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FORTHCOMING TITLES

Powder Metallurgy: Science, Technology and Materials

Upadhyaya, Anish & Upadhyaya, G.S.

Powder metallurgy (P/M) is one of the oldest metal/ceramics forming processes. Powder injection moulding has emerged as a major offshoot of P/M processing. This book attempts to bring out both the basic and applied aspects of P/M on a composite plank. A detailed discussion of P/M materials and products is given. The book serves as a textbook (both for undergraduate and postgraduate courses in engineering) and also as a handy reference book for engineers in the P/M industry. It is useful for all materials and manufacturing engineers. At the end of each chapter, a variety of questions and problems are included. In order to aid and broaden the problem solving ability of students, some examples are included in each chapter.

Textbook of Nanoscience and Nanotechnology

Murty, B.S., et al.

This book is a textbook for beginners in the field of 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 characterisation techniques. The applications of nanoscience and technology and emerging materials and technologies are also presented in the book. A set of questions including problems is given at the end of each chapter.

Embedded Systems Engineering

C.R. Sarma

This book has been written to cover the subject of embedded systems as per the JNTU syllabus for the Master of Computer Applications programme. This is an elective paper for the course in the 4th semester. The contents would also serve for a foundation course for B. Tech. students of ECE and ICE streams on the subject. The book provides an understanding of the core principles of embedded-system programming, of real-time operating system (RTOS) and how to use it effectively.

Strength of Materials

Basavarajaiah, B.S. & Mahadevappa, P.

Strength of materials is a core subject for civil, mechanical, electrical and metallurgical engineering courses. This book deals with the principles underlying the methods of solving problems on the behaviour of material when subjected to different types of loads. It is intended for an introductory course in engineering and architecture. The subject matter is presented in a simple and lucid language to enable students who are exposed to this field for the first time, to comprehend the principles involved. Each chapter deals with definitions, analysis, derivations and applications; a large number of worked-out examples incorporating a variety of problems and exercises for practice enhance the utility of the book for students.

Textbook of Highway Engineering, A

Srinivasa Kumar, R.

A Textbook of Highway Engineering explains the fundamental concepts and principles of highway engineering in a simple way. It covers topics related to the geometric design of highways. Various test methods/principles related to characterisation of pavement materials are discussed. Various aspects of structural maintenance evaluation of flexible and rigid pavements are presented. The author has also included different types of solved example problems with neat sketches wherever necessary. Typical exercise problems are also given at end of the each chapter. This is intended to evaluate whether the students has grasped the underlying fundamental concepts and is able to apply them for solving problems related to their professional career.

Educative JEE (Second Edition)

K D Joshi

Educative JEE is an attempt to lay before the students both the concepts as well as the process of solving problems at the JEE (the joint entrance examination conducted to gain entry into the IITs). The problems have been collected mostly from JEE papers ranging over a period of two decades. The thrust is not so much on solving the problems as in the assimilation of the theory behind

it and learning a few related new concepts. The solutions then come as natural corollaries. It also contains some helpful tips aimed at sharpening the thinking ability and increasing the mathematical maturity of the student.

In the second edition, two appendices have been added, one on matrices and one on solid coordinate geometry. They have been explained in detail, in keeping with the new JEE syllabus. A commentary on the JEE 2009 mathematics papers has also been included.

Numerical Analysis: Mathematics of Scientific Computing

Kincaid, David

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.

Fourier Analysis and Its Applications

Folland, Gerald B.

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.

Modern Theory of Integration, A

Bartle, Robert G.

The theory of integration is one of the twin pillars on which analysis is built. The first version of integration that students see is the Riemann integral. Later, graduate students learn that the Lebesgue integral is "better" because it removes some restrictions on the integrands and the domains over which we integrate. However, there are still drawbacks to Lebesgue integration, for instance, dealing with the fundamental theorem of calculus, or with "improper" integrals.

This book is an introduction to a relatively new theory of the integral (called the "generalized Riemann integral" or the "Henstock—Kurzweil integral") that corrects the defects in the classical Riemann theory and both simplifies and extends the Lebesgue theory of integration. Although this integral includes that of Lebesgue, its definition is very close to the Riemann integral that is familiar to students from calculus. One virtue of the new approach is that no measure theory and virtually no topology is required. Indeed, the book includes a study of measure theory as an application of the integral.

A complete solutions manual is available separately.

Algebraic Curves and Riemann Surfaces

Miranda, Rick

In this book, Miranda takes the approach that algebraic curves are best encountered for the first time over the complex numbers, where the reader's classical intuition about surfaces, integration, and other concepts can be brought into play. Therefore, many examples of algebraic curves are presented in the first chapters. In this way, the book begins as a primer on Riemann surfaces, with complex charts and meromorphic functions taking center stage. But the main examples come from projective curves, and slowly but surely the text moves toward the algebraic category. Proofs of the Riemann—Roch and Serre Duality theorems are presented in an algebraic manner, via an adaptation of the adelic proof, expressed completely in terms of solving a Mittag—Leffler problem. Sheaves and cohomology are introduced as a unifying device in the latter chapters, so that their utility and naturalness are immediately obvious. Requiring a background of one semester of complex variable theory and a year of abstract algebra, this is an excellent graduate textbook for a second-semester course in complex variables or a year-long course in algebraic geometry.

FORTHCOMING TITLES

Algebraic Number Fields (Second Edition)

Janusz, Gerald J.

The book is directed toward students with a minimal background who want to learn class field theory for number fields. The only prerequisite for reading it is some elementary Galois theory. The first three chapters lay out the necessary background in number fields, such as the arithmetic of fields, Dedekind domains, and valuations. The next two chapters discuss class field theory for number fields. The concluding chapter serves as an illustration of the concepts introduced in previous chapters. In particular, some interesting calculations with quadratic fields show the use of the norm residue symbol.

In the second edition, the author has added some new material, expanded many proofs, and corrected errors found in the first edition. The main objective, however, remains the same as it was for the first edition: to give an exposition of the introductory material and the main theorems about class fields of algebraic number fields that would require as little background preparation as possible. Janusz's book can be an excellent textbook for a year-long course in algebraic number theory; the first three chapters would be suitable for a one-semester course. It is also very suitable for independent study.

Hamilton's Ricci Flow

Chow, Bennett et al.

Ricci flow is a powerful analytic method for studying the geometry and topology of manifolds. This book is an introduction to Ricci flow for graduate students and mathematicians interested in working in the subject. To this end, the first chapter is a review of the relevant basics of Riemannian geometry. For the benefit of the student, the text includes a number of exercises of varying difficulty. The book also provides brief introductions to some general methods of geometric analysis and other geometric flows. Comparisons are made between the Ricci flow and the linear heat equation, mean curvature flow, and other geometric evolution equations whenever possible. Several topics of Hamilton's program are covered, such as short time existence, Harnack inequalities, Ricci solutions, Perelman's no local collapsing theorem, singularity analysis, and ancient solutions.

Real Analysis

Morgan, Frank

Intended for undergraduates studying real analysis, this book builds the theory behind calculus directly from the basic concepts of real numbers, limits, and open and closed sets in \mathbf{R}^n . It gives the three characterizations of continuity: via epsilon-delta, sequences, and open sets. It gives the three characterizations of compactness: as "closed and bounded," via sequences, and via open covers. Topics include Fourier series, the Gamma function, metric spaces, and Ascoli's theorem.

Representation Theory and Automorphic Forms

Sally, Paul J. Jr. & Wallach, Nolan R.

The eleven papers collected in this volume appeared in the Bulletin of the AMS during the years 1955 to 1984 and share the theme of the representation theory of locally compact groups and its numerous applications. The papers provide a glimpse at the historical development of a subject which has expanded into many areas of mathematics during the past forty years. In addition, this volume provides easy access to a useful set of references. Chronicling some of the most important developments by some of the field's major figures, this book will appeal to specialists in representation theory as well as to researchers in those areas of mathematics in which representation theory plays an important role.

p -adic Analysis Compared with Real

Katok, Svetlana

The book gives an introduction to p -adic numbers from the point of view of number theory, topology, and analysis. Compared to other books on the subject, its novelty is both a particularly balanced approach to these three points of view and an emphasis on topics accessible to undergraduates. In addition, several topics from real analysis and elementary topology which are not usually covered in undergraduate courses (totally disconnected spaces and Cantor sets, points of discontinuity of maps and the Baire Category theorem, surjectivity of isometries of compact metric spaces) are also included in the book. They will enhance the reader's understanding of real analysis and intertwine the real and p -adic contexts of the book.

Abstract Algebra*Solomon, Ronald*

This undergraduate text takes a novel approach to the standard introductory material on groups, rings, and fields. At the heart of the text is a semi-historical journey through the early decades of the subject as it emerged in the revolutionary work of Euler, Lagrange, Gauss, and Galois. Avoiding excessive abstraction whenever possible, the text focuses on the central problem of studying the solutions of polynomial equations. Highlights include a proof of the fundamental theorem of algebra, essentially due to Euler, and a proof of the constructability of the regular 17-gon, in the manner of Gauss. Another novel feature is the introduction of groups through a meditation on the meaning of congruence in the work of Euclid. Everywhere in the text, the goal is to make clear the links connecting abstract algebra to Euclidean geometry, high school algebra, and trigonometry.

Concepts in Abstract Algebra*Lanski, Charles*

The style and structure of concepts in abstract algebra are designed to help students learn the core concepts and associated techniques in algebra deeply and well. Providing a fuller and richer account of material than time allows in a lecture, this text presents interesting examples of sufficient complexity so that students can see the concepts and results used in a nontrivial setting. Charles Lanski gives students the opportunity to practice by offering many exercises that require the use and synthesis of the techniques and results. Both readable and mathematically interesting, the text also helps students learn the art of constructing mathematical arguments. Overall, students will discover how mathematics proceeds and how to use techniques that mathematicians actually employ.

Topics in Applied Abstract Algebra*Nagpaul, S.R. & Jain, S.K.*

This book presents interesting applications of abstract algebra to practical real-world problems. Especially for those whose interest in algebra is not confined to abstract theory, the text makes the study of abstract algebra more exciting and meaningful. 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.

Introduction to Analysis (Fifth Edition)*Gaughan, Edward D.*

Introduction to Analysis is designed to bridge the gap between the intuitive calculus usually offered at the undergraduate level and the sophisticated analysis courses the student encounters at the graduate level. In this book, the student is given the vocabulary and facts necessary for further study in analysis. The course for which it is designed is usually offered at the junior level, and it is assumed that the student has little or no previous experience with proofs in analysis. A considerable amount of time is spent motivating the theorems and proofs and developing the reader's intuition. Of course, that intuition must be tempered with the realization that rigorous proofs are required for theorems. The topics are quite standard: convergence of sequences, limits of functions, continuity, differentiation, the Riemann integral, infinite series, power series, and convergence of sequences of functions. Many examples are given to illustrate the theory, and exercises at the end of each chapter are keyed to each section. Also, at the end of each section, one finds several projects. The purpose of a project is to give the reader a substantial mathematical problem and the necessary guidance to solve that problem. A project is distinguished from an exercise in that the solution of a project is a multi-step process requiring assistance for the beginner.

Advanced Calculus (Second Edition)*Fitzpatrick, Patrick M.*

Advanced Calculus is intended as a text for courses that furnish the backbone of the student's undergraduate education in mathematical analysis. The goal is to rigorously present the fundamental concepts within the context of illuminating examples and stimulating exercises. This book is self-contained and starts with the creation of basic tools using the completeness axiom. The continuity, differentiability, integrability, and power series representation properties of functions of a single variable are established. The next few chapters describe the topological and metric properties of Euclidean space. These are the basis of a

FORTHCOMING TITLES

rigorous treatment of differential calculus (including the implicit function theorem and Lagrange multipliers) for mappings between Euclidean spaces and integration for functions of several real variables.

Algebra: A Graduate Course

Martin Isaacs, I.

This book, based on a first-year graduate course the author taught at the University of Wisconsin, contains more than enough material for a two-semester graduate-level abstract algebra course, including groups, rings and modules, fields and Galois theory, an introduction to algebraic number theory, and the rudiments of algebraic geometry. In addition, there are some more specialized topics not usually covered in such a course. These include transfer and character theory of finite groups, modules over artinian rings, modules over Dedekind domains, and transcendental field extensions.

Textbook of Physical Chemistry

Mahadevan, V. & Sangaranarayanan, M.V.

Textbook of Physical Chemistry conforms to the syllabus of Indian universities at the undergraduate level, but can be quite useful to students at a more advanced level also. It uses simple language, develops the subject matter in a logical manner and aims at getting the students to learn and apply the concepts rather than learn the subject by rote. Various aspects of physical chemistry including chemical kinetics, electrochemistry, thermodynamics and others are dealt with. It is hoped that the novel original problems provided in this book will help the student appreciate the nuances of physical chemistry.

Convex Optimization Theory

Dimitri P Bertsekas

This book 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. Convexity theory is developed in a simple accessible manner, using easily visualised proofs. The book may be used as a supplementary source for nonlinear programming classes, and as a theoretical foundation for classes focused on convex optimization models. It contains many examples and illustrations and is structured to be used conveniently either as a standalone text for a theoretically-oriented class on convex analysis and optimization, or as a theoretical supplement to an applications/convex optimization models class or a nonlinear programming class.

Graph Theory

Pirzada and Dharwadker

This book explains the basics of graph theory, provides complete proofs of all the classical theorems and attempts to give new proofs for old theorems. Intended primarily as a textbook at the graduate level (for students pursuing masters in mathematics and computer science), each chapter contains examples, diagrammatic illustrations and problems of different levels of difficulty. The first eight chapters can be used for a one-semester course at the undergraduate level in computer science and engineering. The final sections introduce advanced topics and unsolved problems that would be of interest to research students.

IT for Real World Problems

Editor: V Sree Hari Rao

This is the second book in the series Systems, Models, Informatics and Control (SMIC). It comprises five multidisciplinary papers contributed by experts from India and abroad on the application of IT for solving real world problems in diverse fields such as health sciences, industrial automation, bioinformatics and artificial intelligence. The objective common to all papers is the endeavour to arrive at systems capable of controlling natural and social processes, forecasting their behaviour, and taking appropriate decisions. The book would be of interest to research students, scientists and decision makers in academics and society for the insight it provides on the possible areas of research of practical relevance to humankind.

Communication Systems Modelling and Simulation using MATLAB and Simulink

K.C. Raveendranathan

This book is intended as a textbook on communication systems simulation for a senior under-graduate or graduate level course in engineering. The concepts are presented in a lucid and clear cut manner, followed by appropriate simulations in MATLAB/Simulink. The book starts with a brief introduction to computer simulation, followed by simulation of signals and systems; analog modulation systems; and angle modulation. Digital modulation schemes like ASK, FSK and PSK are also discussed.

Several graded examples are given throughout the text. The book contains a number of figures and tables, which make the discussion more clear and lucid. A detailed bibliography is appended at the end of each chapter, which would be of some assistance to the advanced learner.

Short Stories About Numbers

Rajnish Kumar

Why is 11 eleven and not oneteen, and 12 twelve and not twoteen? Why of all bases, has this strange number 2.718... been chosen as the natural logarithm base called e ? Why does the computer use such a strange notation as F29 to denote 3881? These are questions that may have arisen in the curious minds of young learners. Here, by answering a few of these questions, the author brings out the innately fascinating quality of mathematics and its astonishing ability to explain many mysterious phenomena of nature.

The material for Short Stories About Numbers has been collected by the author over years of adventuring in mathematics, motivated only by his love and passion for numbers and with the hope that it will serve as a friendly encouraging guiding post for other young adventurers.

