. . . .

■■■■■■ **FORTHCOMING** ■■■■■■

First Course in Iron and Steel-Making, A

Dipak Mazumdar

This book describes comprehensively the production of iron and steel, with an emphasis on metallurgical kinetics, transport phenomena and process modelling. The book covers topics such as chemical thermodynamics, product development and product recycling in relation to manufacturing iron and steel. Principles of blast furnace iron-making is discussed in detail, along with a fully preductive mathematical model. Modern-day steel-making techniques such as LD, Q-BOP and KBOP are elaborated and assessed. The growth of the iron and steel industry since independence and problems related to the sourcing of raw materials and production is also covered.

PHARMACEUTICAL TECHNOLOGY

Ananthanarayan and Paniker's Textbook of Microbiology

Arti Kapil (Ed.)

- -

Analytical Chemistry

G L David Krupadanam, D Vijaya Prasad,
K Varaprasad Rao, K L N Reddy & C Sudhakar

This book deals with the principles and applications of analytical chemistry, and *is useful for B.Sc. chemistry students and those working in analytical research laboratories of drug, pesticide and other chemical industries*. The topics discussed include the procedures to be followed in analytical work, solvent extraction as a technique in the isolation and purification of compounds, and chromatographic techniques (TLC, column, paper, ion-exchange, and HPLC) that are used for identification, purification, quantitative analysis and for monitoring the progress of reactions.

Contents: *Preface* ❖ Evaluation of Analytical Data ❖ Separation Methods: Solvent Extraction ❖ Separation Methods: Chromatography ❖ Instrumental Methods of Analysis: UV-Visible Spectroscopy ❖ Analysis of Water ❖ *Index*

2001	216 pp.	Paperback
978-81-7371-385-9		₹ 250.00

Chemical Process Calculations

K Asokan

Chemistry of Natural Products:
A Unified Approach
(Second Edition)

N R Krishnaswamy

Chemistry of Natural Products: A Unified Approach, provides a planned account of the common features—structural and stereochemical—of naturally occurring organic compounds. This is the only approach to bring about effective understanding of their chemistry. A variety of examples have been given to illustrate varied aspects so that the range of structure and behaviour exhibited by these compounds is retained within the set framework. The increasing application of physical (spectroscopic) methods like IR, NMR, CD, ORD, MS, High Resolution Mass Spectroscopy—using which, structural determinations are often done with

very small or even microscopic quantities of the substance—is emphasised, without undermining the importance of 'classical' chemical methods. *The section on problem solving helps to develop an analytical and critical evaluation of the data.*

The second edition reflects the significant and important developments that have taken place since the publication of the first edition, particularly with regard to the biological aspects of natural products.

Special Features: Unified approach: Discusses all classes of compounds ❖ Unique approach: Discusses common structural and stereochemical features of naturally occurring organic compounds ❖ Revised Introduction for all chapters ❖ *Examples: About 100 examples across the book and 6 new per chapter* ❖ Correlation with spectral data

Contents: Introduction ❖ Structure ❖ Stereochemistry ❖ Reactions and Rearrangements ❖ Synthesis ❖ Biosynthesis ❖ Biological Significance of Secondary Metabolites ❖ *Problems* ❖ *Index*

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

2010	432 pp.	Paperback
978-81-7371-677-5		₹ 550.00

Chemistry of Natural Products:
A Laboratory Handbook

N R Krishnaswamy

This book is a laboratory companion to the author's book, *Chemistry of Natural Products: A Unified Approach*, Second edition (Universities Press, 2010). *The main objective is to provide students with experimental details for the successful isolation of different types of natural products.*

The handbook has been extensively revised and updated. Apart from including additional examples under isolation, chemical transformation and synthesis, two new chapters have been added to enlarge the scope of the book and make it useful to students of organic chemistry and biochemistry. They are:
• Metabolism of Natural Products
• Suggested Projects

Notes on how to collect and identify plant materials, and the preparation of diagnostic chemical reagents used in the characterisation of natural products, have been included.

The chemistry of natural products is a hybrid science combining the theory of organic chemistry with experimentation. This book contains a judicious combination of both spectroscopic and chemical methods. All the experiments have been successfully class tested.

Contents: *Introduction* ❖ A Survey of the Methods of Extraction, Isolation and Fractionation of Naturally Occurring Organic Compounds ❖ Characterisation of Naturally Occurring Compounds ❖ Procedures for Isolation of Select Compounds ❖ Chemical Transformations of some Natural Products ❖ Synthesis of Select Compounds ❖ Metabolism of Natural Products ❖ Suggested Projects ❖ *Appendix A* ❖ *Appendix B* ❖ *Index of Compounds* ❖ *Index of Plants* ❖ *Index of Reagents*

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

2012	224 pp.	Paperback
978-81-7371-757-4		₹ 225.00

Drugs

G L David Krupadanam, D Vijaya Prasad, K Varaprasad Rao, K L N Reddy & C Sudhakar

Drugs have played a central role in the progress of human civilisation. There are many important stages before a compound is used as a drug to treat a disease. The first stage is drug discovery; the second stage is the manufacture; and the third stage is the formulation of the drug in the form of tablets, capsules, injections and solutions. Some drugs like penicillin have been discovered quite accidentally, while some plant-derived drugs have been known to man since very early times; for example, quinine, ephedrine, cocaine, and morphine. *This book deals with the historical aspects of the development and use of drugs, vitamins, hormones; their classification, synthesis and formulation; and the general principles of drug actions. The pharmacokinetics, the interaction of drugs in the targeted receptor, and mode of drug synthesis is explained in detail*.

Contents: *Introduction* ❖ Pharmacodynamic agents ❖ Vitamins, hormones and synthetic drugs ❖ Formulation of drugs ❖ *Bibliography* ❖ *Glossary* ❖ *Index*

2001	168 pp.	Paperback
978-81-7371-386-6		₹ 250.00

Essentials of Physical Chemistry and Pharmacy

H J Arnikar, S S Kadam & K N Gujar

A number of chemical compounds are now being used as drugs. This makes it essential for a student of pharmacy to have sound knowledge of physico-chemical principles. *This book brings together the relevant basic concepts of physical chemistry and pharmaceutical sciences*. A general account of the gaseous and crystalline states of matter is followed by a detailed treatment of the liquid state including solutions, ionic equilibria, collodial dispersions, emulsions and gels which form the core of pharmaceutical sciences. Relevant kinetic thermodynamic theories with examples are also included.

Contents: The Gaseous State ❖ The Solid State ❖ Properties of Solutions-1 ❖ Properties of Solutions-II ❖ The Phase Rule ❖ Electrolyte Solutions ❖ Thermodynamics-1 ❖ The Second Law or Thermodynamics ❖ Electrochemistry ❖ Ionic Equilibria ❖ Chemical Kinetics and Biopharmaceutics Interfacial Phenomena ❖ Collids and Macromolecular Systems ❖ Suspensions, Emulsions and Coarse Dispersions ❖ Micromeritics ❖ Rheology ❖ *Appendix* ❖ *Bibliography* ❖ *Index*

1991	384 pp.	Paperback
978-0-86311-084-9		₹ 375.00

Herbal Drug Technology
(Second Edition)

S S Agrawal & M Paridhavi

The second edition of the textbook *Herbal Drug Technology*, based on the curriculum of various universities, caters to both bachelor's and master's courses in pharmacy and allied sciences. It contains detailed information on Indian systems of medicine, herbal therapeutics, crude drugs and medicinal botany. New to this edition are topics such as herbal cosmetics, nutraceuticals, chemotaxonomy, recent changes in in vivo anticancer screening models and screening of cardiac glycosides, and methods of literature search and patenting of herbal drugs.