Embedded Systems Engineering

C.R. Sarma

Embedded systems is a multidisciplinary subject requiring skills from electronics, computer engineering and signal processing, to name a few. To delve into its complexity, it is therefore important to understand the concepts involved in its development. This book provides an understanding of the core principles of embedded-system programming, of real-time operating system (RTOS) and how to use it effectively.

Embedded Systems Engineering has been written as per the JNTU syllabus for its Master of Computer Applications programme. With its detailed walk-through the design process and its self evaluation questions at the end of each chapter, the book would also serve for a foundation course for BTech students of ECE and ICE streams on the subject.

Textbook of Highway Engineering

R. Srinivasa Kumar

Textbook of Highway Engineering explains the fundamental concepts and principles of highway engineering in a simple way. It covers topics related to the geometric design of highways. Various test methods/principles related to characterization of pavement materials are discussed. Various aspects of structural maintenance evaluation of flexible and rigid pavements are presented.

The Calculus of Finance

Amber Habib

Mathematics has always enjoyed a close relationship with financial matters. While economics deals with the general issues regarding money and its place in society, finance has a narrower aim: how should we invest our money to make it grow the most? This sharper focus makes it more tractable to mathematical treatment—relatively elementary mathematics can point to quite deep results in finance. Problems of finance have also helped motivate new mathematics of the highest order. This book introduces the basic concepts and products of modern finance. The emphasis is not so much on the details of the financial world as the basic principles by which one would seek to understand it. To aid this, the book is peppered with examples that use real-life data to ground the theory. Exercises are also scattered through the text—their purpose varies from simple practice in applying formulas to extending the ideas in the text to new situations.

Portfolio analysis, financial derivatives, Markowitz model, capital asset pricing model, and the Black–Scholes approach to options pricing are some of the highlights of the book.

Digital Communications and Signal Processing (Second Edition)

K. Vasudevan

This book covers a wide variety of topics in 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 of the usual E_b/N_0 , 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 ease of understanding, the turbo decoding algorithm is described using the classical MAP detection rule instead of the log-MAP and the max-log-MAP procedures that are widely adopted in literature.

The second edition of the book incorporates many new solved examples and some additional topics like performance analysis of differential detectors in fading channels and synchronization of linearly modulated signals. The following C programs have also been added: (a) simulation of coherent and noncoherent detectors for AWGN and fading channels, (b) simulation of a digital communication system that employs root-raised cosine pulse shaping and algorithms for carrier and timing synchronization.

Pattern Recognition – An Algorithmic Approach

M Narasimha Murty and V Susheela Devi

The book provides an exposition of principal topics in pattern recognition using an algorithmic approach. The concepts of pattern recognition have been dealt with very clearly; it provides a systematic account of the major topics in pattern recognition. The book also looks at the developments in the field that have taken place in recent times, making it an up-to-date and easily accessible text for senior undergraduate students for a course in pattern recognition.

COMPUTER SCIENCE

Brief History of the Future:

The Origins of the Internet, A
Naughton, J.

This book is an impassioned attempt to rescue the Internet from the condescension of posterity, to celebrate the engineers and scientists who created it and to explain the values and ideas that drove them. Its heroes are the people who laid the foundations of the post-modern world, from visionaries like Joseph Licklider, Robert Taylor, Douglas Engelbart, Norbert Wiener, Vannevar Bush and Ted Nelson, to the engineers—Paul Baran, Donald Davies, Larry Roberts, Bob Kahn, Vint Cerf and Tim Berners-Lee—who fashioned their dreams in hardware and software. This book is an intensely personal celebration of vision and altruism, ingenuity and determination and, above all, of the power of ideas to change the world.

2000 • 336 pp. • Paperback
978-81-7371-281-4 • Rs. 325.00

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

Jones, R.S.

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.

2004 • 168 pp. • Paperback
978-81-7371-492-4 • Rs. 175.00

Plan to write? Contact:
info@universitiespress.com

C: An Advanced Introduction: ANSI C Edition

Gehani, Narain

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.

2004 • 276 pp. • Paperback
978-81-7371-490-0 • Rs. 250.00

Code Breaking:

A History and Exploration

Kippenhahn, R.

This brilliant history and exploration of the fascinating art and science of cryptography begins with Caesar's coded letters to Cicero, and ends with the computer hackers of the present. Code breaking has always played a key role in both the romance and the reality of espionage. Now, with the advent of electronic banking and widespread concerns about personal privacy, the issues surrounding the coding and decoding of information have assumed greater importance than ever before. Rudolf Kippenhahn provides both an exciting history of cryptography and a lucid exploration of the art of coding and decoding language.

1999 • 284 pp. • Paperback
978-81-7371-204-3 • Rs. 425.00

Order Online:
www.universitiespress.com

Communications and Broadcasting

Henderson, H.

This volume explores the inventors and inventions that have made modern communications and broadcasting possible and the scientific ideas used to visualize and build new communications devices. Each of the inventions discussed has had profound societal effects that go beyond entertaining people and helping them communicate.

1999 • 144 pp. • Paperback
978-81-7371-181-7 • Rs. 175.00

Computer Algebra and Symbolic Computation:

Elementary Algorithms

Cohen, Joel S.



The author explores the structure and implementation of computer algebra algorithms as well as the mathematical and computational concepts behind them.

This book contains a CD with the entire text, active reference hyperlinks, and complete algorithms. It bridges the gap between software manuals, which only explain how to use computer algebra programs such as Mathematica, Maple, Derive, etc., and graduate level texts, which only describe algorithms.

Contents: Introduction—computer algebra and computer algebra systems; Applications of computer algebra | Elementary concept of computer algebra—Mathematical pseudo-language (MPL); Expression evaluation; mathematical programs; Sets and lists | Recursive structure of mathematical expressions—Recursive definitions and algorithms; Expression structure and trees; Structure-based operators | Elementary mathematical algorithms—Mathematical algorithms; MPL's algorithmic language; Case study: First order ordinary differential equations | Recursive algorithms—A computational view of recursion; Recursive procedures; Case study: Elementary integration operator | Structure of polynomials and rational expressions—Single variable polynomials; General polynomial

expressions; Relationships between generalized variables; Manipulation of general polynomial expressions; General rational expressions | Exponential and trigonometric transformations—Exponential and trigonometric expansion; Exponential and trigonometric contraction | Bibliography

2005 • 342 pp. • Paperback
978-81-7371-532-7 • Rs. 450.00

Computer Algebra and Symbolic Computation:

Mathematical Methods

Cohen, Joel S.



Mathematica™, Maple™, and similar software packages provide programs that carry out sophisticated mathematical operations. In this book, the author explores the mathematical methods that form the basis for such programs, in particular the application of algorithms to methods such as algebraic simplification, polynomial decomposition, polynomial greatest common divisor computation, and polynomial factorization.

This text introduces advanced methods to treat complex operations and presents implementations in such programs as Mathematica™, Maple™, and MuPAD™.

The accompanying CD includes the complete text, hyperlinks, and algorithms as well as additional reference files.

Contents: Background concepts | Integers, rational numbers, and fields | Automatic simplification | Single variable polynomials | Polynomial decomposition | Multivariate polynomials | The resultant | Polynomials simplification with side relations | Polynomial factorization | Bibliography

2005 • 344 pp. • Paperback
978-81-7371-531-0 • Rs. 450.00

Computer Algorithms/C++ (Second Edition)

Horowitz, Ellis, Sahni, Sartaj & 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.

Contents: 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

2008 • 808 pp. • Paperback
978-81-7371-611-9 • Rs. 395.00

Computer Arithmetic Algorithms (Second Edition)

Koren, Israel

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: 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

2005 • 300 pp. • Paperback
978-81-7371-533-4 • Rs. 295.00

Computer Laboratory Referral for Diploma and Engineering Students

Jagadeesh, T.R., Jayaram, M.A. & Prasad, D.S.R.

This is a hands-on reference that will help students attain fluency in word processing, electronic accounting in Spreadsheet and programming with C in the shortest possible time. It includes all the fundamental computing processes concisely, to specifically address the needs of engineering and diploma students in the early semesters. The instructional approach stems directly from the authors' long teaching experience in the classroom and laboratory environment.

Contents: Working with MS word | Working with MS EXCEL | Getting close to turbo C | C preliminaries | Few simple C programs | Using decision control structures | Using loop control structures | Use of case control structure | Using arrays | Using pointers | Creating functions | Working with strings | Using structures, Union and enumeration | File handling | Computer lexicon

2000 • 216 pp. • Paperback
978-81-7371-258-6 • Rs. 210.00

Computer Programming and Numerical Analysis:

An Integrated Approach
(Revised Edition with C)

Datta, N.

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.

2003 • 515 pp. • Paperback
978-81-7371-451-1 • Rs. 395.00

Computer, Internet and Multimedia Dictionary

Verma, S.

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.

1998 • 256 pp. • Paperback
978-81-7371-091-9 • Rs. 275.00

Database Book, The:

Principles and Practice Using MySQL

Gehani, Narain

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.

2008 • 390 pp. • Paperback
978-81-7371-621-8 • Rs. 425.00

Data Mining Techniques

Pujari, Arun K.

This book addresses all the major and latest techniques of data mining and data warehousing. It deals with the latest algorithms for discovering association rules, decision trees, clustering, neural networks and genetic algorithms. The book also discusses the mining of web data, spatial data, temporal data and text data. It can serve as a textbook for students of computer science, mathematical science and management science, and as an excellent handbook for researchers in the area of data mining and warehousing.

Contents: Introduction | Data warehousing | Data mining | Association rules | Clustering techniques | Decision trees | Other techniques | Web mining | Temporal and spatial data Mining

2001 • 308 pp. • Paperback
978-81-7371-380-4 • Rs. 350.00

Data Structures, Algorithms and Applications in C++

(Second Edition)

Sahni, Sartaj

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.

2005 • 832 pp. • Paperback
978-81-7371-522-8 • Rs. 375.00

Data Structures, Algorithms, and Applications in JAVA

(Second Edition)

Sahni, Sartaj

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.

2005 • 872 pp. • Paperback
978-81-7371-523-5 • Rs. 495.00

Discrete Mathematical Structures with Applications to Combinatorics

Ramaswamy, V.

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: 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

2006 • 264 pp. • Paperback
978-81-7371-500-6 • Rs. 195.00

Fundamentals of Computer Algorithms (Second Edition)

Horowitz, Ellis, Sahni, Sartaj & Rajasekaran, Sanguthevar

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.

Contents: 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

2008 • 808 pp. • Paperback
978-81-7371-612-6 • Rs. 360.00

Fundamentals of Computer Security

Pieprzyk, Josef, Hardjono Thomas & Seberry, Jennifer

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.

2008 • 678 pp. • Paperback
978-81-8128-916-2 • Rs. 575.00

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- Request for specimen copy can be placed by faculty members.

Fundamentals of Data Structures in C (Second Edition)

Horowitz, Ellis, Sahni, Sartaj & 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.

2008 • 664 pp. • Paperback
978-81-7371-605-8 • Rs. 375.00

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

Horowitz, Ellis, Sahni, Sartaj & Mehta, Dinesh

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.

2008 • 720 pp. • Paperback
978-81-7371-606-5 • Rs. 375.00

Fundamentals of Data Warehouses

Jarke, M., et al.

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.

2008 • 207 pp. • Paperback
978-81-8128-914-8 • Rs. 295.00

Global Electronic Commerce: Theory and Case Studies

Westland, J. Christopher & Clark, Theodore H.K.

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.

2001 • 608 pp. • Paperback
978-81-7371-394-1 • Rs. 625.00

Information Retrieval (Second Edition)

Grossman, David A. & Frieder, Ophir

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.

2008 • 332 pp. • Paperback
978-81-8128-917-9 • Rs. 395.00

Introduction to System Dynamics Modeling

Mohapatra, P.K.J., Mandal, P. & Bora, M.C.

This book deals with system dynamics which blends the art of traditional management with the science of feedback control to conceptualise a problem, map it into easily understandable diagrams, and develop mathematical models using friendly algebra.

1994 • 296 pp. • Paperback
978-0-86311-490-8 • Rs. 325.00

Knowledge Engineering and Management: The CommonKADS Methodology

Schreiber, Guus, et al.

Knowledge engineering deals with the development of information systems in which knowledge and reasoning play pivotal roles. A newly-developed field at the intersection of computer science and management, it deals with knowledge as a key resource in modern organisations. The book covers in an integrated fashion the complete route from corporate knowledge management, through knowledge analysis and engineering, to the design and implementation of knowledge-intensive information systems.

2001 • 472 pp. • Paperback
978-81-7371-392-7 • Rs. 550.00

Knowledge Management: Classic and Contemporary Works

Morey, Daryl, Maybury, Mark & Thuraisingham, Bhavani

This book provides an introduction to the field of knowledge management.

Taking a learning-centric rather than an information-centric approach, it emphasises the continuous acquisition and application of knowledge. The book is organised 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.

2001 • 456 pp. • Paperback
978-81-7371-390-3 • Rs. 395.00

Knowledge-Based Neurocomputing

Cloete, Ian & Zurada, Jacek M. (Eds.)

Neurocomputing methods are loosely based on a model of the brain as a network of simple interconnected processing elements corresponding to neurons. These methods derive their power from the collective processing of artificial neurons, the chief advantage being that such systems can learn and adapt to a changing environment. In knowledge-based neurocomputing, the emphasis is on the use and representation of knowledge about an application. The focus is on methods to encode prior knowledge and to extract, refine, and revise knowledge within a neurocomputing system.

2001 • 486 pp. • Paperback
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Managing Business Risks in the Information Age

Anderson, A. & Economist Intelligence Unit, The

This book provides a framework for identifying, sourcing, measuring and monitoring business risks in general and IT-related risks more specifically. This book shows how companies must manage information technology as a business risk in order to operate effectively. The findings presented here are drawn from 150 survey responses

from senior executives in North America, Europe and Asia. The mix of companies in the study comprises large multinationals, as well as small- to medium-sized firms.

2000 • 136 pp. • Paperback
978-81-7371-241-8 • Rs. 250.00

Mobile Computing:

A Book of Readings

Prabhu, C.S.R.

Wireless data technologies are making significant strides in providing universal connectivity today. Mobile computing combines the capabilities of computing with communications, opening up several application areas. The challenge lies in not only overcoming the limitations posed by narrow bandwidths and intermittent connectivity, but also the extreme vulnerability of wireless networks to security threats. The papers in this book survey the developments in wireless communications technology and give the readers an insight into the major issues and challenges in mobile computing.

2002 • 216 pp. • Paperback
978-81-7371-404-7 • Rs. 325.00

Multimedia Applications

Steinmetz, Ralf & Nahrstedt, Klara

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: Introduction | Database systems | Programming | Security |

Documents, Hypertext, and hypermedia | Design | User interfaces | Multimedia learning | Multimedia applications | Bibliography

2007 • 245 pp. • Paperback
978-81-8128-651-2 • Rs. 425.00

Multimedia Database Management Systems

Prabhakaran, B.

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: Multimedia storage and retrieval | Metadata for multimedia | Multimedia data access | Multimedia information modelling | Querying multimedia databases | Multimedia communication | MMDBMS architecture

2007 • 216 pp. • Paperback
978-81-8128-652-9 • Rs. 395.00

Natural Language Programming and Knowledge Representation (IEEE)

Iwanska, Lucja M. & Shapiro, Stuart C. (Eds.)

Natural language refers to human language—complex, irregular, diverse—with all its philosophical problems of meaning and context. This book explores the development of knowledge representation and reasoning systems that take seriously the role of natural language in human information and knowledge processing. The essays in this interdisciplinary book cover a range of implementations and designs, from formal computational models to

large-scale natural language processing systems.

2001 • 459 pp. • Paperback
978-81-7371-391-0 • Rs. 495.00

Numerical Methods

Boehm, W. & Prautzsch, H.

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: I. Fundamental concepts—Algorithms and error propagation | Matrices | II. Linear equations and inequalities—Gaussian elimination | The LU factorization | The exchange algorithm | The cholesky factorization | The QU factorization | Relaxation methods | Data fitting | Linear optimization | III. Iteration—Vector iteration | The KR algorithm | One-dimensional iteration | Multi-dimensional iteration | Roots of polynomials | Bernoulli's method | The QD algorithm | IV. Interpolation and discrete Approximation—Interpolation | Discrete approximation | Polynomials in bezier form | Splines | V. Numerical differentiation and integration—Numerical 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

2005 • 196 pp. • Paperback
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Numerical Methods with Programs in BASIC, FORTRAN, Pascal and C++

(Revised Edition)

Balachandra Rao, S. & Shantha, C.K.

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.

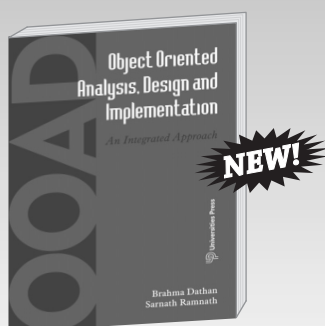
The revised edition has a section on C++ and programs in C++.

Contents: 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

2004 • 504 pp. • Paperback
978-81-7371-472-6 • Rs. 410.00

Object-Oriented Analysis, Design, and Implementation: An Integrated Approach

Brahma Dathan & Ramnath Sarnath



Object-oriented analysis and design (OOAD) has, over the years, become quite vast a field comprising diverse topics such as design process and principles, documentation tools (UML), refactoring, and design and architectural patterns. For most students the learning experience is incomplete

without implementation, an issue which has been addressed in this book. This book, meant to serve as textbook on the subject, provides a comprehensive introduction to OOAS. The salient points of its coverage are: (i) a sound footing in object-oriented concepts such as classes, objects, interfaces, inheritance, polymorphism and dynamic linking, (ii) a good introduction to the stage of requirements analysis, (iii) use of UML to document user requirements and design, (iv) an extensive treatment of the design process, (v) coverage of implementation issues with critical excerpts from the implementation in Java, (vi) appropriate use of design and architectural patterns, (vii) introduction to the art and craft of refactoring and, (viii) pointers to resources that further the reader's knowledge. There are three main case-studies in the book which have been implemented by the authors using Java; they help to present topics in an integrated manner to give students a complete picture of the OOAD process. The text is liberally peppered with snippets of code which are short and fairly self-explanatory. Also included are chapter-end exercises and a list of projects that can be executed in parallel with the case studies for gaining a firm understanding of the concepts and techniques of OOD.

2010 • 496 pp. • Paperback
978-81-7371-711-6 • Rs. 395.00

Object Oriented Programming through JAVA

Radha Krishna, P.

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.

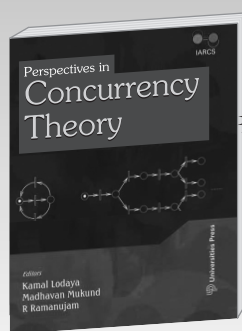
Contents: Object oriented programming | Introduction to java programming | Java language fundamentals | Java as object oriented programming | Exception handling | Multithreading | Files and I/O streams | Database handling using JDBC | AWT | Swings | Servlets | Networking and java RMI

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**2006 • 492 pp. • Paperback
978-81-7371-572-3 • Rs. 350.00**

Perspectives in Concurrency Theory

Lodaya, Kamal, Mukund, Madhavan & Ramanujam, R. (Eds.)



Perspectives in Concurrency Theory is an excellent collection of research papers in concurrency theory, especially from the viewpoint of automata and logics, contributed by leading researchers in the field as a tribute to P S Thiagarajan, one of the principal researchers in the

area, on the occasion of his sixtieth birthday. The range of topics covered includes formal methods and models in concurrent systems: net theory, process algebra, temporal and dynamic logics, control synthesis, security, message sequence charts, system testing and verification and process scheduling. Graduate students and professionals working in this area will find the book an invaluable source of reference.

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

**2009 • 512 pp. • Paperback
978-81-7371-652-2 • Rs. 550.00**

Practical Approach to Parallel Computing, A

Ghoshal, S.K.

This book describes a way of building and using simple inexpensive parallel computers using PCs. It presents details of hardware, system software and application programming lucidly. It can be used as an introductory textbook in the architecture and programming environment of parallel computers. It contains practical guidelines on how to assemble and use one's own parallel computer out of existing PCs.

**2000 • 168 pp. • Paperback
978-81-7371-132-9 • Rs. 200.00**

Principles of Computer Graphics

Govil-Pai, Shalini

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: From pixels to shapes | Making them move | Pixels, images and image files | Let the games begin | 3D modelling | Rendering, shading and lighting | Advanced techniques | And finally, Introducing maya | Animation | Viewpoint animation | Lights, Camera, Action! | Appendix A | Appendix B | Appendix C

**2007 • 310 pp. • Paperback
978-81-8128-674-1 • Rs. 475.00**

Robotics: The Marriage of Computers and Machines

Thro, E.

Robotics a volume of the Universities Press Science Sourcebooks, series gives the reader a thorough understanding of this amazing science and, more generally, the science of artificial intelligence. Coverage includes the anatomy of a robot (vision systems, sensors, and control mechanisms), industrial robots and how they are used around the world, and specialized robots (those used in the military, in space, and in hazardous situations). The book also addresses the larger questions: How far can robot technology go? Will increased use of robots mean fewer jobs? Are the benefits worth the cost?

**2000 • 128 pp. • Paperback
978-81-7371-343-9 • Rs. 210.00**

Robotics Primer, The*Mataric, Maja J.*

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 K–12 teachers who bring robotics into their classrooms.

2010 • 288 pp. • Paperback
978-81-7371-680-5 • Rs. 370.00

Structure and Interpretation of Computer Programs (Second Edition)

Abelson, Harold, Sussman, Gerald Jay & Sussman, Julie

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.

2005 • 684 pp. • Paperback
978-81-7371-527-3 • Rs. 525.00

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Structured Systems Analysis and Design: Data Flow Approach

Kaujalgi, V.B.

This book describes the data flow diagram approach, which is considered to be the most popular method available for systems analysis and design. This method is useful for the development of systems on micro as well as on mini/mainframe computers. It will also prove to be a useful book to those who wish to develop computerised systems for business applications using the data flow approach.

1994 • 172 pp. • Hardback
978-0-86311-323-9 • Rs. 300.00

Supercomputers

Rajaraman, V.

This book explains what a supercomputer is and why such a machine is needed to solve challenging problems in science and engineering. The architecture of super computers which distinguishes them from other computers is explained and the need to vectorise programs to make effective use of supercomputers is brought out. The book presents details of some of the commercially available high performance computers. It concludes by describing some interesting applications of supercomputers.

1999 • 104 pp. • Paperback
978-81-7371-149-7 • Rs. 100.00

Supercomputers: Shaping the Future

Billings, C.W.

Some computers are so fast and so powerful that they are known as supercomputers. The next generation of these computers will be able to complete more than one trillion operations per second. This book, part of the Universities Press Science Sourcebooks series, introduces readers to the history and use of these powerful machines.

Writing in a lively, informative tone, this award-winning author presents the latest computer technology in a clear and exciting format that will benefit anyone interested in science.

2000 • 144 pp. • Paperback
978-81-7371-341-5 • Rs. 195.00

Web Services:

Concepts, Architectures and Applications

Alonso, G. et al.



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.

2009 • 374 pp. • Paperback
978-81-8489-170-6 • Rs. 595.00

Web Style Guide:

Basic Design Principles for Creating Web Sites

Lynch, P.J. & Horton, S.

This essential guide for web site designers offers clear, concise advice on creating well designed and effective web sites and pages. Focusing on the interface and graphic design principles that underlie the best web site design, the book provides expert guidance on issues ranging from planning and organizing goals, to design strategies for a site, to the elements of individual page design.

Shifting away from the emphasis of many authors on HTML and glitzy, gimmicky graphics, Lynch and Horton discuss classic principles of design, how these principles apply to web design, and the issues and constraints of designing complex, multi-layered sites. They address the practical concerns of bending and

adapting HTML to the purposes of graphic page design.

1999 • 176 pp. • Paperback
978-81-7371-236-4 • Rs. 275.00

Writer's Guide to the Internet

Lockwood, T. & Scott, K.

The Internet is the world's fastest growing means of communication. For writers, it presents a huge array of opportunities and choices. This authoritative guide will help every writer, from the seasoned Netizen to the technophobe, to make the most of this exciting new medium. It is complete with comprehensive and up-to-date listings of the very best online writers' resources.

2001 • 102 pp. • Paperback
978-81-7371-357-6 • Rs. 275.00

SYSTEMS, MODELS, INFORMATICS AND CONTROL (SMIC)

The series Systems, Models, Informatics and Control (SMIC) encompasses books in the broad areas of dynamical systems; mathematical modelling in actuarial, biological, behavioural, physical, sociological and engineering sciences; economics and finance; artificial intelligence, bio informatics, data warehousing and mining; neural networks and their implementations; and control theory and robotics.

Introduction to Mathematical Computer Science, An

Viswanath, Kasturi

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: 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

**2008 • 304 pp. • Paperback
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ENGINEERING

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Venkatesh, A.

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Advances in Computational Optimization and its Applications

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First Course in Fluid Mechanics, A

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Heat Transfer

Rao, Y.V.C.

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Solutions Manual for Heat Transfer

Rao, Y.V.C.

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Pillai, Narayana N.

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Recent Advances in Experimental Fluid Mechanics

Rathakrishnan, E. (Ed.)

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Shock Waves:

Proceedings of the 25th International Symposium on Shock Waves-ISSW25, Bangalore, India

Jagadeesh, G., Arunan, E. & Reddy, K.P.J. (Eds.)

A shock wave is a phenomenon in the realm of fluid mechanics, characterised by a sudden change in the characteristics of the medium, such as pressure, temperature and speed. It may arise at explosions, detonation, supersonic movements of bodies, powerful electric discharges, etc. The scope of the research pertaining to this phenomena varies from basic shock wave phenomena in gases, liquids and solids to their interdisciplinary applications in earth sciences (e.g., to clarify the mechanism of volcanic eruption and to predict and overcome blast disasters), medical treatment (in urology, orthopaedics, rheumatology, cardiology, gastroenterology, cancer treatment, orthopaedic surgery, neuro-surgery, etc), and industry (automobile, semiconductor, space, etc).

The topics covered in this book span a wide range of interdisciplinary areas of research in shock waves including hypersonic, scramjet engine development; space travel; and physical, chemical, biological and medical applications of shock waves.

This book will be an invaluable reference for researchers, particularly in fluid dynamics, and has relevance to the sciences (physics, chemistry, life sciences) and engineering (mechanical, aerospace, biomedical, defence, space). Departmental libraries of universities, research centres, defence labs, department of space and industries with R&D facilities will find this book useful.

2006 • 1178 pp. • Hardback
978-81-7371-571-6 • Rs. 4350.00

APPLIED MATHEMATICS

Advances in Computational Optimization and its Applications

Deb, Kalyanmoy, et al. (Eds.)

Optimization and analysis of systems through modelling are practices common to many engineering and scientific problem solving tasks. These techniques can be used to enhance productivity and understand and design systems better. Although they are routinely used in academia and industries abroad, such practices are yet to be popular in Indian industries and academics. This book presents a number of state-of-the-art papers written by experts (both from academia and industries) in the field of optimization and systems analysis from USA and India. The papers involve theoretical treatise, classical optimization methodologies, evolutionary optimization procedures and application issues. The application domains include engineering design of systems, components and processes, bioinformatics, finance, and resource allocation problems. Anyone interested in understanding, using and researching in the area of optimization will find this book useful.

2007 • 224 pp. • Paperback
978-81-7371-585-3 • Rs. 500.00

Differential Equations with Applications and Programs

Balachandra Rao, S. & Anuradha, H.R.

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: 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

1996 • 416 pp. • Paperback
978-81-7371-023-0 • Rs. 350.00

Engineering Mathematics

Sarveswara Rao, Koneru

This book incorporates in one volume the material covered in the mathematics course of undergraduate programmes in engineering and technology. The topics discussed include sequences and series, mean value theorems, evolutes, functions of several variables, solutions of ordinary and partial differential equations, Z-transform with their applications.

The book also contains chapters on vector calculus, matrices, Fourier series and numerical algorithms. The text is

substantiated with about 450 worked-out examples and nearly an equal number of exercises.

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 | 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 | Partial differential equations | Applications of partial differential equations | Probability | Random variables and probability distributions | Joint distributions | Sampling distributions | Statistical estimation and inference | Curve fitting, Regression and correlation | Fourier and Z-transforms | Numerical methods | Appendix

2002 • 520 pp. • Paperback
978-81-7371-424-5 • Rs. 395.00

Introduction to Strength of Materials

Prakash Rao, D.S.

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Cloete, Ian & Zurada, Jacek M. (Eds.)

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Introduction to Thermodynamics, An (Revised Edition)

Rao, Y.V.C.

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Solution Manual for A Introduction to Thermodynamics

Rao Y.V.C.,

See page 36

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

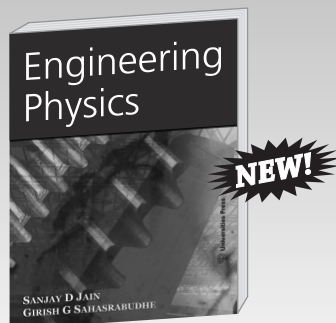
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APPLIED PHYSICS

Engineering Physics

Jain, Sanjay D. &
Sahasrabudhe, Girish G.



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:

- 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

2010 • 608 pp. • Paperback
978-81-7371-678-2 • Rs. 375.00

Frontiers in Materials Science

Raj, Baldev & Bhanu Sankara Rao, K.

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Introduction to Mathematical Computer Science, An

Viswanath, Kasturi

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Introduction to Mechanics

Verma, Mahendra K.

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: 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

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2008 • 356 pp. • Paperback
978-81-7371-627-0 • Rs. 290.00

Knowledge-Based Neurocomputing

Cloete, Ian & Zurada, Jacek M. (Eds.)

See page 26

Lasers: The New Technology of Light

Billings, C.

Once the stuff of science fiction legend, lasers are now employed for everything from clocking the speed of moving traffic to performing delicate eye surgery. This book addresses the basic questions—What is a laser? What are the theories about light?—and gives details about different types of lasers and how they are used. It also includes information about the pioneers in the field and about how lasers are employed in medicine, the military, industry, research, and communications.

2000 • 128 pp. • Paperback
978-81-7371-344-6 • Rs. 175.00

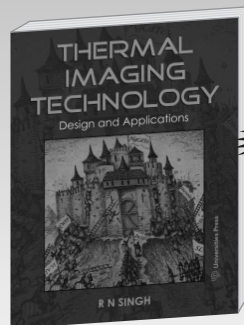
Optical Communication

Mukunda Rao, M.

See page 29

Thermal Imaging Technology: Design and Applications

Singh, R.N.



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, optomechanics 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.

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

Physics of Semiconductor Devices (Revised Edition)

Roy, D.K.