Special Features: *Designed according to the curriculum of undergraduate and postgraduate courses*

Prices are subject to change without notice

in pharmacy of various universities in India and abroad ◆ Incorporates recent advances in technology ◆ Provides a comparative study of dosage forms in ayurveda and modern medicine ◆ Includes a detailed analysis of more than 60 phytopharmaceuticals ◆ Discusses standardization of herbal drugs—WHO protocol, different methods used for standardization, quality control standards for herbal extracts and validation of herbal products

Contents: *Second Message* ◆ *First Message* ◆ *Foreword* ◆ *Preface to the Second Edition* ◆ *Preface to the First Edition* ◆ Introduction to Medicinal Plants ◆ Indian Systems of Medicine ◆ Herbal Therapeutics: From Ancient Times to the 21st Century ◆ Essentials of Crude Drugs ◆ Medicinal Botany ◆ In vitro Culture of Medicinal Plants: Tissue Culture ◆ Systematic Examination of Powdered Drugs ◆ Screening Methods Used for Herbal Drugs ◆ Standardisation of Herbal Drugs ◆ Herbal Formulations: A Comparative Study of Ayurvedic and Modern Dosage Forms ◆ Herbal Cosmetics ◆ Nutraceuticals: A Modern Approach ◆ Chemotaxonomy ◆ The Role of Literature Search in Medicinal Plant Research ◆ Patenting of Herbal Drugs ◆ *List of Plates* ◆ *Plate 1a Callus culture* ◆ *Plate 1b Plantlets formed from callus culture* ◆ *Plate 2 Shoot elongation and rooting of in vitro regenerated shoots* ◆ *Plate 3 Plantlets acclimatised to greenhouse conditions* ◆ *Plate 4 Immobilised beads*

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

2012	836 pp	Paperback
978-81-7371-787-1		₹ 825.00

Herbal Home Remedies

R Vasudevan Nair

This book contains information about the use of common plants to cure common ailments. It is popular knowledge gained from the experience of generations. The suggested treatments are simple, inexpensive and easy to follow. They are recommended only as primary health care measures. The book is beautifully illustrated with line drawings of each plant to facilitate easy identification.

Contents: Amenorrhea ◆ Anemia ◆ Asthma ◆ Athlete's Foot ◆ Back Pain ◆ Blood Pressure ◆ Burning Micturation ◆ Burns ◆ Cholesterol ◆ Common Cold ◆ Constipation ◆ Cough ◆ Dandruff ◆ Diabetes ◆

Diarrhoea ◆ Dysentery ◆ Dysmenorrhea ◆ Earache ◆ Eczema ◆ Eosnophilia ◆ Fever ◆ Fissure Foot ◆ Gas in Stomach ◆ Headache ◆ Heart Diseases ◆ Indigestion ◆ Indigestion and Vomiting ◆ Infantile Diarrhoea ◆ Infantile Vomiting ◆ Insomnia ◆ Intestinal Worms ◆ Jaundice ◆ Kidney stones ◆ Leucorrhea ◆ Liver Enlargement ◆ Malaria ◆ Menorrhea ◆ Mumps ◆ Night Fever ◆ Oral Ulcers ◆ Peptic Ulcers ◆ Piles ◆ Pimples ◆ Poisons ◆ Pregnancy Protection ◆ Premature Graying ◆ Prickly Heat ◆ Ring Worm ◆ Scabies ◆ Simple Clean Wound ◆ Sores ◆ Sprain ◆ Stomachache ◆ Tenia Versicolour ◆ To Promote Hair Growth ◆ Tonsillities and Sore Throat ◆ Toothache ◆ Virility ◆ Whooping Cough ◆ *Glossary*

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

2004	58 pp.	Paperback
978-81-7371-482-5		₹ 150.00

Mass Transfer Concepts

K Asokan

Textbook of Biochemistry for Medical Students
(Second Edition)

Rafi MD

Textbook of Industrial Pharmacognosy

Anusuya R Kashi, S Ramachandran & Bindu Sukumaran
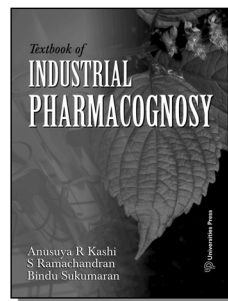
This book is *designed for undergraduate pharmacy students* and provides both contemporary and comprehensive information on herbal drugs.

The first three chapters—herbal drug industry, patents and intellectual property rights, and standardization of herbal drugs—are new, and have been culled from diverse sources. The book provides current information, and is organised in a format that enables students to focus on the important aspects.

Contents: Herbal drug industry ◆ Patents ◆ Standardization of herbal drugs ◆ Traditional systems of medicine ◆ Ayurvedic formulations ◆ Traditional drugs ◆ Isolation of compounds from natural sources ◆ Herbal cosmetics ◆ Enzymes ◆ Nutraceuticals ◆ Polyploidy ◆ Plant biotechnology ◆ Protoplast technology ◆ Enzyme biotechnology

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

2012	244 pp.	Paperback
978-81-7371-754-3		₹ 325.00

Textbook of Practical Physiology
(Third Edition)

G K Pal, Pravati Pal

Textbook of Organic Chemistry

C N Pillai

Textbook of Organic Chemistry is meant for students who learn organic chemistry at the undergraduate level and who have already had exposure to the basics of chemistry, including an introduction to organic chemistry. This book conforms to the syllabus of Indian Universities at the undergraduate level, but can be useful to students at a more advanced level also.

The book has a deductive approach and reduces the need to learn by rote. The objectives are listed at the beginning of every chapter which gives the student an overview of the chapter. Each chapter has been structured in a logical and interesting manner that facilitates easy reading and understanding. This approach has been developed and perfected by the author over the course of his tenure as a teacher of organic chemistry. At the end of each chapter, exercises are provided which strengthen the students'

understanding of the concepts discussed in the text. 'Challenging Questions' are given for those students who want to delve deeper into the subject. Topics of current interest that are related to the subject matter of the chapter are suggested for preparing project reports.

This book represents the hope that students of Indian universities who use it will appreciate that much of organic chemistry can be logically deduced from fundamentals and is amenable to reasonable explanations and deductions.

Contents: Objectives are listed to give an overview of the chapter ◆ Involves a deductive approach ◆ Chapters are developed in a logical and interesting manner ◆ Extensive exercises are provided at the end of each chapter ◆ Basic concepts of bonding in organic chemistry ◆ Nomenclature of organic compounds ◆ Alkanes ◆ Alkenes ◆ Alkynes ◆ Dienes ◆ Polymerisation ◆ Cycloalkanes ◆ Aromatic hydrocarbons and aromaticity ◆ Polynuclear aromatic hydrocarbons ◆ Aliphatic nucleophilic substitution reactions ◆ Elimination reactions ◆ Determination of structure using spectroscopy ◆ Alcohols ◆ Phenols ◆ Carbonyl chemistry ◆ Carboxylic acids ◆ Nitrogen containing compounds ◆ Molecular rearrangements ◆ Heterocyclic compounds ◆ Stereochemistry – I ◆ Stereochemistry – II ◆ Bioorganic chemistry – carbohydrates and vitamins (Natural products-I) ◆ Bioorganic chemistry – Aminoacids, proteins and nucleic acids (Natural Products-II) ◆ Terpenoids and alkaloids (Natural Products-III) ◆ Dyes ◆ Supplementary reading ◆ *Index*

2010	640 pp.	Paperback
978-81-7371-689-8		` 525.00

Textbook of Inorganic Chemistry

R Gopalan

Textbook of Inorganic Chemistry conforms to the syllabus of the B. Sc Chemistry courses of Indian universities. This book not only fulfils the requirements of the syllabus but also caters to the students who would like to delve deeper into the subject. It convinces the student that there is more to inorganic chemistry than equations! This book will serve as a handy tool for teachers to plan their lectures.

Special Features: Objectives are listed to give an overview of the chapter ◆ Involves a systematic and

interesting approach ⬥ Several worked out problems are provided ⬥ 'Boxed' matter on popular aspects are presented ⬥ Exhaustive question bank is provided at the end of each chapter

Contents: *Preface* ⬥ Chapter 1: Atomic structure: Objectives ⬥ Orbitals, electrons and quantum numbers ⬥ Pauli's exclusion principle, Hund's rule of maximum multiplicity ⬥ The Aufbau principle ⬥ Electron configuration, orbital stability and reactivity ⬥ Shapes of atomic orbitals ⬥ Exercises ⬥ Chapter 2: Periodicity of properties: Objectives ⬥ Periodic table: a review ⬥ Electronic basis for the periodic classification ⬥ Periodicity ⬥ Lanthanide contraction ⬥ Inert pair effect ⬥ Diagonal relationship ⬥ Exercises ⬥ Chapter 3: Principles of inorganic qualitative analysis: Objectives ⬥ Introduction (some fundamental concepts) ⬥ Acid–base equilibria ⬥ Solubility product ⬥ Application of common ion effect in qualitative analysis ⬥ Types of reactions in inorganic qualitative analysis ⬥ Semimicro analysis ⬥ Exercises ⬥ Chapter 4: Principles of volumetric analysis: Objectives ⬥ Introduction ⬥ Concentration units ⬥ Calculation of equivalent weights ⬥ Theories of titrations ⬥ Exercises ⬥ Chapter 5: Solvents for inorganic reactions: Objectives ⬥ Introduction ⬥ Protic solvents ⬥ Aprotic solvents ⬥ Aqueous solvents ⬥ Nonaqueous solvents ⬥ Liquid ammonia ⬥ Solutions of metals in liquid ammonia ⬥ Acetic acid ⬥ Exercises ⬥ Chapter 6: Ionic bond:Objectives ⬥ Introduction ⬥ Lewis dot symbols ⬥ Types of bonds ⬥ General properties of ionic compounds ⬥ Structures of ionic crystals ⬥ Hydration energy ⬥ Lattice energy ⬥ The Born–Haber cycle ⬥ Trends in lattice energies ⬥ Applications of lattice energetics ⬥ Transitions between electrovalence and covalence ⬥ Exercises ⬥ Chapter 7: Covalent bond: VB theory: Objectives ⬥ Introduction ⬥ Theories of bonding ⬥ Valence bond theory: formation and properties of covalent bonds ⬥ Types of orbital overlap ⬥ Hybridisation of orbitals ⬥ Bond pairs and lone pairs ⬥ Valence shell electron pair repulsion theory (VSEPR Theory) ⬥ Partial ionic character of covalent bonds ⬥ Directional bonding ⬥ Resonance in inorganic molecules ⬥ Polar interactions ⬥ Exercises ⬥ Chapter 8: Covalent bond: Molecular orbital theory: Objectives ⬥ Introduction: molecular orbitals ⬥ Molecular orbital treatment ⬥ Comparison between the VB and the MO theories ⬥ Hydrogen bonding ⬥ Exercises ⬥ Chapter 9: Hydrogen: Objectives ⬥ Introduction ⬥ Preparation of hydrogen ⬥ Physical properties ⬥ Reactions of hydrogen ⬥ Hydrogen as a fuel ⬥ Isotopes of hydrogen ⬥ Hydrides: introduction ⬥ Classification of the hydrides ⬥ Exercises ⬥ Chapter 10: Alkali metals: Objectives ⬥ Introduction: comparative study of the elements ⬥ Occurrence ⬥ Metallurgy of alkali elements ⬥ Uses of alkali metals ⬥ Some compounds of alkali metals ⬥ Lithium: anomalous properties ⬥ Potpourri ⬥ Exercises ⬥ Chapter 11: Alkaline earth metals: Objectives ⬥ Introduction ⬥ Comparative study of the elements ⬥ Diagonal relationship ⬥ Uses ⬥ Some compounds of group 2 elements ⬥ Exceptional properties of beryllium ⬥ Isolation of group 2 elements ⬥ Potpourri ⬥ Exercises ⬥ Chapter 12: Boron family: Objectives ⬥ Comparative account of elements of group 13 ⬥ Chemistry of Boron ⬥ Boron hydrides (boranes) ⬥ Other boron compounds ⬥ Chemistry of aluminium ⬥ Gallium, indium and thallium ⬥ Potpourri ⬥ Exercises ⬥ Chapter 13: Carbon Family: Objectives ⬥ Introduction ⬥ Some compounds of carbon and silicon ⬥ Carbides ⬥ Silicates ⬥ Silicones ⬥ Germanium ⬥ Tin ⬥ Lead ⬥ Potpourri ⬥ Exercises ⬥ Chapter 14: Nitrogen family: Objectives ⬥ Introduction ⬥ Chemistry of nitrogen ⬥ Chemistry of phosphorus ⬥ Chemistry of arsenic ⬥ Chemistry of antimony ⬥ Chemistry of bismuth ⬥ Exercises ⬥ Chapter 15: Oxygen family: Objectives ⬥ Comparative account ⬥ Chemistry of oxygen ⬥ Chemistry of sulphur ⬥ Chemistry of selenium, tellurium and polonium ⬥ Potpourri ⬥ Exercises ⬥ Chapter 16: Halogens: Objectives ⬥ Introduction ⬥ Comparative account of the halogens ⬥ Chemistry of fluorine ⬥ Chemistry of chlorine ⬥ Chemistry of bromine ⬥ Chemistry of iodine ⬥ Chemistry of astatine ⬥ Exercises ⬥ Chapter 17: Noble gases: Objectives ⬥ Introduction ⬥ Chemistry of noble gases ⬥ Chemistry of xenon ⬥ Potpourri ⬥ Exercises ⬥ Chapter 18: Principles of Metallurgy:Objectives ⬥ Introduction ⬥ Occurrence of metals ⬥ Metallurgy ⬥ Metals from the sea ⬥ Microbial metallurgy ⬥ Potpourri ⬥ Exercises ⬥ Chapter 19: Transition elements: Introduction: Objectives ⬥ Introduction ⬥ Abundance ⬥ Atomic and ionic radii ⬥ Magnetic properties ⬥ Chemical properties ⬥ Differences between the first row and the other two rows ⬥ Comparison of transition and representative elements ⬥ Exercises ⬥ Chapter 20: Chemistry of transition elements: Objectives ⬥ Titanium group: comparative study ⬥ Vanadium group: comparative study ⬥ Chromium group: comparative study ⬥ Manganese, technicium, rhenium: comparative study ⬥ Iron, cobalt and nickel: comparative study ⬥ The platinum metals: comparative study ⬥ Copper, silver and gold: comparative study ⬥ Zinc, cadmium and mercury: comparative study ⬥ Exercises ⬥ Chapter 21: Inner transition elements: Objectives ⬥ Introduction ⬥ Chemistry of lanthanides ⬥ Chemistry

of actinides ◆ Chemistry of thorium ◆ Chemistry of uranium ◆ Uses of actinides ◆ Potpourri ◆ Exercises ◆ Chapter 22: Coordination compounds: Objectives ◆ Introduction ◆ Nomenclature of metal complexes ◆ Theories of coordination compounds ◆ Spectral characteristics of metal complexes ◆ Magnetic properties of metal complexes ◆ Chelates ◆ Isomerism of metal complexes ◆ Identification of isomeric metal complexes ◆ Applications of coordination compounds ◆ Potpourri ◆ Exercises ◆ Chapter 23: Bioinorganic chemistry: Objectives ◆ Introduction ◆ Transport and storage of oxygen ◆ Electron transfer ◆ Catalysis ◆ Photosynthesis ◆ Vitamin B_{12} (cyanocobalamin) ◆ Inventory of iron in the human body ◆ Metal complexes in the human system ◆ Metal complexes in therapy ◆ The significance of chelation in soil biology ◆ Exercises ◆ Chapter 24: Nuclear chemistry: Objectives ◆ Introduction ◆ Properties of radioactive rays ◆ Laws of radioactive decay ◆ The fundamental particles ◆ The atomic nucleus ◆ Isotopes ◆ Detection and measurement of radiation ◆ Nuclear transmutations ◆ Applications of nuclear science ◆ Exercises ◆ Chapter 25: Industrial inorganic chemistry: Objectives ◆ Surface coatings ◆ Cement ◆ Fuels ◆ Relative merits of fuels ◆ Glass ◆ Exercises ◆ Chapter 26: Environmental Chemistry: Objectives ◆ Introduction ◆ Air pollution ◆ Water pollution ◆ Radionuclides in water ◆ Soil pollution ◆ Pollution by heavy metals ◆ Noise pollution ◆ Rain water harvesting ◆ Exercises ◆ Supplementary Reading ◆ *Index* ◆ *Periodic Table*