See page 27

Wavelets: A Primer

Blatter, Christian

The wavelet transform, with its many applications, has become a major new mathematical technique. It has stimulated research unparalleled since the invention of the Fast Fourier Transform (FFT) and opened new avenues of application in signal processing, image compression, radiology, cardiology, and many other areas. This book grew out of a short course for mathematics students at the ETH in Zurich. It provides a solid, yet accessible, mathematical foundation for those interested in learning about wavelets and pursuing the broad range of applications for which the wavelet transform has proved successful. Numerous illustrations and fully worked-out examples further enhance the value of this exemplary introduction to the field.

Contents: Formulating the problem | Fourier analysis | The continuous wavelet transform | Frames | Multiresolution

analysis | Orthonormal wavelets with compact support | References

2003 • 216 pp. • Paperback
978-81-7371-449-8 • Rs. 225.00

Wavelets: Theory, Applications, Implementation

Altaisky, M.V.

This book aims 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 schemes; 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

2004 • 164 pp. • Paperback
978-81-7371-503-7 • Rs. 225.00

AUTOMOBILE ENGINEERING

Computer Simulation of Compression-Ignition Engine Processes

Ganesan, V.

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Computer Simulation of Spark-Ignition Engine Processes

Ganesan, V.

See page 34

BIOMEDICAL ENGINEERING

Principles of Medical Electronics and Biomedical Instrumentation

Raja Rao, C. & Guha, S.K.

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

2000 • 288 pp. • Paperback
978-81-7371-257-9 • Rs. 275.00

Short Introduction to Biomedical Engineering, A

Sarbadhikari, S.N.

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.

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

2006 • 276 pp. • Paperback
978-81-7371-558-7 • Rs. 235.00

CHEMICAL ENGINEERING

Basic Engineering Thermodynamics

Venkatesh, A.

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Chemical Engineering Thermodynamics

Rao, Y.V.C.

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: 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

1997 • 624 pp. • Paperback
978-81-7371-048-3 • Rs. 495.00

Solutions Manual for Chemical Engineering Thermodynamics

Rao, Y.V.C.

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 • Rs. 275.00

Chemical Process Calculations

Asokan, K.

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 are 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

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**2007 • 264 pp. • Paperback
978-81-7371-594-5 • Rs. 290.00**

Frontiers in Materials Science

Raj, Baldev & Bhanu Sankara Rao, K.

See page 32

Fuel Cells:

Principles and Applications

Viswanathan, B. & Scibioh, Aulice M.

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

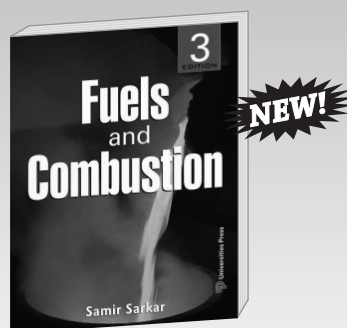
flexibility, and high power density. The only emission from fuel cells is water when hydrogen is fed to the fuel cell. For these reasons, research in the area of fuel cells is of great significance. This book is a comprehensive work on the state-of-the-art findings in this area.

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**2006 • 504 pp. • Paperback
978-81-7371-557-0 • Rs. 595.00**

Fuels and Combustion (Third Edition)

Sarkar, Samir



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.

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**2009 • 400 pp. • Paperback
978-81-7371-669-0 • Rs. 355.00**

Mechanics of Composite Materials and Structures

Mukhopadhyay, Madhujit

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Understanding Combustion (Second Edition)

Mukunda, H.S.

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

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Advances in Stainless Steels

Raj, Baldev et al. (Eds.)

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Frontiers in the Design of Materials

Raj, Baldev, et al. (Eds.)

See page 33

Perspectives in Materials Characterization

Amarendra, G., Raj, Baldev &
Manghnani, M.H. (Eds.)

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CIVIL ENGINEERING

Advances in Computational Optimization and its Applications

Deb, Kalyanmoy, et al. (Eds.)

See page 12

Cable Stayed, Supported and Suspension Bridges

Dayaratnam, P., Garg, G.P. &
Raghavan, R.N.

This book comprises about 50 scientific papers presented by academicians, leading engineers, consultants and students from various disciplines

of Bridge Engineering Research and Development from India and abroad. The deliberations at the International Conference covered a wide spectrum of research and development activities in the field of suspension and cable stayed bridges. This book provides an overview of the recent developments in these fields, with contributions from distinguished engineers and consultants worldwide.

1999 • 400 pp. • Paperback
978-81-7371-271-5 • Rs. 700.00

Civil Engineering Contracts and Estimates (Third Edition)

Patil, B.S.

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: Vol. 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 | Vol. 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 paving | Plastering and pointing | Stairs | Plumbing, drains and sanitary fittings | Electrical work | Structural steelwork | Measurement of earthwork | Squaring and 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 • Rs. 410.00

Ductility of Seismic Resistant Steel Structures

Gioncu, Victor & Mazzolani, Federico M.

This book provides a critical review of recent progress in the conception, design and construction of seismic-resistant steel structures to improve their performance during ground movements. The authors comprehensively review analytical techniques, with emphasis placed on the assessment of structural ductility as the most efficient way to prepare and protect a structure against unexpected strong events. This book is an essential guide for structural designers concerned with building safer and more economical steel structures. It will also serve as an authoritative reference for academics and postgraduate students in this important area of structural design.

2002 • 718 pp. • Hardback
978-04-192-2550-8 • Rs. 2730.00

Elementary Exercises in Geology

Prasad, C.V.R.K.

The absence of a book of exercises in geology has been deeply felt by Indian students. This book is an attempt to fill the lacuna. It provides basic training in the principles of geology along with some bare facts on many topics. Although the method adopted is elementary, any student completing the exercises will profit by getting many facts and ideas permanently imbedded in his or her mind. This book shows how with simple arithmetic and easily drawn graphs, a student can find the age of a local rock, trace the drift of India, estimate the rise in the height of the Himalayas and even locate the epicentre of a recent earthquake, thus

opening his eyes to the fascination of geology.

Contents: Problems - Measuring the earth; The universe and the solar system; Structure of the earth; Geochronology; Stratigraphy; petrology; Plate tectonics; Economics geology | Solutions - Measuring the earth; The universe and the solar system; Structure of the earth; Geochronology; Stratigraphy; petrology; Plate tectonics; Economic geology | Glossary

2005 • 216 pp. • Paperback
978-81-7371-502-0 • Rs. 250.00

Engineering Mechanics

Seshagiri Rao, M.V. & Ramadurgaiah, D.

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Engineering Thermodynamics Through Examples:

More than 765 Solved Examples

Rao, Y.V.C.

See page 34

Finite Element Analysis and Procedures in Engineering

Lakshminarayana, H.V.

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.

2004 • 264 pp. • Paperback
978-81-7371-476-4 • Rs. 230.00

Finite Element Analysis for Engineering and Technology

Chandrupatla, Tirupathi R.

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. 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

2003 • 268 pp. • Paperback
978-81-7371-427-6 • Rs. 350.00

First Course in Fluid Mechanics, A

Narasimhan, S.

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Foundations of Engineering Geology (Second Edition)

Waltham, Tony

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.

2002 • 102 pp. • Hardback
978-04-152-5450-2 • Rs. 450.00

• Request for specimen copy can be placed by faculty members.

Fracture Mechanics for Modern Engineering Design

Simha, K.R.Y.

Fracture is a natural reaction of solids to relieve stress and shed excess energy. The fragility of solids is a constant threat to our survival as we drive over a bridge, go through a tunnel, or even inside a building. This book weaves together the essential concepts underlying fracture mechanics.

2001 • 176 pp. • Hardback
978-81-7371-259-3 • Rs. 375.00

Fundamentals of Computational Fluid Dynamics

Sengupta, Tapan K.

See page 35

Fundamentals of Remote Sensing (Second Edition)

Joseph, George

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: 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 | Geographical information system (GIS) | Appendices | References

2005 • 488 pp. • Paperback
978-81-7371-535-8 • Rs. 415.00

Gas Tables (Revised Edition)

Rathakrishnan, E.

See page 35

Geographical Information Science

Panigrahi, Narayan

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: Introduction | Input domain of GIS | Spatial data modelling | 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

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

2008 • 292 pp. • Paperback
978-81-7371-628-7 • Rs. 290.00

Graphical Methods in Structural Analysis

Prakash Rao, D.S.

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.

1997 • 200 pp. • Paperback
978-81-7371-046-9 • Rs. 250.00

Guide to Soil Mechanics, A

Bolton, Malcolm

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: Introduction | Constitution of soil | Groundwater | Friction | Cohesion | Small Strains | Transient flow | The deformation of a soil element | The collapse of soil construction | Towards design

2003 • 452 pp. • Paperback
978-81-7371-425-2 • Rs. 450.00

Handbook of Fire Technology, A

Gupta, R.S.



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.

2009 • 355 pp. • Paperback
978-81-7371-686-7 • Rs. 325.00

Heat Transfer

Rao, Y.V.C.

See page 35

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Solutions Manual for Heat Transfer

Rao, Y.V.C.

See page 36

India's Water Wealth (Revised Edition)

Rao, K.L.

See page 31

Integrated Life Cycle Design of Structures

Sarja, Asko

Current objectives towards sustainable building and civil engineering are leading to new challenges for the construction industry. The life cycle engineering approach takes into account all aspects of construction practice, from design, construction, and service life management, to demolition and the recycling of materials. This book explains how to optimise the structures for the entire design life through an optimum integrated life cycle design process. Sustainability and performance issues are detailed. *Integrated Life Cycle Design of Structures* provides a comprehensive account of this rapidly emerging field. It is essential reading for civil and structural engineers, designers, architects, contractors, and clients.

2002 • 152 pp. • Hardback
978-04-152-5235-5 • Rs. 3250.00

Introduction to Soil Reinforcement and Geosynthetics, An

Sivakumar Babu, G.L.

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: 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 eotextiles

2005 • 208 pp. • Paperback
978-81-7371-481-8 • Rs. 275.00

Introduction to Strength of Materials

Prakash Rao, D.S.

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: 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

2002 • 172 pp. • Paperback
978-81-7371-405-4 • Rs. 175.00

Invention by Design:

How Engineers Get from Thought to Thing

Petroski, H.

See page 36

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Manual of Tropical Housing and Building: Climatic Design

Koenigsberger, O.H., et al.

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.

1975 • 320 pp. • Paperback
978-81-7371-697-3 • Rs. 350.00

Mechanics of Composite Materials and Structures

Mukhopadhyay, Madhujit

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: 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 fibre reinforced composite structures | Composite joints

2004 • 388 pp. • Paperback
978-81-7371-477-1 • Rs. 425.00

Mine Disasters and Mine Rescue

Ramlu, M.A.

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.

2006 • 460 pp. • Paperback
978-81-7371-573-0 • Rs. 550.00

Model Analysis of Structures

Ganesan, T.P.

The purpose of this book is to introduce the basic principles and techniques of model studies. It will prove very useful for analysis design and review of structural design, especially of those structures which are not amenable to treatment by the usually simpler and faster theoretical methods.

2000 • 304 pp. • Paperback
978-81-7371-123-7 • Rs. 650.00

Numerical Examples, Problems and Objective Questions in Geotechnical Engineering

Narasimha Rao, A.V. & Venkatramaiah, C.

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.

2000 • 600 pp. • Paperback
978-81-7371-145-9 • Rs. 525.00

Recent Advances in Structural Engineering

Jagadish, K.S. & Iyengar, R.N. (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: Advance in the design of concrete structural members | State-of-the-art report on ferrocement and fibre reinforced concrete | A review of recent advances in layout optimisation of skeletal structures | Modelling 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 modelling and analysis of railway tracks

2005 • 408 pp. • Paperback
978-81-7371-493-1 • Rs. 650.00

Strength of Materials: A Practical Approach (Vol. 1)

Prakash Rao, D.S.

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: Introduction | Direct stresses | Impact loading and strain energy | Shear stresses | Stress and strain analysis | Analysis of beams | Flexural analysis of beams | Combined stresses | Torsional stresses | Deflections in beams | Statically indeterminate beams | Determinate arches and frames | Trusses | Cylinders and spherical shells | Columns and struts | Springs

1999 • 664 pp. • Paperback
978-81-7371-125-1 • Rs. 600.00

Structural Analysis:

A Unified Approach

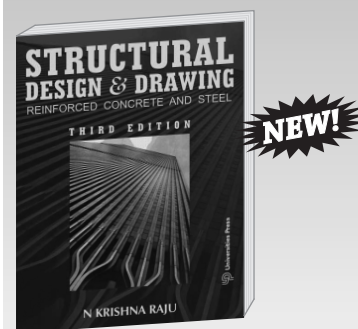
Prakash Rao, D.S.

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.

1996 • 672 pp. • Paperback
978-81-7371-027-8 • Rs. 500.00

Structural Design and Drawing (Third Edition)

Krishna Raju, N.



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: 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 | 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 | III appendix

2009 • 248 pp. • Paperback
978-81-7371-670-6 • Rs. 450.00

Structural Steel Handbook for IS:226 and IS:2062 Steels

Sridhara, B.N.

The Bureau of Indian Standards revised the code of practice IS: 800-1962 and published the revised code IS: 800-1984 (Second Rev.) under the new title Code of Practice for General Construction in Steel. As a result of the significant changes, the Torsteel Research Foundation in India felt that there was an immediate need for a *Structural Steel Handbook* which gives permissible stresses and safe loads for beams, built-up beams, plate girders, joist and channel columns and single and double-angle ties and struts, calculated in accordance with the requirements of the revised code. This handbook will be an invaluable reference to designers, engineers, architects, structural consultants, and students of structural engineering.

1992 • 248 pp. • Hardback
978-0-86311-337-6 • Rs. 450.00

Textbook of Surveying

Venkatramaiah, C.

This book presents, in SI units, the various methods and concepts of surveying, laying greater emphasis on those that are commonly used. Relevant historical aspects are given, tracing the development of the subject and the methods. The book also gives an overview of certain advanced and modern surveying techniques such as precise traversing and levelling, aerial photogrammetry, airphoto interpretation, electronic distance measurement and remote sensing.

Contents: 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 measurements | Trigonometric levelling | Hydrographic

surveying | Construction surveys | Certain special and modern instruments | Other and modern methods of surveying | Appendix A—SI units | Appendix B—List of symbols | Answer to numerical problems | Objective questions in surveying | Answer to objective questions

1996 • 692 pp. • Paperback
978-81-7371-021-6 • Rs. 500.00

Theory of Plates

Chandrasekhara, K.

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.

2000 • 256 pp. • Paperback
978-81-7371-253-1 • Rs. 700.00

Textbook on Heat Transfer, A (Fourth Edition)

Sukhatme, S.P.

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Introduction to Thermodynamics, An (Revised Edition)

Rao, Y.V.C.

See page 35

Solution Manual for A Introduction to Thermodynamics

Rao Y.V.C.,

See page 37

Principles of Fluid Mechanics and Fluid Machines

(Third Edition)

Pillai, Narayana N.

See page 37

COMPUTER SCIENCE ENGINEERING

Advances in Computational Optimization and its Applications

Deb, Kalyanmoy, et al. (Eds.)

See page 12

Knowledge-Based Neurocomputing

Cloete, Ian & Zurada, Jacek M. (Eds.)

See page 26

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

Balachandra Rao, S. & Shantha, C.K.

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: 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

2004 • 504 pp. • Paperback
978-81-7371-472-6 • Rs. 410.00

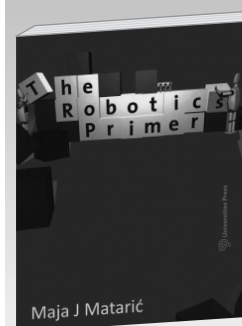
Natural Language Programming and Knowledge Representation

Iwanska, Lucja M. & Shapiro,
Stuart C. (Eds.)