2009	960 pp.	Paperback
978-81-7371-660-7		₹ 525.00

Textbook of Physical Chemistry

M V Sangaranarayanan, V Mahadevan

Textbook of Physical Chemistry, together with the companion books on organic chemistry and inorganic chemistry, meets the complete requirements of undergraduate students of chemistry across India. In a book comprising all the classical topics which span physical chemistry including chemical kinetics, electrochemistry and thermodynamics among others, uniformity in the depth of coverage of each topic is not easy to attain in view of the disjointed pace of growth of each discipline. Nevertheless, care has been taken to ensure that the material in this book will sustain the interest of students and motivate them to learn physical chemistry. In order to aid students, every chapter contains the Objectives at the beginning and Key Points at the end. Various aspects of physical chemistry are dealt with in a lucid manner and interesting related matter is highlighted in boxes. The derivations are given in a comprehensible manner. Since physical chemistry involves numericals, several worked examples complement the text. The exercises at the end of each chapter, in particular, will be extremely valuable to sharpen the problem-solving skills and direct the student towards appreciating the nuances of physical chemistry.

Special Features: Objectives are listed to give an overview of the chapter ◆ Chapters are developed in a logical and interesting manner ◆ Derivations are kept simple ◆ Interesting matter is highlighted in grey boxes ◆ Numerous worked out examples complement the text ◆ Exercises at the end of each chapter to sharpen the problem-solving skills ◆ Key points at the end of each chapter to aid revision

Contents: Quantum Chemistry ◆ Gaseous State ◆ Liquid State ◆ Solid State ◆ Colloidal State ◆ First Law of Thermodynamics ◆ Second Law of Thermodynamics ◆ Third Law of Thermodynamics ◆ Solutions ◆ Phase Equilibria ◆ Chemical Kinetics ◆ Surface Chemistry and Catalysis ◆ Photochemistry ◆ Electrochemistry—Ionics ◆ Electrochemical Cells ◆ Polarography ◆ Group Theory

2011	592 pp.	Paperback
978-81-7371-726-0		₹ 450.00

Cloud Computing: A Hands-on Approach

Arshdeep Bahga and Vijay Madisetti
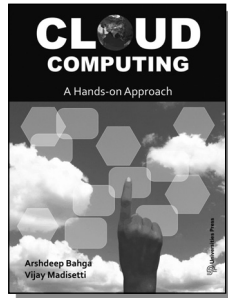
This book is written as a textbook on cloud computing for educational programs at colleges. It uses an immersive "hands-on approach" to transfer knowledge to the reader by providing the necessary guidance and knowledge to develop working code for real-world cloud applications.

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		₹ 500

Programming with C and Data Structures

R S Bichkar
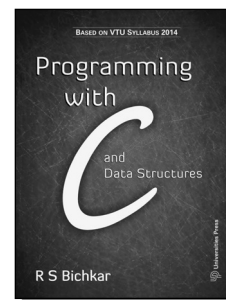
This comprehensive textbook is designed to meet the requirements of the first year engineering curriculum of VTU. It aims to fulfil the broad objective of enabling the students to learn the basic principles of problem solving through C programming language and develop programming skills. The concepts 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	671 pp.	Paperback
978-81-7371-942-4		₹ 350.00

Advances in Cloud Computing

Anirban Basu, Rajiv Ranjan &
Rajkumar Buyya (Eds)

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		₹ 450.00

NEW

Introduction to MATLB Programming, Toolbox and Simulink

Jaydeep Chakravorty
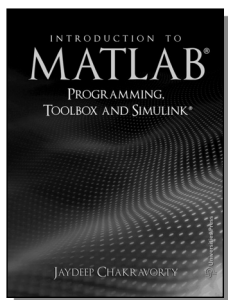
This book provides a simple, easy-to-use introduction to MATLAB®, the programming environment popular with students, scientists and engineers and industries the world over as a tool for computation and simulation. The basic features of MATLAB are explained in a step-by-step manner with many examples 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		₹ 650.00

Bioinformatics and Bioprogramming in C

L N Chavali

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		₹ 295.00

Bioinformatics: Basics, Algorithms and Applications

Ruchi Singh & Richa Sharma

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		₹ 295.00

C Programmer's Companion, The: ANSI C Library Functions

R S Jones

This book is intended for both the beginning C programmer who wants to know more about C library functions and for the experienced C programmer who wants to understand the exact semantics of C library functions. In this book, the author discusses the C library functions in detail. Specifically, the author describes the semantics of the C standard library functions and, when appropriate, illustrates their use with examples. The author also discusses the constants and types defined in the standard library header files.

Contents: *Preface* ❖ *Introduction* ❖ Character Manipulation ❖ Localization ❖ Mathematical Functions ❖ Jumps & Signals ❖ Variable Number of Arguments ❖ Input/Output ❖ Utility Functions ❖ Strings ❖ Date & Time ❖ *Bibliography* ❖ *Index*

2004	168 pp.	Paperback
978-81-7371-492-4		₹ 275.00

C: An Advanced Introduction: ANSI C Edition

Narain Gehani

This book on ANSI C is for readers with a good knowledge of at least one procedural programming language such as Pascal, FORTRAN or ADA. Advanced aspects of C, for example, type declarations, data abstraction, exceptions and the C preprocessor are emphasised. *Several examples drawn from a wide spectrum of application areas such as interactive programming, systems programming, database applications, text processing and concurrent programming are included in the book.* These are taken from real programs that have been tested. The book also discusses two derivatives of C: C++ and Concurrent C.

Contents: *Preface* ❖ *Acknowledgements* ❖ *Introduction and Basics* ❖ Types and Objects ❖ Operation and Expressions ❖ Control Flow ❖ Functions and Complete Program ❖ Independent Compilation and Data Abstraction ❖ Exceptions ❖ The C Preprocessor ❖ One Final Example ❖ *Appendix A: C++* ❖ *Appendix B: Concurrent C* ❖ *Appendix C: Library Routines* ❖ *Appendix D: Differences between ANSI C and K & R C* ❖ *Bibliography* ❖ *Index*

2004	276 pp.	Paperback
978-81-7371-490-0		₹ 325.00

Computer Algorithms/C++
(Second Edition)

Ellis Horowitz, Sartaj Sahni & Rajasekaran Sanguthevar

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		₹ 425.00

Computer Arithmetic Algorithms
(Second Edition)

Israel Koren

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		₹ 450.00

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

N Datta

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	515 pp.	Paperback
978-81-7371-451-1		₹ 495.00

Cryptography: An Introduction

V V Yaschenko

Series: Indian Editions of AMS Titles

Database Application Book, The: Using the MYSQL Database System

Narain Gehani

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		₹ 350.00

Database Book, The: Principles and Practice Using MySQL

Narain Gehani

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		₹ 550.00

Database Book, The: Principles of Pratice Using the ORACLE Database System

Narain Gehani & Melliyal Annamalai

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		₹ 375.00

NEW

Data Mining Techniques
(Third edition)

Arun K Pujari

This book addresses all the major and latest techniques of data mining and data warehousing. It deals in detail with the latest algorithms for discovering association rules, decision trees, clustering, neural networks and genetic algorithms. The book contains 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. Interesting and recent developments such as support vector machines and rough set theory are also covered. The book also discusses the mining of web data, spatial data, temporal data and text data. The inclusion of well thought out *illustrated examples for making the concepts clear to a first time reader makes the book suitable as a textbook for students of computer science, mathematical science and management science. It can also serve as a handbook for researchers in the area of data mining and data warehousing.*

In this edition, the chapter on data warehousing has been thoroughly revised and its coverage expanded to include a more detailed discussion on multidimensional data modelling and cube computation. The discussion on genetic algorithms too has been considerably expanded to bring to fore its applications in the context of data mining. *This book will serve as a core undergraduate textbook for computer sciences and engineering programmes. It will also serve as a useful reference for those pursuing management studies.*

Contents: *Introduction* ❖ Data warehousing ❖ Data mining ❖ Association rules ❖ Clustering techniques ❖ Decision tree techniques ❖ Rough set theory ❖

Genetic algorithm ❖ Other techniques ❖ Web mining ❖ Temporal and spatial data mining

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

2013	388 pp.	Paperback
978-81-7371-884-7		₹ 375.00

Data Structures, Algorithms and Applications in C++
(Second Edition)

Sartaj Sahni

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		₹ 450.00

Data Structures, Algorithms, and Applications in JAVA
(Second Edition)

Sartaj Sahni

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		₹ 550.00

Discrete Mathematical Structures with Applications to Combinatorics

V Ramaswamy

Meant to serve as an introduction to discrete mathematical structures, this book covers the *topics taught in a one-semester course at the undergraduate level in computer science, information science and other engineering branches*.

The chapters on combinatorics will bring home the practical utility of the various concepts introduced in the book and enable

appreciation of the myriad applications that apparently simple concepts such as relations, functions and the pigeon-hole principle have.

Contents: *Preface* ❖ Elements of Mathematical Logic ❖ Fundamentals of Set Theory ❖ Principles of Mathematical Induction ❖ Permutations and Combinations ❖ Recurrence Relations ❖ Relations ❖ Functions ❖ Lattices and Finite Boolean Algebra ❖ Elements of Graph Theory ❖ Algebraic Structures ❖ More on Algebraic Structure ❖ More on Recurrence Relations ❖ More on Functions ❖ Partitions ❖ Miscellaneous Applications ❖ *Index*

2006	264 pp.	Paperback
978-81-7371-500-6		₹ 275.00

Effective E-learning: Design, Development and Delivery

Madhuri Dubey

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		₹ 575.00

Embedded Systems Engineering

C R Sarma

Fundamentals of Computer Algorithms
(Second Edition)

Ellis Horowitz, Sartaj Sahni & Sanguthevar Rajasekaran

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		₹ 410.00

Fundamentals of Computer Security

Josef Pieprzyk, Thomas Hardjono & Jennifer Seberry

This book presents modern concepts of computer security. It introduces the basic mathematical background necessary to follow computer security concepts. Modern developments in cryptography are examined, starting, from private-key and public-key encryption, going through hashing, digital signatures, authentication, secret sharing, group oriented cryptography, pseudorandomness, key establishment protocols, zero-knowledge protocols, and identification, and finishing with an introduction to modern e-business systems based on digital cash. Intrusion detection and access control provide examples of security systems implemented as a part of the operating system. Database and network security is also discussed.

Contents: *Introduction* ◆ Background Theory ◆ Private-Key Cryptosystems ◆ Public-Key Cryptosystems ◆ Pseudorandomness ◆ Hashing ◆ Digital Signatures ◆ Authentication ◆ Secret Sharing ◆ Group-Oriented Cryptography ◆ Key Establishment Protocols ◆ Zero-Knowledge Proof Systems ◆ Identification ◆ Intrusion Detection ◆ Electronic Elections and Digital Money ◆ Database Protection and Security ◆ Access Control ◆ Network Security ◆ *References* ◆ *Index*

2008	678 pp.	Paperback
978-81-8128-916-2		₹ 675.00

Fundamentals of Data Structures in C
(Second Edition)

Ellis Horowitz, Sartaj Sahni & Anderson-Freed Susan

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		₹ 395.00

Fundamentals of Data Structures in C++
(Second Edition)

Ellis Horowitz, Sartaj Sahni & Dinesh Mehta

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		₹ 395.00

Fundamentals of Data Warehouses

*Matthias Jarke, Maurizio Lenzerini,
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		₹ 350.00

Global Electronic Commerce: Theory and Case Studies

J Christopher Westland & Theodore H K Clark

Electronic commerce has spurred far-reaching changes in business, on multiple fronts, using

many technologies. *This book provides a deep, practical understanding of these technologies and their use in e-commerce*. Unlike other books on e-commerce, it does not concentrate solely on the Internet. Instead, it suggests that the Internet is only a bridge technology, attractive because of its low cost and global reach, but unattractive because of its slow speed and poor user interface.

Contents: *Preface* ◆ *Introduction to Electronic Commerce* ◆ Information Technology in the Post-Industrial Revolution ◆ Redefining the Geography of Space, Time, and Money ◆ Supply Chain Management and Information Alliances ◆ Telecommunications Infrastructure in Transition ◆ Access to Electronic Commerce Services ◆ Electronic Auctions and Intermediaries ◆ Electronic Financial Markets ◆ Digital Storefronts ◆ Secure Digital Payments ◆ Logistics and Service Opportunities and Issues ◆ Successful E-Commerce ◆ *Appendix* ◆ *References* ◆ *Index*

2001	608 pp.	Paperback
978-81-7371-394-1		₹ 725.00

Introduction to Graph Theory, An

S Pirzada

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		₹ 395.00

Information Retrieval
(Second Edition)

David A Grossman & Ophir Frieder

This book is not yet another high level text. Instead, algorithms are thoroughly described, making *this book ideally suited for both computer science students and practitioners who work on search-related applications*. This book provides a current, broad, and detailed overview of the field and is the only one that does so. Examples are used throughout to illustrate the algorithms.

The authors explain how a query is ranked against a document collection using either a single or a combination of retrieval strategies, and how an assortment of utilities are integrated into the query processing scheme to improve these rankings. Methods for building and compressing text indexes, querying and retrieving documents in multiple languages, and using parallel or distributed processing to expedite the search are likewise described.

This edition is a major expansion of the one published in 1998. Besides updating the entire book with current techniques, it *includes new sections on language models, cross-language information retrieval, peer-to-peer processing, XML search, mediators, and duplicate document detection.*

Contents: *List of Figures* ◆ *Preface* ◆ *Acknowledgements* ◆ *Introduction* ◆ Retrieval Strategies ◆ Retrieval Utilities ◆ Cross-Language Information Retrieval ◆ Efficiency ◆ Integrating Structured Data and Text ◆ Parallel Information Retrieval ◆ Distributed Information Retrieval ◆ Summary and Future Directions ◆ *References* ◆ *Index*

2008	332 pp.	Paperback
978-81-8128-917-9		₹ 550.00

Multimedia Applications

Ralf Steinmetz & Klara Nahrstedt

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	245 pp.	Paperback
978-81-8128-651-2		₹ 495.00

Multimedia Database Management Systems

B Prabhakaran

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		₹ 425.00

Numerical Methods

W Boehm & H Prautzsch

Numerical Methods with Programs in BASIC, FORTRAN, Pascal and C++
(Revised Edition)

S Balachandra Rao & C K Shantha

Object-Oriented Analysis, Design, and Implementation: An Integrated Approach
(Second Edition)

Brahma Dathan & Sarnath Ramnath

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*

2014	497 pp.	Paperback
978-81-7371-880-9		₹ 495.00

Object Oriented Programming through JAVA

P Radha Krishna

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

2006	492 pp.	Paperback
978-81-7371-572-3		₹ 450.00

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		₹ 475.00

Pattern Recognition: An Introduction

M Narasimha Murty & Susheela Devi

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: Hand-written Digit Recognition

2011	352 pp.	Paperback
978-81-7371-725-3		₹ 295.00

Principles of Computer Graphics

Shalini Govil-Pai

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	310 pp.	Paperback
978-81-8128-674-1		₹ 550.00