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Robotics Primer, The

Mataric, Maja J.



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 K-12 teachers who bring robotics into their classrooms.

2010 • 288 pp. • Paperback
978-81-7371-680-5 • Rs. 370.00

Speech Communications:

Human and Machine (IEEE)

O’Shaughnessy, Douglas

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SYSTEMS, MODELS, INFORMATICS AND CONTROL (SMIC)

The series *Systems, Models, Informatics and Control (SMIC)* encompasses books in the broad areas of dynamical systems; mathematical modelling in actuarial, biological, behavioural, physical, sociological and engineering sciences; economics and finance; artificial intelligence, bio informatics, data warehousing and mining; neural networks and their implementations; and control theory and robotics.

Introduction to Mathematical Computer Science, An

Viswanath, Kasturi

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 textbook for mathematics and computer science students at both undergraduate and graduate levels.

Contents: 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

2008 • 304 pp. • Paperback
978-81-7371-630-0 • Rs. 425.00

ELECTRICAL ENGINEERING

Analysis of Thyristor Power-Conditioned Motors

Pillai, S.K.

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.

1996 • 196 pp. • Paperback
978-81-7371-014-8 • Rs. 250.00

Computational Methods for Electromagnetics (IEEE)

Peterson, Andrew F., Ray, Scott L. & Mittra, Raj

This book is an indispensable resource for making efficient and accurate formulations for electromagnetics applications and their numerical treatment. Employing a unified and coherent approach that is unmatched in the field, the authors detail both integral and differential equations using the method-of-moments and finite-element procedures. Details are provided to enable the reader to implement concepts in software and, in addition, a collection of related computer programs are available via the Internet. This book is designed for graduate-level classroom use or self-study. It will also be of particular interest to engineers working in the aerospace, defense, telecommunications, wireless, electromagnetic compatibility, and electronic packaging industries.

2001 • 584 pp. • Paperback
978-81-7371-377-4 • Rs. 650.00

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- Register online for regular updates on our publications.

Finite Element Method for Electromagnetics

Volakis, John L., Chatterjee, Arindam & Kempel, Leo C.

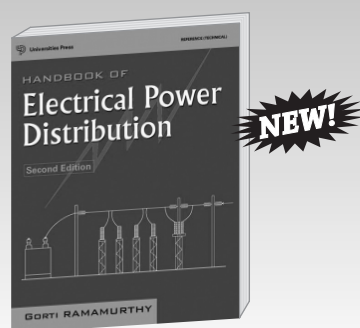
The finite element method is one of the most popular and well-established numerical techniques in engineering. This book covers the theory, development, implementation and application of the finite element method and its hybrid versions to electromagnetics. It begins with a step-by-step presentation of the finite element method and its variations, and then provides up-to-date coverage of three-dimensional formulations and modern applications to open- and closed-domain problems. This book can be used as a textbook for first-year graduate students, as well as a handy reference for engineers and scientists interested in computational electromagnetics.

Contents: Fundamental concepts | Shape functions for scalar and vector finite elements | Overview of the finite element method: One-dimensional examples | Two-dimensional application | Three-dimensional problems: Closed domain | Three-dimensional problems: Radiation and scattering | Three-dimensional FE-BI method | Fast integral methods (by S. Bindiganavalue and J. L. Volakis) | Numerical issues

2001 • 368 pp. • Paperback
978-81-7371-389-7 • Rs. 475.00

Handbook of Electrical Power Distribution (Second Edition)

Ramamurthy, Gorti



The 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 which provide further data not covered earlier along with useful mathematics and examples. Appendix-1 provides a worked-out design example illustrating the effective way of using the data in the book for project design. Appendix 2 includes information and worked-out examples on per-unit quantities, selection of circuit breakers and protection relays and power distribution solutions for bus duct systems. Appendix 3 provides a quick reference to some of the frequently-used fundamental theorems and mathematical techniques in ac circuit analysis, while Appendix 4 is on essentials of matrix operations.

2009 • 520 pp. • Paperback
978-0-7371-684-3 • Rs. 750.00

Introductory AC Circuit Theory

Mann, K. & Russell, G.J.

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: 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

2000 • 224 pp. • Paperback
978-81-7371-325-5 • Rs. 225.00

Knowledge-Based Neurocomputing

Cloete, Ian & Zurada, Jacek M. (Eds.)

Neurocomputing methods are loosely based on a model of the brain as a network of simple interconnected processing elements corresponding to neurons. These methods derive their power from the collective processing of artificial neurons, the chief advantage being that such systems can learn and adapt to a changing environment. In knowledge-based neurocomputing, the emphasis is on the use and representation of knowledge about an application. The focus is on methods to encode prior knowledge and to extract, refine, and revise knowledge within a neurocomputing system.

Contents: Knowledge-based neurocomputing: Past, present, and future | Architectures and techniques for knowledge-based neurocomputing | Symbolic knowledge representation in recurrent neural network: Insight from theoretical models of computation | A tutorial on neurocomputing of structures | Structural learning and rule discovery | VL1ANN: Transformation of rules to artificial neural | Integration of heterogeneous sources of partial domain knowledge | Approximation of differential equation using neural networks | Fynesse: A hybrid architecture for self-learning control | Data mining techniques for designing neural network time series

predictors | Extraction of decision trees from artificial neural networks | Extraction of linguistic rules from data via neural networks and fuzzy approximation | Neural knowledge processing in expert systems

2001 • 486 pp. • Paperback
978-81-7371-393-4 • Rs. 595.00

Lasers: The New Technology of Light
Billings, C.

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Physics of Semiconductor Devices (Revised Edition)

Roy, D.K.

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: 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: Shockley – 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 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

2004 • 488 pp. • Paperback
978-81-7371-494-8 • Rs. 450.00

Radio Frequency Principles and Applications:

The Generation, Propagation, and Reception of Signals and Noise (IEEE)
Smith, Albert A.

Now in one convenient volume you have all the information you need on real-world applications of electromagnetic theory, including the prediction, analysis and measurement of electromagnetic fields and their effects. *Radio Frequency Principles and Applications* will guide you from the basics of electromagnetic theory to a full range of new and vital applications. It provides a wealth of practical information in an accessible style, without using abstruse theory

or requiring complex mathematical derivations.

2001 • 232 pp. • Paperback
978-81-7371-376-7 • Rs. 325.00

Special Electrical Machines

Venkataratnam, K.

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: 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

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2008 • 280 pp. • Paperback
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Switched Mode Power Supplies: Design and Construction (Second Edition)

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



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.

2009 • 248 pp. • Paperback
978-81-7371-664-5 • Rs. 325.00

Thermal Imaging Technology: Design and Applications

Singh, R.N.

See page 15

Utilisation of Electric Energy in SI Units

Taylor, E.O.

This book covers the whole range of the more useful applications of electrical energy in a single volume. 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.

1971 • 392 pp. • Paperback
978-81-250-1640-3 • Rs. 295.00

ELECTRONICS AND COMMUNICATIONS ENGINEERING

Analog Communications Systems: Principles and Practices

Raveendranathan, K.C.

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®, (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. The book introduces recent and most promising developments in the domain of analog communications.

Contents: 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

2008 • 256 pp. • Paperback
978-81-7371-620-1 • Rs. 225.00

Computational Methods for Electromagnetics (IEEE)

Peterson, Andrew F., Ray, Scott L. &
Mitra, Raj

See page 25

Digital Communication and Signal Processing

Vasudevan, K.

This book presents some of the key fundamental and practical concepts in digital communication in a simple and logical manner. Some of the important features of this book are: (a) Analysis of m-ary modulation schemes using the Euclidean distance criterion rather than the usual E_b/N_0 , (b) A new approach to Viterbi decoding which makes no assumption on the encoder starting and ending states, (c) A very intuitive discussion on constellation shaping and shell mapping, (d) As age of the root raised cosine pulse shape for communication through distortionless channels, (e) Introduction of the concept of the fractionally-spaced ML detector and its equivalence to the symbol-spaced ML detector, (f) Inclusion of software programs written in C language for a better understanding of the concepts.

Contents: Introduction - overview of the book | Bibliography | Communicating with points - Coherent detectors for two-dimensional constellations | Coherent detectors for multidimensional orthogonal constellations | Bi-orthogonal constellations | Simplex constellations | Noncoherent detectors for multidimensional orthogonal constellations | Noncoherent detectors for M-ary PSK | Coherent detectors in coloured noise | Coherent detectors for frequency nonselective (Flat) fading channels | Summary | Channel coding - Introduction | The convolutional encoder | Are the encoded symbols correlated? | Hard-decision decoding of convolutional codes | Soft-decision decoding of convolutional codes | Trellis coded modulation (TCM) | Maximization of the shape gain | Constellation shaping by shell mapping | Turbo codes | Summary | Transmission of signals through distortionless channels - Linear modulation | Nonlinear modulation | Summary | Transmission of signals

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2007 • 304 pp. • Paperback
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Digital Microwave Communication Systems with Selected Topics in Mobile Communications

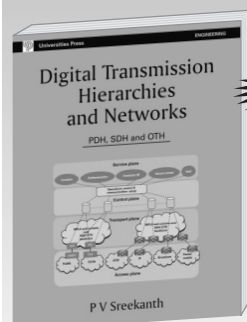
Sreekanth, P.V.

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.

2003 • 400 pp. • Paperback
978-81-7371-395-8 • Rs. 575.00

Digital Transmission Hierarchies and Networks: PDH, SDH and OTH

Sreekanth, P.V.



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 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: 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

2010 • 560 pp. • Paperback
978-81-7371-699-7 • Rs. 425.00

Fundamentals of Convolutional Coding (IEEE)

Johannesson, R. & Zigangirov, K.Sh.

Convolutional codes, among the main error control codes, are routinely used in applications for mobile telephony, satellite communications, and voice-band modems. This book brings you a clear and comprehensive discussion

of the basic principles underlying convolutional coding. It is unmatched in the field for its accessible analysis of the structural properties of convolutional encoders. This book can be used as a textbook for graduate-level electrical engineering students. It will also be of key interest to researchers and engineers of wireless and mobile communication.

2001 • 448 pp. • Paperback
978-81-7371-375-0 • Rs. 550.00

Global Electronic Commerce: Theory and Case Studies

Westland, J. Christopher & Clark, Theodore H.K.

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Optical Communication

Mukunda Rao, M.

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: Introduction | Optical sources: The LASER | Optical sources—The semiconductors laser diode and light emitting diode | Transmission medium—Atmospheric propagation | Transmission medium: Fibre optics | Optical fibre characterisation and fabrication | Photodetectors and optical receivers | Modulation and demodulation schemes in optical communication | Optical communication systems

2000 • 208 pp. • Paperback
978-81-7371-090-2 • Rs. 250.00

Physics of Semiconductor Devices (Revised Edition)

Roy, D.K.

See page 27

Principles of Electronic Communications:

Analog and Digital

Ghosh, Pradip Kumar

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: 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

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2007 • 600 pp. • Paperback
978-81-7371-601-0 • Rs. 350.00

Radio Frequency Principles and Applications:

The Generation, Propagation, and Reception of Signals and Noise (IEEE)

Smith, Albert A.

See page 27

Speech Communications:

Human and Machine (IEEE)

O'Shaughnessy, Douglas

This book teaches you state-of-the-art techniques to analyse, code, recognise, and synthesise speech. In addition, you will gain a better understanding of the limits of today's technology and an informed view of future trends for speech research. The book brings you an integrated approach toward human and machine speech production and perception that is simply unmatched in the field. This book is complete with up-to-date references and Web addresses that will lead you to a wealth of resources for your own research into speech communication. Students of electrical engineering, along with computer scientists, systems engineers, linguists, audiologists, and psychologists will find in this one concise volume an inter-disciplinary introduction to speech communication.

2001 • 576 pp. • Paperback
978-81-7371-374-3 • Rs. 650.00

SERIES IN METALLURGY AND MATERIALS SCIENCE

Advances in Materials Characterization

Amarendra, G., Raj, Baldev & Manghnani, M.H. (Eds.)

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Advances in Stainless Steels

Raj, Baldev et al. (Eds.)

See page 32

Frontiers in the Design of Materials

Raj, Baldev, et al. (Eds.)

See page 33

Perspectives in Materials Characterization

Amarendra, G., Raj, Baldev & Manghnani, M.H. (Eds.)

See page 33

ENVIRONMENTAL ENGINEERING

Environmental Science and Engineering

Debi, Aloka

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 damage to the environment can be controlled.

The book; discusses the acts and laws that govern pollution; provides a number of relevant case studies to highlight the environmental problems; provides extensive exercises; is based on the undergraduate syllabus prescribed by the UGC; can be used by engineering students.

Contents: Environment | Resources | Population | Ecology | Biodiversity | Air pollution | Water pollution | Land pollution | Noise pollution | Environmental legislation (Acts) / Social issues and the environment

2008 • 220 pp. • Paperback
978-81-7371-608-9 • Rs. 165.00

Fundamentals of Remote Sensing (Second Edition)

Joseph, George

See page 20

Geographical Information Science

Panigrahi, Narayan

See page 20

India's Water Wealth

(Revised Edition)

Rao, K.L.

This volume has proved to be a pioneering study of India's water resources. It brings together an unparalleled wealth of information on the subject and provides assessments and projections that are equally valuable for the practising engineer and the student. Thoroughly revised, the text now carries additional material and substantial modifications. This book is divided into three parts. Part I deals with the practice and problems of assessment of water resources. Part II focusses attention on the multifaceted use of water. Part III concerns itself with the projection and utilisation of water resources.

1979 • 286 pp. • Paperback
978-81-250-0704-3 • Rs. 350.00

Speech Communications:

Human and Machine (IEEE)

O'Shaughnessy, Douglas

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**INFORMATION
TECHNOLOGY**

Computer Laboratory Referral for Diploma and Engineering Students*Jagadeesh, T.R., Jayaram, M.A. & Prasad, D.S.R.*

This is a hands-on reference book that will help students attain fluency in Word Processing, electronic accounting in Spreadsheet and programming with C in the shortest possible time. It includes all the fundamental computing processes concisely, to specifically address the needs of engineering and diploma students in the early semesters. The instructional approach stems directly from

the authors' long teaching experience in the classroom and laboratory environment.

Contents: Working with MS word | Working with MS Excel | Getting close to turbo C | C preliminaries | Few simple C programs | Using decision control structures | Using loop control structures | Use of case control structure | Using arrays | Using pointers | Creating functions | Working with strings | Using structures, union and enumeration | File handling | Computer lexicon

2000 • 216 pp. • Paperback
978-81-7371-258-6 • Rs. 210.00

Global Electronic Commerce:

Theory and Case Studies

Westland, J. Christopher & Clark, Theodore H.K.

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.

2001 • 608 pp. • Paperback
978-81-7371-394-1 • Rs. 625.00

Knowledge Engineering and Management:

The CommonKADS Methodology

Schreiber, Guus, et al.

Knowledge engineering deals with the development of information systems in which knowledge and reasoning play pivotal roles. A newly-developed field at the intersection of computer science and management, it deals with knowledge as a key resource in modern organisations.

The book covers in an integrated fashion the complete route from corporate knowledge management, through knowledge analysis and engineering, to the design and implementation of knowledge-intensive information systems.

2001 • 472 pp. • Paperback
978-81-7371-392-7 • Rs. 550.00

Knowledge Management:

Classic and Contemporary Works

Morey, Daryl, Maybury, Mark & Thuraisingham, Bhavani

This book provides an introduction to the field of knowledge management. Taking a learning-centric rather than an information-centric approach, it emphasises the continuous acquisition and application of knowledge. The book is organised 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.