Programming Logic and Techniques

S. B. Kishor

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*

2012	200 pp	Paperback
978-81-7371-822-9		₹ 155.00

Programming With C

R S Bichkar

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 con-

trol 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

2012	668 pp	Paperback
978-81-7371-771-0		₹ 395.00

Robotics Primer, The

Maja J Mataric

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		₹ 425.00

Structure and Interpretation of Computer Programs
(Second Edition)

Harold Abelson, Gerald Jay Sussman & Julie Sussman

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: Meta-linguistic 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		₹ 625.00

Web Services: Concepts, Architectures and Applications

Gustavo Alonso, Fabio Casati, Harumi Kuno & Vijay Machiraju

Like many other incipient technologies, Web services are still surrounded by a substantial level of noise. This noise results from the always dangerous combination of wishful thinking on the part of research and industry and of a lack of clear understanding of how Web services came to be. On the one hand, multiple contradictory interpretations are created by the many attempts to realign existing technology and strategies with Web services. On the other hand, the emphasis on what could be done with Web services in the future often makes us lose track of what can be really done with Web services today and in the short term. These factors make it extremely difficult to get a coherent picture of what Web services are, what they contribute, and where they will be applied. Alonso and his co-authors deliberately

take a step back. Based on their academic and industrial experience with middleware and enterprise application integration systems, they describe the fundamental concepts behind the notion of Web services and present them as the natural evolution of conventional middleware, necessary to meet the challenges of the Web and of B2B application integration. Rather than providing a reference guide or a "how to write your first Web service" kind of book, they discuss the main objectives of Web services, the challenges that must be faced to achieve them, and the opportunities that this novel technology provides. Established, as well as recently proposed, standards and techniques (e.g., WSDL, UDDI, SOAP, WS-Coordination, WS-Transactions, and BPEL), are then examined in the context of this discussion in order to emphasise their scope, benefits, and shortcomings. Thus, *the book is ideally suited both for professionals considering the development of application integration solutions and for research and students interested in understanding and contributing to the evolution of enterprise application technologies*.

Contents: *Part I:* Conventional Middleware: Distributed Information Systems ❖ Middleware ❖ Enterprise Application Integration ❖ Web Technologies ❖ *Part II:* Web Services: Web Services ❖ Basic Web Services Technology ❖ Service Coordination Protocols ❖ Service Composition ❖ Outlook ❖ *Bibliography* ❖ *Index*

2009	374 pp.	Paperback
978-81-8489-170-6		₹ 650.00

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.

Information Technology for Real World Problems

V Sree Hari Rao

The role of information technology as a problem solver in multidisciplinary environments is exemplified in through a set of *five state-of-the-art papers written by experts from various disciplines*. It opens to the readers a window of opportunities for developing systems and solutions that can be applied in socially relevant situations.

The objective common to all the papers is to develop an intelligent systems approach to decision making; the approach has been deployed in an interesting mix of domains bioinformatics, health sciences, artificial intelligence and industrial automation. *The book would be of interest to students, scientists and academics for the glimpse it provides of the exciting avenues of research that are of practical relevance to humankind.*

Contents: *Preface* ❖ Homology Modelling and Molecular Dynamics of Cyclin-Dependent Protein Kinases ❖ Use of Information Technology for the Control of Vector-Borne Diseases ❖ Knowledge Discovery Approach for Measurement of Mood Fluctuations ❖ Signal Identification Based on Multiscale Decompositions ❖ Robots as Intelligent Machines ❖ *Index*

2011	300 pp.	Paperback
978-81-7371-734-5		₹ 795.00

Introduction to Mathematical Computer Science, An

Kasturi Viswanath

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		₹ 550.00

DICTIONARIES

Computer, Internet and Multimedia Dictionary

Surendra Verma
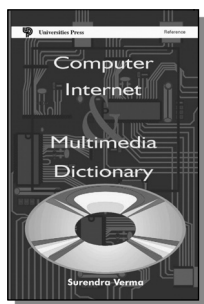
This dictionary covers the core of Information Technology featuring about **3500 entries** on computing, telecommunications, and digital electronics. It also covers the Internet and World Wide Web technologies and includes important people, machines and events in the history of computing, and provides glimpses of latest discoveries/inventions of the 21st Century.

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

1998	256 pp.	Paperback
978-81-7371-091-9		₹ 350.00

GENERAL INTEREST

Agenda of the Apprentice Scientist, The

Nicole Ostrowsky

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		₹ 595.00

Concise History of Science in India, A
(Second Edition)

D M Bose, 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.

Contents: *List of Figures, Tables and Plates* ◆ A Survey of Source Astronomy Mathematics ◆ Medicine   Chemical Practices and Alchemy ◆ Agriculture   Botany Zoology The Physical World: Views and Concepts Western Science in India up to Independence ◆ *Resume* ◆ *Glossary* ◆ *Bibliography* ◆ *Supplementary* ◆ *Bibliography* ◆ *Index*

| 2009 | 980 pp. | Paperback |
| 978-81-7371-619-5 | | ₹ 1095.00 |

Encyclopaedia of Classical Indian Sciences

Helaine Selin & Roddam Narasimha

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: 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*

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

2007	492 pp.	Hardback
978-81-7371-555-6		₹ 1025.00

Kariamanikkam Srinivasa Krishnan: His Life and Work

D C V Mallik & S Chatterjee
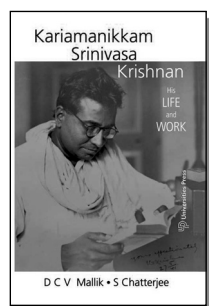
The first four decades of the 20th century were glorious years for science, especially physics. Our view of the physical world changed forever with the emergence of quantum mechanics and Einstein's formulation of the theory of relativity. India too contributed significantly to this scientific revolution 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*

2011	516 pp.	Hardback
978-81-7371-748-2		₹ 895.00

Know Your English Volume 1: Idioms and their stories

S Upendran

Idioms and their stories is the first of a four volume series, based on the popular column, *Know Your English*, which has been a regular feature 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		₹ 195.00

Know Your English Volume 2: Words frequently confused

S Upendran

Words Frequently Confused, the second volume in the four volume series, *Know Your English*, is based on S. Upendran's popular weekly column 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.

2012	416 pp.	Paperback
978-81-7371-730-7		₹ 275.00

Paths of Innovators
(Volume 1)

R Parthasarathy

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 ❖ Henry, Joseph ❖ Hertz, Heinrich ❖ Karman, Theodore von ❖ Kelvin, Lord ❖ Krupp, Alfred ❖ Langmuir, Irving ❖ Marconi, Guglielmo ❖ Ohain, Hans von ❖ Shannon, Claude ❖ Taylor, G.I. ❖ Terzaghi, Karl ❖ Tesla, Nicola ❖ Steinmetz, Charles ❖ Stephenson, George ❖ Watt, James ❖ Whittle, Frank ❖ Zworykin, Vladimir

Physics: Becquerel, Henri ❖ Bohr, Niels ❖ Boltzmann, Ludwig ❖ Born, Max ❖ Bragg, Lawrence ❖ Bragg, William ❖ 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, C.V. ❖ 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		₹ 475

Paths of Innovators,
(Volume 2)

R Parthasarathy

This is the second 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* ❖ Ampere, Andre Marie ❖ Benz, Karl ❖ Bessemer, Henry ❖ Bhabha, Homi ❖ Bosch, Carl ❖ Cayley, George ❖ Cockroft, John ❖ Daimler, Gottlieb ❖ De Laval, Gustav ❖ Francis, James ❖ Grove, Andrew ❖ Guillemin, Ernst ❖ Kaplan, Victor ❖ Kelly, William ❖ Khosla, A. N. ❖ Korolov, Sergi ❖ Lienthal, Otto ❖ Mond, Ludwig ❖ Morse, Samuel ❖ Otto, Nikolous ❖ Parsons, Charles ❖ Pelton, Lester

❖ Prandtl, Ludwig ❖ Reynolds, Osborne ❖ Sarabhai, Vikram ❖ Seshu, Sundaram ❖ Sperry, Elmer ❖ Tata, J. R. D. ❖ Vishveshwaraya, M. ❖ Von Bekesy, Georg ❖ Westinghouse, George ❖ Wheatstone, Charles ❖ Wollaston, William ❖ Wright, Orville ❖ Wright, Wilbur

Physics: Blackett, P.M.S. ❖ Blau, Mariette ❖ Bose, J.C. ❖ Bose, S.N. ❖ Boyle, Robert ❖ Brewster, David ❖ Claussius, Rudolf ❖ Compton, Arthur ❖ Curie, Pierre ❖ de Broglie, Louis ❖ Ehrenfest, Paul ❖ Franck, James ❖ Gabor, Dennis ❖ Geiger, Hans ❖ Hahn, Otto ❖ Herzberg, Gerad ❖ Hess, Victor ❖ Kilby, Jack ❖ Kramers, Hendrik ❖ Krishnan, K.S. Landau, Lev ❖ Lawrence, Ernest ❖ Lenard, Philip ❖ Lenz, Henirich ❖ Lorentz, Hendrik ❖ Meitner, Lise ❖ Michelson, Albert ❖ Mosley, Henry ❖ Neel, Louis ❖ Oppenheimer, Robert ❖ Rabi, I.I ❖ Rayleigh, Lord ❖ Rotblat, Joesph ❖ Saha, M.N. ❖ Schrodinger, Erwin ❖ Seaborg, Gleen T. ❖ Smith, George ❖ Sommerfeld, Arnold ❖ Stern, Otto ❖ Szilard, Leo ❖ Weber, Wilhelm ❖ Wilson, C.T.R.

Mathematics: Bolyai, Janos ❖ Bolyai, Wolfgang ❖ Carbano, Gerolomo ❖ Cayley, Arthur ❖ Chebyshev, Pafulty ❖ D' Alembert, Jean ❖ de Moivre, Abraham ❖ De Morgan, Ausustus ❖ Dirichlet, Peter ❖ Galileo, Galilei ❖ Green, George ❖ Hamilton, William ❖ Hermite Charles ❖ Hubble, Edwin ❖ Jacobi, Carl ❖ Klein, Felix ❖ Kronecker, Leopold ❖ Lefschetz, Solomon ❖ Legendre, A.M. ❖ Louisville, Joseph ❖ Lyapunov, Alexander ❖ Mahalanobis, P.C. ❖ Moebius, August ❖ Monge, Gaspard ❖ Nash, John ❖ Pierce, Charles ❖ Pluecker, Julius ❖ Poisson, Simon ❖ Ranganathan, S.R. ❖ Steiner, Jakob ❖ Sylvester, James ❖ Taylor, Brook ❖ Von Neumann, John ❖ Weierstrass, Karl ❖ Whitehead, A.N.

Chemistry: Curie, Marie ❖ Davy, Humphry ❖ Debye, Peter ❖ Fischer, Emil ❖ Ghosh, J.C. ❖ Gibbs,Willard ❖ Haber, Fritz ❖ Klaproth, Martin ❖ Kopp, Hermann ❖ Le Chatlier, Henry ❖ Lewis, G.N. ❖ Meyer, Victor ❖ Mitscherlich, Eilhard ❖ Nernst, Walther ❖ Nobel, Alfred ❖ Ostwald, Wilhelm ❖ Pauling, Linus ❖ Priestley, Joseph ❖ Ray, Acharya P.C ❖ Seshadri, T.R. ❖ Soddy, Frederick ❖ Urey, Harold ❖ Van't Hoff, Jacobus ❖ Venkataraman, K.

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 ❖ Linneaus, Carlister, Joseph ❖ Manson, Patrick ❖ McClintock, Barbara ❖ Mendel, Gregor ❖ Pasteur, Louis ❖ Perutz,

Max ❖ Ross, Ronald ❖ Row, Y. Subba ❖ Sahni, Birbal ❖ Salk, Jonas ❖ Sircar, Mahendralal

2012	544 pp.	Paperback
978-81-7371-751-2		₹ 450.00

NEW

Squaring the Circle: Seven Steps to Indian Renaissance

APJ Abdul Kalam with Arun Tiwari
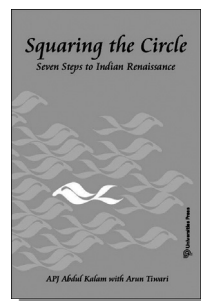
Dr Kalam calls for an Indian Renaissance, which he describes in seven steps involving the common people of the land, and in particular, the youth. He urges people to arise out of servitude to a vested ruling class, awake from the slumber of a passive democracy, and advance to manifest our destiny of 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		₹ 295.00

Story of Our Food, The

K T Achaya

- Our distant ancestors speared animals for food. How do we know this?
- Why did vegetarian habits develop so long ago only in India?

- Why were food, health and natural elements considered if separable?
- What do the words hot and cold, when applied to food, mean in India?
- How old are idli, the vada and curd-based shrikand?
- When and where did the mango originate? And the papaya?
- Why were chillies not used in Akbar's kitchen?
- What was India's first beverage-coffee or tea?
- From which Indian language did the words curry, betel leaf and sugar enter into English language?

The answers to all these questions, and many more, can be found in this amazing and richly-textured little book. It shows how our wonderful Indian cusine, with all its regional variants, is the outcome of food plants brought into India from numerous directions over thousands of years. How food occupied an important niche in the natural cycle. And of a social ethic in which cleanliness was indeed next to godliness.

2000	148 pp.	Paperback
978-81-7371-293-7		₹ 150.00

Wings of Fire: An Autobiography (Abridged, Special Student Edition with Exercises)

A P J Abdul Kalam with Arun Tiwari

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		₹ 150.00

Wings of Fire: An Autobiography

A P J Abdul Kalam with Arun Tiwari

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
978-81-7371-146-6		₹ 295.00

Prices are subject to change without notice

ISBN	Title	Author
978-81-7371-932-5	A & P Textbook of Microbiology *(9th Edition)*	*Arti Kapil (Ed.)*
978-81-7371-797-0	Adolescence	*Usha R Krishna*
978-81-7371-785-7	Advances in Cloud Computing	*Rajiv Ranjan*
978-81-7371-841-0	Advances in Medical Plants	*Janardhan K Reddy*
978-81-7371-925-7	Agenda of The Apprentice Scientist	*Nicole Ostrowsky*
978-81-7371-837-3	Amphibians of Peninsular India	*Ranjit Daniels*
978-81-7371-883-0	Antenatal and Intrapartum Surveillance	*Sir Sabaratnam Arulkumaran*
978-81-7371-869-4	Astrophysics of The Solar System	*K D Abhyankar*
978-81-7371-871-7	Astrophysics: Stars and Galaxies	*K D Abhyankar*
978-81-7371-898-4	At The Speed of Light (V.I.P.)	*G Venkataraman*
978-81-7371-896-0	Benign Breast Disease: A Surgical Approach	*Uma Krishnaswamy*
978-81-7371-859-5	Bhabha and His Magnificient Obsessions	*G Venkataraman*
978-81-7371-868-7	Birds Beyond Watching	*Abdul Jamil Urfi*
978-81-7371-894-6	Birds in Our Lives	*Asish Kothari*
978-81-7371-852-6	Bose and His Statistics	*G Venkataraman*
978-81-7371-807-6	Brief History of Rocketry, A	*P V Manoranjan Rao*
978-81-7371-833-5	Butterflies of Peninsular India	*Krushnamegh Kunte*
978-81-7371-863-2	Can Stars Find Peace	*G. Srinivasan*
978-81-7371-906-6	Cardiology: A Socratic Approach	*Wei Min Chong*
978-81-7371-875-5	Chandrasekhar and His Limit	*G Venkataraman*
978-81-7371-813-7	Compendium of e-Governance	*Piyush Gupta*
978-81-7371-836-6	Computer, Internet and Multimedia Dictionary	*Surendra Verma*
978-81-7371-895-3	Controversial Drug Plants	*Vasudevan Nair*
978-81-7371-853-3	Data Mining Techniques	*Arun K Pujari*
978-81-7371-808-3	Dimensions in Environmental & Ecological	*Nirmal Chandra Sahu*
978-81-7371-866-3	Disaster Management	*Harsh K Gupta*
978-81-7371-865-6	Disaster Management Global Challenges	*Rajib Shaw*
978-81-7371-817-5	Elements of Psychology and Mental Hygiene	*Aruna Balachandra*
978-81-7371-800-7	Endometriosis	*N D Motashaw*
978-81-7371-823-6	Engineering Chemistry	*N B Singh, S S Da, Kalpana Singh*
978-81-7371-790-1	Engineering Mathematics *(2nd Edition)*	*Koneru Sarveswara Rao*
978-81-7371-821-2	Environmental Science and Engineering *(2nd Edition)*	*Aloka Debi*
978-81-7371-851-9	Field Days	*A J T Johnsingh*
978-81-7371-846-5	Forensic Medicine	*P V Guharaj*
978-81-7371-791-8	Gas Tables *(3rd Edition)*	*Ethirajan Rathakrishnan*
978-81-7371-908-0	General Surgery for BDS Students	*A Sukumar*
978-81-7371-893-9	Group Theory: Selected Problems	*B Sury*
978-81-7371-799-4	Gynecological Urology	*Usha B Saraiya*
978-81-7371-789-5	Herbal Drug Technology *(2nd Edition)*	*S S Agrawal, M Paridhavi*
978-81-7371-849-6	Hot Story, A	*G Venkataraman*
978-81-7371-792-5	Indian Medicinal Plants Volume - 1	*P K Warrier, V P K Nambiar, C Ramankutty*