2001 • 456 pp. • Paperback
978-81-7371-390-3 • Rs. 395.00

Natural Language Programming and Knowledge Representation*Iwanska, Lucja M. & Shapiro, Stuart C. (Eds.)*

Natural language refers to human language—complex, irregular, diverse, with all its philosophical problems of meaning and context. This book explores the development of knowledge representation and reasoning systems that take seriously the role of natural language in human information and knowledge processing. The essays in this interdisciplinary book cover a range of implementations and designs, from formal computational models to large-scale natural language processing systems.

2001 • 459 pp. • Paperback
978-81-7371-391-0 • Rs. 495.00

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

Balachandra Rao, S. & Shantha, C.K.

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MATERIALS SCIENCE

Frontiers in Materials Science

Raj, Baldev & Bhanu Sankara Rao, K.

This volume presents contributions by a galaxy of eminent scientists and technologists from the world over in a broad spectrum of areas in materials science, providing a global perspective on complex issues of current concern and the direction of research in these areas. The topics covered include nanocrystalline materials, mechanical behaviour of advanced materials, development and processing of intermetallics, composites and ceramics, welding science and technology, corrosion and surface engineering, science and engineering of bio-materials, testing and evaluation of advanced metallic and intermetallic materials, computational materials science, teaching of material science.

2004 • 876 pp. • Paperback
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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 Materials Characterization

Amarendra, G., Raj, Baldev & Manghnani, M.H. (Eds.)

Materials characterisation is an important area of fundamental and technological interest. A variety of experimental techniques have been developed over the years for characterising the physical and chemical properties of materials. This book provides an overview of the recent advances in this area in terms of providing an in-depth review of the latest techniques. It comprises review articles written by experts in these areas, providing an introduction, overview of the technique as well as demonstration of their applications to selected problems.

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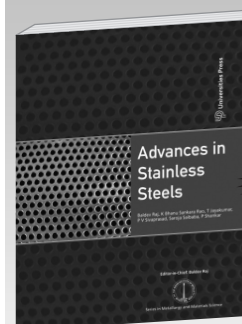
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Advances in Stainless Steels

Baldev Raj et al. (Eds.)



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

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

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

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

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**2010 • 692 pp. • Hardback
978-81-7371-696-6 • Rs. 1995.00**

Frontiers in the Design of Materials

Raj, Baldev, et al. (Eds.)

This book is an ensemble of a unique collection of advanced topics in the field of alloy design and development of advanced materials. The topics cover a wide range from multiscale modelling for alloy design, structural materials to nano materials, quasicrystals, amorphous metallic glasses, design of coatings, carbon based materials, metal foams as well as component/structure integrity. The book has an optimum blend of subjects of interest to physicists, materials scientists, engineers, industry as well as researchers and beginners. There has been significant progress not only in the development of advanced materials but also in understanding their constitution and behaviour with the help of modelling. This book presents a comprehensive view of the latest developments and experimental work on both these fronts and attempts to give direction to future work.

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

**2006 • 392 pp. • Hardback
978-81-7371-567-9 • Rs. 1000.00**

Perspectives in Materials Characterization

Amarendra, G., Raj, Baldev & Manghnani, M.H. (Eds.)



Materials characterisation is an important area of fundamental and technological interest. Numerous experimental techniques for determining the physical and chemical properties of materials have developed over the years. *Perspectives in Materials Characterization* is the companion volume to *Advances in Materials Characterization* published in 2007. Both volumes comprise review articles written by experts, providing an introduction and overview of individual characterisation techniques, as well as a demonstration of their application to selected problems.

For the first time, books providing such a collection of advanced techniques are being made available and will be of use to postgraduates, researchers, and faculty in the field of metallurgy and materials science.

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MECHANICAL ENGINEERING

Advances in Computational Optimization and its Applications

Deb, Kalyanmoy, et al. (Eds.)

See page 12

Basic Engineering Thermodynamics

Venkatesh, A.

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

**2007 • 495 pp. • Paperback
978-81-7371-587-7 • Rs. 350.00**

Basic Tools (Metric) (Second Edition)

Deshpande, D.L. (Ed.)

This is a useful handbook which describes the tools used by engineers. With the help of numerous diagrams, it instructs the engineer where to use each tool and how to handle it.

**1971 • 62 pp. • Paperback
978-81-250-1618-2 • Rs. 35.00**

Computer Simulation of Compression-Ignition Engine Processes

Ganesan, V.

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: 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

2000 • 248 pp. • Paperback
978-81-7371-283-8 • Rs. 325.00

Computer Simulation of Spark-Ignition Engine Processes

Ganesan, V.

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: 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

1996 • 248 pp. • Paperback
978-81-7371-015-5 • Rs. 325.00

Engineering Analysis in Applied Mechanics

Brewer, J.W.

This text surveys the mathematical foundations of applied mechanics and will be relevant for mechanical, aeronautical and civil engineers, advanced undergraduate and first-year graduate students in the engineering sciences. Among the topics treated are simultaneous algebraic and differential equations, matrix algebra, the theory of optimization and the calculus of variations in the section on engineering mathematics. Considerable attention is paid to engineering applications in theoretical thermodynamics, strength of materials and Lagrangian–Hamiltonian dynamics. The unifying themes are mathematical foundations, work – energy principles and the Legendre transform.

2002 • 152 pp. • Hardback
978-15-603-2932-9 • Rs. 1500.00

Engineering in the Ancient World

Landels, J.G.

Not many of us know that the Greeks and Romans were capable engineers. They made remarkable machines, not bettered until the Industrial Revolution. Perhaps the greatest achievement of the Romans was their water engineering, with aqueducts to carry water for miles to feed their complex municipal plumbing systems. In this fascinating study, Dr Landels draws on evidence from archaeological and literary sources as well as his own engineering knowledge, to show how these machines were developed and made. It is illustrated throughout with explanatory line drawings.

1999 • 224 pp. • Paperback
978-81-7371-228-9 • Rs. 300.00

Engineering Mechanics

Seshagiri Rao, M.V. & Ramadurgaiah, D.

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.

2005 • 360 pp. • Paperback
978-81-7371-543-3 • Rs. 295.00

Engineering Thermodynamics Through Examples:

More than 765 Solved Examples

Rao, Y.V.C.

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. Psychrometry 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

2003 • 704 pp. • Paperback
978-81-7371-423-8 • Rs. 575.00

First Course in Fluid Mechanics, A

Narasimhan, S.

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: Properties of fluids | Fluid statics | Kinematics of fluid flow | Dynamics of flow | Examples of irrotational flow of ideal fluids | Applications of Bernoulli's theorem and modifications | Force-momentum relationship | Laminar flow: Laminar motion | Turbulent flow: Reynold equation | Flow in pipes: Steady flow | Forces on submerged bodies | Open channels | Compressible flow | Dimensional analysis and similitude: Dimensional analysis

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2006 • 452 pp. • Paperback
978-81-7371-564-8 • Rs. 360.00

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Fracture Mechanics for Modern Engineering Design

Simha, K.R.Y.

See page 20

Fuels and Combustion (Third Edition)

Sarkar, Samir

See page 17

Fundamentals of Computational Fluid Dynamics

Sengupta, Tapan K.

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 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: Basic ideas of computational fluid mechanics | Governing equations of fluid mechanics | Classification of quasi-linear PDEs | Additional issues of CFD: space – time resolution of flows | Discretization of partial differential equations | Solution methods for parabolic PDEs and their analysis | Solution method for elliptic PDEs | Solution of hyperbolic PDEs | Curvilinear coordinates and grid generation | Spectral analysis of numerical schemes and aliasing error | High order

methods | Introduction to finite volume and finite element methods | Solution of Navier-Stokes equation | Appendices

2004 • 364 pp. • Paperback
978-81-7371-478-8 • Rs. 750.00

Gas Tables (Revised Edition)

Rathakrishnan, E.

The book will serve as a useful tool for solving compressible flow problems. The book is divided into three parts.

Part I 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 II consists of the tables for compressible fluid flows. The tables will be useful to students, teachers and practicing engineers for carrying out gas dynamic calculations.

Part III gives the program listing for generating the tables. The programs are written in FORTRAN 77 so that they can be run even on personal computers, and will be invaluable to students.

Contents: Part one: Fundamental concepts—Introduction | Some useful gas dynamic relations | part two: Gas tables—Thermal properties of gases | Properties of standard atmosphere | Isentropic 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—Program listing for table 3 to 8 | Oblique shock charts

2004 • 188 pp. • Paperback
978-81-7371-468-9 • Rs. 190.00

Heat Transfer

Rao, Y.V.C.

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: 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

2001 • 488 pp. • Hardback
978-81-7371-384-2 • Rs. 375.00

Solutions Manual for Heat Transfer

Rao, Y.V.C.

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 • Rs. 200.00

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India's Water Wealth (Revised Edition)

Rao, K.L.

See page 31

Introduction to Strength of Materials

Prakash Rao, D.S.

See page 21

Introduction to Thermodynamics, An (Revised Edition)

Rao, Y.V.C.

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: 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

2003 • 500 pp. • Paperback
978-81-7371-461-0 • Rs. 340.00

Solution Manual for A Introduction to Thermodynamics

Rao Y.V.C.,

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 • Rs. 550.00

Invention by Design: How Engineers Get from Thought to Thing

Petroski, H.

Engineering entails more than knowing how things work. What do economics and ecology, aesthetics and ethics, have to do with the shape of a paper clip, the tab of a beverage can, the cabin design of a turbojet, or the course of a river? How do the idiosyncrasies of individual engineers, companies and communities leave their mark on projects such as Velcro, fax machines, and waterworks? This offers an insider's look at these political and cultural dimensions of design, development, and production, and reaffirms Petroski as the master explicator of the principles and processes that turn thoughts into the many things that define our material world.

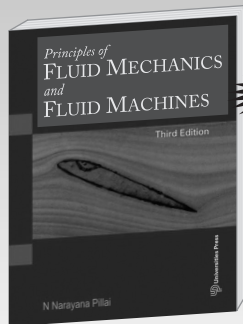
2000 • 256 pp. • Paperback
978-81-7371-290-6 • Rs. 325.00

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Principles of Fluid Mechanics and Fluid Machines (Third Edition)

Pillai, Narayana N.



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.

2009 • 498 pp. • Paperback
978-81-7371-675-1 • Rs. 450.00

Mechanics of Composite Materials and Structures

Mukhopadhyay, Madhujit

See page 22

Principles of Metal Cutting

Kuppuswamy, G.

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: 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

1996 • 248 pp. • Paperback
978-81-7371-028-5 • Rs. 250.00

Recent Advances in Experimental Fluid Mechanics

Rathakrishnan, E. (Ed.)

Recent Advances in Experimental Fluid Mechanics is a collection of papers from renowned researchers in the area of flow physics. The papers cover frontier areas of research in fluid mechanics with emphasis on experimental methods in flow visualisation techniques, measurements in high- and low-speed flows, flow control techniques, environmental flows and hydraulics, and computational fluid dynamics. The book would be of interest to scientists, engineers and other professionals in aerospace, mechanical, civil and chemical engineering disciplines.

2008 • 712 pp. • Paperback
978-81-7371-622-5 • Rs. 1850.00

Shock Waves:

Proceedings of the 25th International Symposium on Shock Waves-ISSW25, Bangalore, India

Jagadeesh, G., Arunan, E. & Reddy, K.P.J. (Eds.)

See page 12

Textbook on Heat Transfer, A (Fourth Edition)

Sukhatme, S.P.

This fourth edition of the established text deals with the elementary aspects of heat transfer with special emphasis on the fundamental laws, so that the subject of heat transfer is perceived by the students as both a science and an art. The text is supported by a large number of solved examples. This stand-alone text on heat transfer contains many explanatory portions, figures and solved problems to illustrate the matter. A new chapter describing elementary concepts in mass transfer has been added.

Contents: 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

2005 • 412 pp. • Paperback
978-81-7371-544-0 • Rs. 350.00

Thermodynamics

Rao, Y.V.C.

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: 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

2001 • 216 pp. • Paperback
978-81-7371-388-0 • Rs. 150.00

METALLURGY

Frontiers in Materials Science

Raj, Baldev & Bhanu Sankara Rao, K.

See page 32

Fuels and Combustion (Third Edition)

Sarkar, Samir

See page 17

Introduction to Metallurgy, An (Second Edition)

Cottrell, Sir Alan

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: Prologue | The atomic nucleus | Atomic structure | Chemical bonding | 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

2000 • 564 pp. • Paperback
978-81-7371-239-5 • Rs. 635.00

SERIES IN METALLURGY AND MATERIALS SCIENCE

Advances in Materials Characterization

Amarendra, G., Raj, Baldev & Manghnani, M.H. (Eds.)

See page 32

Advances in Stainless Steels

Baldev Raj et al. (Eds.)

See page 32

Frontiers in the Design of Materials

Raj, Baldev, et al. (Eds.)

See page 33

Perspectives in Materials Characterization

Amarendra, G., Raj, Baldev & Manghnani, M.H. (Eds.)

See page 33



MATHEMATICS

103 Trigonometry Problems

Andreescu, Titu & Feng, Zuming

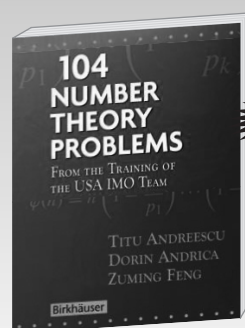
This book contains carefully selected problems and solutions used in the training and testing of the USA International Mathematical Olympiad (IMO) team. Though many problems may initially appear impenetrable to the novice, most can be solved using only elementary high school mathematics techniques.

2005 • 232 pp. • Paperback
978-81-8128-339-9 • Rs. 295.00

104 Number Theory Problems:

From the Training of the USA IMO Team

Andreescu, Titu Andrica & Dorin Feng, Zuming



104 Number Theory Problems is a valuable resource for advanced high school students, undergraduates, instructors, and mathematics coaches preparing to participate in mathematical contests and those contemplating future research in number theory and its related areas.

Special features: • Contains problems developed for various mathematical contests, including the International Mathematical Olympiad (IMO) • Builds a bridge between ordinary high school examples and exercises in number theory and more sophisticated, intricate and abstract concepts and problems • Begins by familiarising students with typical examples that illustrate central themes, followed by numerous

carefully selected problems and extensive discussions of their solutions

- Combines unconventional and essay-type examples, exercises and problems, many presented in an original fashion
- Engages students in creative thinking and stimulates them to express their comprehension and mastery of the material beyond the classroom.

2010 • 216 pp. • Paperback
978-81-8489-528-5 • Rs. 450.00

Across the Board:

The Mathematics of Chessboard Problems

Watkins, John J.

Across the Board is the definitive work on chessboard problems. It is not simply about chess but the chessboard itself—that simple grid of squares so common to games around the world. And, more importantly, the fascinating mathematics behind it.

Using the highly visual language of graph theory, Watkins gently guides the reader to the forefront of current research in mathematics. By solving some of the many exercises sprinkled throughout, the reader can share fully in the excitement of discovery. It will captivate students and instructors, mathematicians, chess enthusiasts, and puzzle devotees.

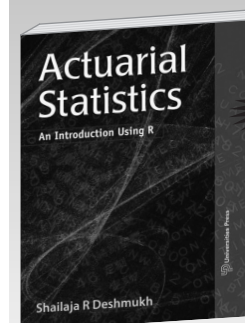
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Actuarial Statistics: An Introduction Using R

Deshmukh, Shailaja R.



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 tables, important concepts of financial mathematics, annuities certain, terms, endowment and whole life insurance products, monthly, quarterly, semi-annual and annual life annuities.