Prices are subject to change without notice

978-81-7371-793-2	Indian Medicinal Plants Volume - 2	*P K Warrier, V P K Nambiar, C Ramankutty*
978-81-7371-794-9	Indian Medicinal Plants Volume - 3	*P K Warrier, V P K Nambiar, C Ramankutty*
978-81-7371-795-6	Indian Medicinal Plants Volume - 4	*P K Warrier, V P K Nambiar, C Ramankutty*
978-81-7371-796-3	Indian Medicinal Plants Volume - 5	*P K Warrier, V P K Nambiar, C Ramankutty*
978-81-7371-786-4	Industrial Psychology: Theory and Practice	*Dipak Bhattacharyya, Sutapa Bhattacharya*
978-81-7371-819-9	International Finance	*G Shailaja*
978-81-7371-861-8	Introduction to Ayurveda, An	*MS Valiathan*
978-81-7371-848-9	Introduction to Soil Reinforcement and Geosynthetics	*G L Sivakumar Babu*
978-81-7371-830-4	Know Your English Volume 2: Words Frequently Confused	*S Upendran*
978-81-7371-802-1	Low Birth Weight Baby, The	*R L Tambyraja*
978-81-7371-814-4	Mammals of South Asia: Volume 1	*AJT Johnsingh, Nima Manjrekar*
978-81-7371-873-1	Management of Labour, The	*Sir Sabaratnam Arulkumaran*
978-81-7371-878-6	Many Phases of Matter, The	*G Venkataraman*
978-81-7371-831-1	Marine Mammals of India	*Kumaran Sathasivam*
978-81-7371-905-9	Medicine at A Glance	*R S Vasan*
978-81-7371-806-9	Menopause	*Usha R Krishna*
978-81-7371-826-7	Monitoring Elephant Populations & Assessing	*Simon Hedges*
978-81-7371-816-8	Mudaliar and Menon's Clinical Obstetrics	*A L Mudaliar*
978-81-7371-907-3	Obstetrics Medicine	*S Raman*
978-81-7371-918-9	Pediatric Endocrine Disorders *(third Edition)*	*Meena P Desai*
978-81-7371-801-4	Perinatal Asphyxia	*S Arulkumaran*
978-81-7371-911-0	Practical Guide to Obstetrics, A	*Arjun Gita*
978-81-7371-804-5	Practical infertility Management	*Duru Shah*
978-81-7371-805-2	Practical Neonatal Care	*Krishnan Lalitha*
978-81-7371-798-7	Pregnancy induced Hypertension	*Harshalal R Seneviratne*
978-81-7371-783-3	Production and Operations Management	*Dipak Kumar Bhattacharyya*
978-81-7371-824-3	Programming Logic and Techniques	*S B Kishor*
978-81-7371-779-6	Programming With C	*R S Bichkar*
978-81-7371-857-1	Quantum Revolution I: The Breakthrough	*G Venkataraman*
978-81-7371-876-2	Quantum Revolution II: QED: The Jewel of Physics	*G Venkataraman*
978-81-7371-858-8	Quantum Revolution III: What Is Reality?	*G Venkataraman*
978-81-7371-899-1	Raman and His Effect (V.I.P.)	*G Venkataraman*
978-81-7371-834-2	Remote Sensing & Its Applications	*L R A Narayan*
978-81-7371-860-1	Saha and His Formula	*G Venkataraman*
978-81-7371-847-2	Science 366: A Chronicle of Science & Technology	*Biman Basu*
978-81-7371-842-7	Solid State Microelectronic & Optoelectronic Devices	*Angsuman Sarkar*
978-81-7371-818-2	Solitary Cysticercus Granuloma	*Vedantam Rajshekhar, Mathew J Chandy (Eds)*
978-81-7371-812-0	Spiders of India	*P A Sebastian*
978-81-7371-910-3	Squaring the Circle	*A P J Abdul Kalam*
978-81-7371-843-4	Statistical Mechanics *(Rev Edition)*	*Avijith Lahiri*
978-81-7371-835-9	Story of Our Food, The	*K T Achaya*
978-81-7371-882-3	Textbook of Basic and Clinical Immunology	*Sudha Gangal*
978-81-7371-815-1	Textbook of Clinical Pharmacy Practic *(2nd Edition)*	*G Parthasarathi*
978-81-7371-870-0	Textbook on Heat Transfer, A *(Fourth Edition)*	*S P Sukhatme*

978-81-250-5034-6	Textbook of Medical Parasitology	*R Panjarathinam*
978-81-7371-809-0	Textbook of Medicine	*R S Vasan*
978-81-7371-838-0	Textbook of Industrial Pharmacognosy	*R Kashi Anusuya*
978-81-7371-856-4	Textbook of Surveying	*C Venkatramaiah*
978-81-7371-879-3	The Big and The Small Volume 1	*G Venkataraman*
978-81-7371-850-2	The Big and The Small Volume 2	*G Venkataraman*
978-81-7371-854-0	The Legacy of Caraka	*M S Valiathan*
978-81-7371-855-7	The Legacy of Vagbhata	*M S Valiathan*
978-81-7371-840-3	Thermal Imaging Technology	*R N Singh*
978-81-7371-844-1	What Are The Stars	*Ganesan Srinivasan*
978-81-7371-877-9	Why Are Things The Way They Are?	*G Venkataraman*
978-81-7371-780-2	Wings of Fire: An Autobiography	*A P J Abdul Kalam*

Prices are subject to change without notice

AUTHOR INDEX

Title Index

Prices are subject to change without notice

Register with Us

At Universities Press, we believe in sharing details pertaining to our books and the events that we conduct. Should you wish to receive such information by email or by post on a regular basis, you may please write to marketing@universitiespress.com and confirm:

Address for correspondence: _____

_____

_____

Email address: _____

STD code: _____ Landline: _____ Mobile: _____

Subject areas of interest: _____

_____

_____

Please tick inside the box and confirm the mode by which you would like to receive information from us. By Email: ☐   By Post: ☐   Both: ☐

We will be happy to register your details with our database and shall stay in touch.