Contents: Insurance business: Introduction; What is an actuarial science? | Insurance companies as business organisations | Concept of Risk | How does the insurance business operate? | Role of Statistics in Insurance | Insurance business in India | Introductory statistics: Introduction; Some important discrete distributions | Some important

continuous distributions | Multivariate distributions | Feasibility of insurance business and risk models for short term: Introduction; Expected value principle | Notion of utility | Risk models for short term | Future Life time distribution and life tables | Introduction | Future life time random variable | Curate future - life time | Life tables | Assumptions for fractional ages | Select and ultimate life tables | Computations using R | Actuarial present values of benefit in life insurance products: Introduction; Compound interest and discount factor | Benefit payable at the moment of death | Benefit payable at the end of year of death | Relation between A and λ | Computation using R | Annuities | Introduction | Annuities certain | Continuous life annuities | Discrete life annuities | Life annuities with mthly payments | Computation using R | Premiums: Introduction; Loss at issue random variable | Fully continuous premiums | Fully discrete premiums | True mthly payment premiums | Gross premiums | Computations using R | Reserves: Introduction; Fully Continuous reserves | Fully discrete reserves | Computation using R | Multiple life contracts: Introduction; Joint life status | Last survivor status | Computations using R answers to exercises

2010 • 472 pp. • Paperback
978-81-7371-690-4 • Rs. 465.00

considered, the questions asked about them, and the sort of answers one can expect to obtain. It thus emphasises the classical roots of the subject. For readers interested in simply seeing what the subject is about, this avoids the more technical details better treated with the most recent methods. For readers interested in pursuing the subject further, this book will provide a basis for understanding the developments of the last half century, which have put the subject on a radically new footing. Based on lectures given at Brown and Harvard Universities, this book retains the informal style of the lectures and stresses examples throughout; the theory is developed as needed. The first part is concerned with introducing basic varieties and constructions; it describes, for example, affine and projective varieties, regular and rational maps, and particular classes of varieties such as determinantal varieties and algebraic groups. The second part discusses attributes of varieties, including dimension, smoothness, tangent spaces and cones, degree, and parameter and moduli spaces.

2010 • 347 pp. • Paperback
978-81-8489-522-3 • Rs. 595.00

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 • Rs. 295.00

**Cake-Cutting Algorithms:
*Be Fair If You Can***

Robertson, Jack & Webb, William

Since the famous Polish school of mathematicians (Steinhaus, Banach, and Knaster) introduced and described algorithms for the fair division problem in the 1940s, the concept has been widely popularized. This book finally gathers into one readable and inclusive source a comprehensive discussion of the state of the art in cake-cutting problems for both the novice and the professional. It offers a complete treatment of cake-cutting algorithms under all the considered definitions of fair, and presents them in a coherent, reader-friendly manner.

2003 • 192 pp. • Paperback
978-81-7371-448-1 • Rs. 195.00

**Computer Algebra and Symbolic
 Computation:
*Elementary Algorithms***

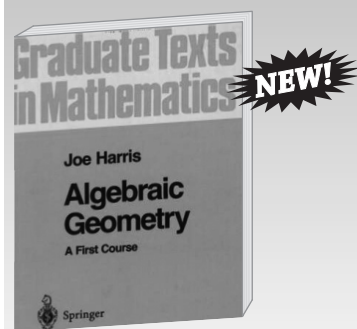
Cohen, Joel S.

The author explores the structure and implementation of computer algebra algorithms as well as the mathematical and computational concepts behind them. This book contains a CD with the entire text, active reference hyperlinks, and complete algorithms. It bridges the gap between software manuals, which only explain how to use computer algebra programs such as Mathematica, Maple, Derive, etc., and graduate level texts, which only describe algorithms.

2005 • 342 pp. • Paperback
978-81-7371-531-0 • Rs. 350.00

**Algebraic Geometry:
 A First Course**

Harris, Joe



This book is intended to introduce students to algebraic geometry; to give them a sense of the basic objects

Analytical Solid Geometry

Pirzada, S. & Chishti, T.A.

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

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Computer Algebra and Symbolic Computation:

Mathematical Methods

Cohen, Joel S.

Mathematica™, Maple™, and similar software packages provide programs that carry out sophisticated mathematical operations. In this book, the author explores the mathematical methods that form the basis for such programs, in particular the application of algorithms to methods such as algebraic simplification, polynomial decomposition, polynomial greatest common divisor computation, and polynomial factorisation.

This text introduces advanced methods to treat complex operations and presents implementations in such programs as Mathematica™, Maple™, and MuPAD™. The accompanying CD includes the complete text, hyperlinks, and algorithms as well as additional reference files.

2005 • 344 pp. • Paperback
978-81-7371-532-7 • Rs. 450.00

Computer Arithmetic Algorithms (Second Edition)*Koren, Israel*

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, ring 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.

2005 • 300 pp. • Paperback
978-81-7371-533-4 • Rs. 295.00

Differential Equations with Applications and Programs*Balachandra Rao, S. & Anuradha, H.R.*

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

1996 • 416 pp. • Paperback
978-81-7371-023-0 • Rs. 350.00

Discrete Mathematical Structures with Applications to Combinatorics*Ramaswamy, V.*

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: 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

2006 • 264 pp. • Paperback
978-81-7371-500-6 • Rs. 195.00

é: The Story of a Number*Maor, E.*

The interest earned on a bank account, the arrangement of seeds in a sunflower, and the shape of the Gateway Arch in St. Louis are all intimately connected with the mysterious number e . In this informal and engaging history, Eli Maor portrays the curious characters and the elegant mathematics that lie behind the number.

1999 • 240 pp. • Paperback
978-81-7371-212-8 • Rs. 225.00

Educative JEE: Mathematics*Joshi, K.D.*

The Joint Entrance Examination (JEE) can be considered as one of the toughest examinations conducted in India, which it has to be as it is the gateway to the IITs—India's prestigious institutes of learning.

This book is an attempt to lay before the students both the concepts as well as the process of solving problems at the JEE. The problems have been collected mostly from JEE papers ranging over a period of two decades. The thrust is not so much on solving the problems as in the assimilation of the theory behind it

and learning a few related new concepts. The solutions then come as natural corollaries. It also contains some helpful tips aimed at sharpening the thinking ability and increasing the mathematical maturity of the student.

2004 • 986 pp. • Paperback
978-81-7371-474-0 • Rs. 495.00

Elementary Statistical Methods

Shrestha, H.B.

The book is basically aimed at university students in Nepal. The contents conform to the broad curriculum guidelines of Tribhuvan University. Exercises have been added in sufficient numbers to consolidate the theoretical exposition.

1989 • 286 pp. • Paperback
978-0-86131-880-3 • Rs. 125.00

Engineering Mathematics

Sarveswara Rao, Koneru

This book incorporates in one volume the material covered in the mathematics course of undergraduate programmes in engineering and technology. The topics discussed include sequences and series, mean value theorems, evolutes, functions of several variables, solutions of ordinary and partial differential equations, Laplace, Fourier and Z-transform with their applications. The book also contains chapters on vector calculus, matrices, Fourier series and numerical algorithms. The text is substantiated with about 450 worked-out examples and nearly an equal number of exercises.

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 | 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 | Partial differential equations | Applications of partial

differential equations | Probability | Random variables and probability distributions | Joint distributions | Sampling distributions | Statistical estimation and inference | Curve fitting, regression and correlation | Fourier and Z-transforms | Numerical Methods

2002 • 520 pp. • Paperback
978-81-7371-424-5 • Rs. 395.00

Excursions into Mathematics:

The Millennium Edition

Beck, Anatole, Bleicher, Michael N. & Crowe, Donald W.

Since it was first published three decades ago, this book has been one of the most popular mathematical books written for a general audience. Taking the reader for short 'excursions' into several specific disciplines of mathematics, it makes mathematical concepts accessible to a wide audience.

The all-new Millennium Edition is updated with current research and new solutions to outstanding problems that have been discovered since the last edition was printed, such as the solution to the well-known 'four-color problem'.

This is an exciting revision of the original, much-loved classic. Everyone with an interest in mathematics should read this book.

2003 • 528 pp. • Paperback
978-81-7371-441-2 • Rs. 450.00

Explorations in Mathematics

Hattangadi, A.A.

The book deals with mathematical concepts from high school onwards. It discusses Pythagoras' Theorem, logarithms, prime numbers, Pi, Fibonacci sequence and its variations, how to multiply extremely large integers, the Gregorian calendar, how a PC can be programmed using BASIC, number systems such as decimal, binary, octal and hexadecimal systems, and finally how string variables in the BASIC language

can convert figures (in a cheque for example) into words.

2001 • 240 pp. • Paperback
978-81-7371-387-3 • Rs. 235.00

First Course in Real Analysis, A

Suryanarayan, E.R.

In early calculus courses, the chief emphasis is on developing computational techniques and applications. In real analysis, the emphasis is primarily on understanding the concepts and developing the ability to prove results. A student should not only learn manipulative skills but also argumentative skills.

It is assumed that the reader has completed courses in elementary calculus covering one-, two- and three-dimensional calculus where he/she is exposed to only the mechanics of calculus without much theory.

A course based on this text is suitable not only for mathematics majors, but also for science and engineering majors who need a careful introduction to the concepts and methods of analytical proofs.

Contents: Preliminaries - Sets; The set of natural numbers; The real line; Mathematical proofs; Absolute values; The completeness axiom; Cardinality; Problems | Sequences of real numbers - Convergence; Algebra of limits; Monotone sequences; Nested sequence of intervals; Sub-sequences; Cauchy sequences; Contractive sequences; Limsup and liminf; Problems | Functions - Topology of R; Limit of a function; Monotone functions; Continuous functions; Uniform continuity; The cantor set; Problems | Differentiation - The derivative; The algebra of derivatives; Mean value theorems; L'Hopital's rule; Problems | Integration - The riemann integral; Riemann sums; Properties of integrals; Mean value theorems; The fundamental theorem of calculus; Improper riemann integrals; Problems | Series of real numbers - Introduction; Series with non-negative Terms; Absolute convergence;

Problems | Sequences and series of functions - Pointwise convergence; Uniform convergence; Uniform convergence of series; Power series; Problems | Exercises

2003 • 216 pp. • Paperback
978-81-7371-430-6 • Rs. 225.00

Fun and Fundamentals of Mathematics

Narlikar, M. & Narlikar, J.

This book introduces fundamental ideas in mathematics through interesting puzzles. Students, from age 12 upwards, who are bored with routine classwork in maths will enjoy these puzzles which will sharpen their logical reasoning. It is designed to arouse an interest in mathematics among readers in the 12–18 age group.

2001 • 200 pp. • Paperback
978-81-7371-398-9 • Rs. 250.00

Gamma: Exploring Euler's Constant

Havil, Julian

Among the myriad of constants that appear in mathematics, p , e , and i are the most familiar. Following closely behind is g , or gamma, a constant that arises in many mathematical areas yet maintains a profound sense of mystery.

In a tantalising blend of history and mathematics, Julian Havil takes the reader on a journey through logarithms and the harmonic series, the two defining elements of gamma, toward the first account of gamma's place in mathematics.

Sure to be popular with not only students and instructors but all math aficionados, Gamma takes us through countries, centuries, lives, and works, unfolding along the way the stories of some remarkable mathematics from some remarkable mathematicians

2005 • 292 pp. • Paperback
978-81-7371-509-9 • Rs. 275.00

Gardner's Workout:

Training the Mind and Entertaining the Spirit

Gardner, Martin

Truly a treat for Martin Gardner's many fans, the articles included in this book span a wide range of topics. They include games of chance (and why a 'computer' will always beat a human player), word ladders and mathematical word play games, tiling puzzles, magic squares, computer and calculator 'magic' tricks, and other mathematical puzzles. Providing the tools to furnish our all-too-sluggish minds with an athletic workout, Gardner's problems foster the agility of the mind as they entertain.

2003 • 336 pp. • Paperback
978-81-7371-444-3 • Rs. 295.00

Group Theory:

Selected Problems

Sury, B.

The selection of problems in *Group Theory* is principally aimed at undergraduate (honours) and postgraduate students of mathematics. Excepting a few, these problems are meant only to supplement the existing ones in standard texts.

The comments interspersed in the text help to put the problems in perspective with other problems and with the subject itself. The intention of the book is two-fold: to introduce via problems some concepts not usually taught at the master's level, and reinforce existing knowledge by means of new problems.

2004 • 168 pp. • Paperback
978-81-7371-491-7 • Rs. 165.00

How to Enjoy Calculus

Pine, E.S.

This book is an essential primer for anyone who wants to familiarise himself or herself with Calculus. Unlike other books on this subject, it is easy for anyone from any discipline to understand it. For too long

this subject has been rendered mysterious and obscure. With this book, Calculus is demystified and can be easily grasped. This book also acts as a stepping-stone and enables you to go on to read other books on Calculus with ease.

2002 • 136 pp. • Paperback
978-81-7371-406-1 • Rs. 175.00

Imaginary Tale, An:

The Story of $\sqrt{-1}$

Nahin, Paul J.

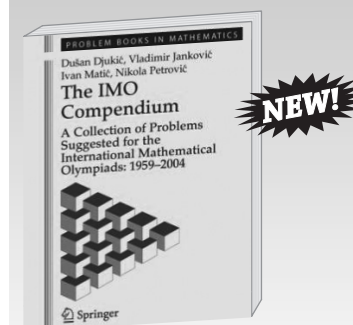
The author tells the 2000-year-old history of one of mathematics' most elusive numbers, the square root of minus one, also known as i , re-creating the baffling mathematical problems that conjured it up and the colourful characters who tried to solve them. Addressing readers with both a general and scholarly interest in mathematics, Nahin weaves into this narrative entertaining historical facts, mathematical discussions, and the application of complex numbers and functions to important problems.

2001 • 280 pp. • Paperback
978-81-7371-399-6 • Rs. 280.00

IMO Compendium, The:

A Collection of Problems Suggested for The International Mathematical Olympiads: 1959–2004

Djukic, D. et al.



The IMO has sparked off a burst of creativity among enthusiasts in creating new and interesting

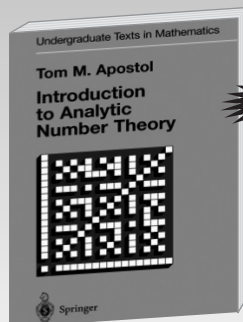
mathematics problems. In an extremely stiff competition, only six problems are chosen each year to appear on the IMO. The total number of problems proposed for the IMOs up to this point is staggering and, as a whole, this collection of problems represents a valuable resource for all high school students preparing for the IMO.

The IMO Compendium is the ultimate collection of challenging high-school-level mathematics problems. It will be an invaluable resource, not only for high-school students preparing for mathematics competitions, but for anyone who loves and appreciates math.

2010 • 760 pp. • Paperback
978-81-8489-525-4 • Rs. 995.00

Introduction to Analytic Number Theory

Apostol, Tom M.



This introductory textbook is designed to teach undergraduates the basic ideas and techniques of number theory, with special consideration to the principles of analytic number theory. The first five chapters treat elementary concepts such as divisibility, congruence and arithmetical functions. The topics in the next chapters include Dirichlet's theorem on primes in progressions, Gauss sums, quadratic residues, Dirichlet series, and Euler products with applications to the Riemann zeta function and Dirichlet L-functions. Also included is an introduction to

partitions. Among the strong points of the book are its clarity of exposition and a collection of exercises at the end of each chapter. The first ten chapters, with the exception of one section, are accessible to anyone with a knowledge of elementary calculus; the last four chapters require some knowledge of complex function theory including complex integration and residue calculus.

2010 • 352 pp. • Paperback
978-81-8489-521-6 • Rs. 595.00

Introductory Course in Differential Equations, An

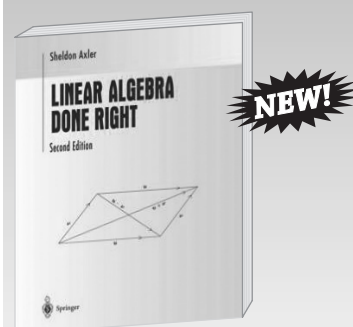
Murray, D.A.

A brief exposition of some of the devices employed in solving differential equations, the book is designed for undergraduate students of physics and engineering, and students who intend to study higher mathematics.

1967 • 236 pp. • Paperback
978-81-250-1355-6 • Rs. 165.00

Linear Algebra Done Right (Second Edition)

Axler, Sheldon



This text for a second course in linear algebra is aimed at math majors and graduate students. The novel approach taken here banishes determinants to the end of the book and focusses on the central goal of linear algebra: understanding the structure of linear operators on vector spaces.

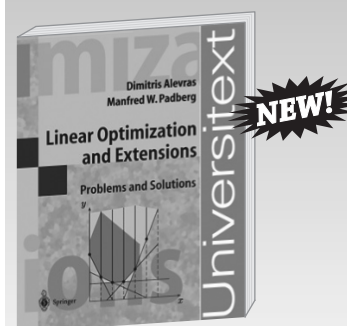
The author has taken unusual care to motivate concepts and to simplify proofs. A variety of interesting exercises in each chapter helps students understand and manipulate the objects of linear algebra.

No prerequisites are assumed other than the usual demand for suitable mathematical maturity. This second edition includes a new section on orthogonal projections and minimization problems. The sections on self-adjoint operators, normal operators, and the spectral theorem have been rewritten. New examples and new exercises have been added, several proofs have been simplified, and hundreds of minor improvements have been made throughout the text.

2010 • 266 pp. • Paperback
978-81-8489-532-2 • Rs. 530.00

Linear Optimization and Extensions: Problems and Solutions

Alevras, Dimitris & Padberg, Manfred W.



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 in finite 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 in finite precision arithmetic, the equivalence of linear optimisation and polyhedral separation; The foundations of mixed-integer programming and combinatorial optimisation.

2010 • 558 pp. • Paperback
978-81-8489-524-7 • Rs. 685.00

Math Charmers:

Tantalizing Tidbits for the Mind
Weaver, Jefferson Hane

This book aims to inspire people by the beauty of mathematics and not necessarily its usefulness, as is most often the case when trying to motivate youngsters to the subject. It provides sufficient evidence of the beauty of mathematics through many examples in a variety of its branches. To make these examples attractive and effective, they were selected on the basis of the ease with which they can be understood at first reading.

2006 • 302 pp. • Paperback
978-81-7371-562-4 • Rs. 325.00

Math Explorer, The:

A Journey through the Beauty of Mathematics
Weaver, Jefferson Hane

This stress-free layperson's introduction to the intriguing world of numbers is designed to acquaint the general reader with the elegance and wonder of mathematics. Even the most math-phobic among us will be lulled into appreciation by Weaver's creative and disarming discussions of this supposedly formidable intellectual discipline.

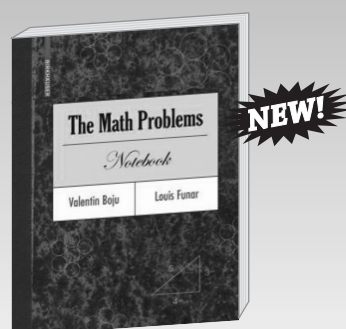
He covers all the basics: irrational and imaginary numbers, algebra, geometry, trigonometry, differential and integral calculus, the concepts of zero and

infinity, vectors, set theory, chance and probability, and much more. This enjoyable volume gives readers a working knowledge of math's most important concepts, an appreciation of its elegant logical structure, and an understanding of its historical significance in creating our contemporary world.

2006 • 288 pp. • Paperback
978-81-7371-563-1 • Rs. 325.00

Math Problems Notebook, The

Boju, Valentin & Funar, Louis



The Math Problems Notebook is a collection of nontrivial, unconventional problems requiring deep insight and imagination reminiscent of those discussed at Sunday Math Circles. These circles have become a place for disseminating beautiful mathematics at an elementary level for college students who have a common passion for mathematics.

The problems cover many topics, including number theory, algebra, combinatorics, geometry and analysis, of varying levels of difficulty. The presentation of each topic begins with simple exercises and follows with more difficult problems, challenging enough even for the experienced problem solver. The easier problems focus on basic methods and tools, while the more advanced problems develop problem-solving techniques, intuition and promote further research.

2010 • 248 pp. • Paperback
978-81-8489-527-8 • Rs. 450.00

Mathematical Analysis

Sitaram, A. & Pati, V.

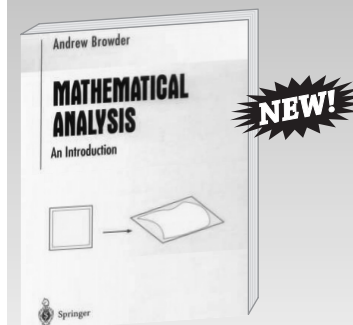
This collection of mathematical articles focusses on some elementary aspects of mathematical analysis, especially infinite sequences and infinite series. Some foundational issues have been addressed in the course of providing rigorous proofs of mathematical results. Biographical sketches of the mathematicians who have contributed to analysis enrich the content of this book.

It can be used by students of mathematics to supplement what they learn in their regular courses.

2001 • 160 pp. • Paperback
978-81-7371-291-3 • Rs. 225.00

Mathematical Analysis: An Introduction

Browder, Andrew



This is a textbook containing more than enough material for a year-long course in analysis at the advanced undergraduate or beginning graduate level. The book begins with a brief discussion of sets and mappings, describes the real number field, and proceeds to a treatment of real-valued functions of a real variable. Separate chapters are devoted to the ideas of convergent sequences and series, continuous functions, differentiation, and the Riemann integral.

2010 • 447 pp. • Paperback
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Mathematical Century, The:

The 30 Greatest Problems of the Last 100 Years

Odifreddi, Piergiorgio

The author concentrates on thirty highlights of pure and applied mathematics. He opens by discussing the four main philosophical foundations of mathematics of the nineteenth century and ends by describing the four most important open mathematical problems of the twenty first century.

He devotes equal attention to pure and applied mathematics, with applications ranging from physics and computer science to biology and economics.

Special attention is dedicated to the famous '23 problems' outlined by David Hilbert in his address to the International Congress of Mathematicians in 1900 as a research programme for the new century, and to the work of the winners of the Fields Medal, the equivalent of a Nobel Prize in mathematics.

2005 • 224 pp. • Paperback
978-81-7371-542-6 • Rs. 225.00

Mathematical Olympiad Challenges

Andreescu, Titu & Gelca, Razvan

This is a rich collection of problems put together by two experienced and well-known professors of the US International Mathematical Olympiad Team. Hundreds of beautiful, challenging and instructive problems from algebra, geometry, trigonometry, combinatorics and number theory are clustered by topic into self-contained sections with solutions provided separately. All sections start with an essay discussing basic facts and one or two representative examples. A list of carefully chosen problems follows. Additionally, historical insights and asides are presented to stimulate further inquiry. The emphasis throughout is on encouraging readers to move away from routine exercises and memorised

algorithms toward creative solutions to open-ended problems.

2005 • 280 pp. • Paperback
978-81-8128-323-8 • Rs. 325.00

Mathematical Olympiad Treasures

Andreescu, Titu & Enescu, Bogdan

This book aims at building a bridge between ordinary high-school exercises and more sophisticated, intricate and abstract concepts and problems in undergraduate mathematics. The book contains a stimulating collection of problems in the subjects of geometry and trigonometry, algebra, number theory and combinatorics.

While it may be considered a sequel to *Mathematical Olympiad Challenges*, the focus of *Treasures* is on engaging a wider audience of undergraduates to think creatively in applying techniques and strategies to problems in the real world.

Throughout the book, students are encouraged to express their ideas, conjectures, and conclusions in writing.

The goal is to help readers develop a host of new mathematical tools and strategies that will be useful beyond the classroom and in a number of disciplines.

2005 • 248 pp. • Paperback
978-81-8128-322-1 • Rs. 325.00

Mathematical Physics:

Advanced Topics

Joglekar, S.D.

This is the companion volume to *Mathematical Physics: The Basics*. The Basics covered topics like vectors, tensors, Cartesian coordinates, Lorentz tensors, curvilinear coordinates, linear vector spaces, linear operators, matrices, complex variables and their applications. *Advanced Topics* covers more advanced topics taught in the second/third semester. It includes ODE, Gamma and beta functions, Bessel functions, spherical harmonics and

special functions, partial differential equations, generalised functions, and group theory. Together, the two volumes cover the subject of mathematical physics for a PG course in physical sciences.

Contents: Ordinary differential equations | Gamma (factorial) and beta functions | Bessel Functions | Some special functions and spherical harmonics | Partial differential equations | Generalized functions, the dirac delta function and the fourier transform | Group theory | Appendix

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

2006 • 264 pp. • Paperback
978-81-7371-560-0 • Rs. 280.00

Mathematical Physics: The Basics

Joglekar, S.D.

This book covers the basic mathematical techniques that are essential at the Master's level in Physics and Chemistry, and provides the basic underlying preparation needed for any research student in either branch.

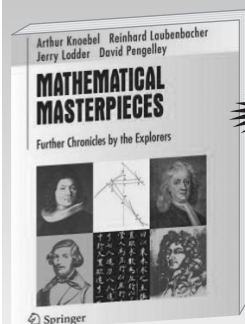
The material is spread over two volumes. This volume deals with vectors, tensors, Cartesian coordinates, Lorentz tensors, curvilinear coordinates, linear vector spaces, linear operators, matrices, complex variables and their applications at an advanced level. The second volume, *Advanced Topics*, deals with more advanced topics and thus between them, these two volumes cover the entire spectrum.

Contents: Coordinate transformations, Vectors and cartesian tensors | Lorentz transformation, 4-vectors and 4-tensors | Curvilinear coordinates | Linear vector spaces – I | Linear vector spaces – II: Linear operators | Complex variables – I | Complex variables – II | Complex variables – III

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2005 • 256 pp. • Paperback
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Mathematical Masterpieces:
Further Chronicles by the Explorers
Knoebel, A. et al.

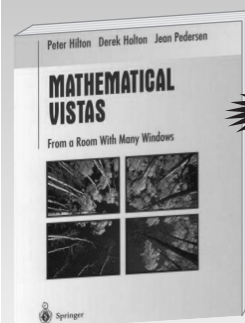


Experience the discovery of mathematics by reading the original work of some of the greatest minds throughout history. Here are the stories of four mathematical adventures, including the Bernoulli numbers as the passage between discrete and continuous phenomena, the search for numerical solutions to equations throughout time, the discovery of curvature and geometric space, and the quest for patterns in prime numbers. Each story is told through the words of the pioneers of mathematical thought. Particular advantages of the historical approach include providing context to mathematical inquiry, perspective to proposed conceptual solutions, and a glimpse into the direction research has taken. The text is ideal for an undergraduate seminar, independent reading, or a capstone course, and offers a wealth of student exercises with a prerequisite of at most multivariable calculus.

2010 • 348 pp. • Paperback
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Mathematical Vistas:
From a Room with Many Windows
Hilton, Peter, Holton, Derek & Pedersen, Jean



The goal of *Mathematical Vistas* is to stimulate the interest of bright people in mathematics. The book consists of nine related mathematical essays which will intrigue and inform the curious reader. In order to offer a broad spectrum of exciting developments in mathematics, topics are treated at different levels of depth and thoroughness. Some chapters can be understood completely with little background, others can be thought of as appetisers for further study. A number of breaks are included in each chapter. These are problems designed to test the reader's understanding of the material thus far in the chapter.

2010 • 349 pp. • Paperback
978-81-8489-523-0 • Rs. 595.00

Mathematics in Nature

Adam, John A.

Generously illustrated, written in an informal style, and replete with examples from everyday life, this book is an excellent and undaunting introduction to the ideas and methods of mathematical modelling. It illustrates how mathematics can be used to formulate and solve puzzles observed in nature and to interpret the solutions. Readers will develop an understanding of the symbiosis that exists between basic scientific principles and their

mathematical expressions as well as a deeper appreciation for such natural phenomena as cloud formations, halos and glories, tree heights and leaf patterns, butterfly and moth wings, and even puddles and mud cracks.

Developed out of a university course, this book makes an ideal supplemental text for courses in applied mathematics and mathematical modelling. It will also appeal to mathematics educators and enthusiasts at all levels, and is designed so that it can be dipped into at leisure.

2004 • 400 pp. • Paperback
978-81-7371-508-2 • Rs. 395.00

Mathematics of Ciphers: Number Theory and RSA Cryptography, The
Coutinho, S.C.

What do prime numbers, multiplication, and factoring have in common? They are all part of the mathematics of ciphers, code-building at its best. Revised and updated since its publication in Portuguese in 1997, this highly accessible book is an introduction to the algorithmic aspects of number theory and its applications to cryptography. Accompanied by historical anecdotes, the familiar topics of number theory are defined and explored. The author takes the reader on a leisurely journey through this fascinating field, culminating in a visit to the RSA cryptosystem.

2003 • 216 pp. • Paperback
978-81-7371-442-9 • Rs. 250.00

Measure and Probability

Athreya, S.R. & Sunder, V.S.

This book has been designed primarily for students at the masters and doctoral levels. It covers the fundamentals of measure theory and probability theory. Among the highlights are alternative proofs of Riesz representation theorem and the law of large numbers. The appendix treats many basic topics

such as metric spaces, topological spaces and the Stone–Weierstrass theorem.

Contents: Probabilities and measures: Introduction; s -Algebras as Events; Algebras, monotone classes, etc; Preliminaries on measures; Outer measures and Carathéodory extension; Lebesgue measure; Regularity; Bernoulli trials | Integration: Measurable functions; Integration; a.e. Considerations | Random variables: Distribution and expectation; Independent events and tail s -Algebra; Some distributions; Conditional expectation | Probability measures on product spaces: Product measures; Joint distribution and independence; Probability measures on infinite product spaces; Kolmogorov consistency theorem | Characteristics and convergences: Characteristic functions; Modes of convergence; Central limit theorem; Law of large numbers | Markov chains: Discrete time MC; Examples; Classification of states; Strong Markov property; Stationary distribution; Limit theorems | Some analysis: Complex measures; L_p spaces; Radon–Nikodym theorem; Change of variables; Differentiation; The Riesz representation theorem | Appendix: Metric spaces; Topological spaces; Compactness; The Stone–Weierstrass theorem

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

**2008 • 232 pp. • Paperback
978-81-7371-613-3 • Rs. 325.00**

Number Theory

Shirali, Shailesh A. & Yogananda, C.S.

Number theory has fascinated mathematicians from the most ancient of times. A remarkable feature of number theory is the fact that there is something in it for everyone from puzzle enthusiasts, problem solvers and amateur mathematicians to professional scientists and technologists. The articles included form a varied lot, beginning with a puzzle, ‘find four positive integers such that the sum of any two is a square’, to an expository article on one of the great mathematical achievements of the

20th century, the proof of ‘Fermat’s Last Theorem’.

Contents: On provability versus consistency in elementary mathematics - Shailesh A Shirali | To find four distinct positive integers such that the sum of any two of them is a square - S H Aravind | Bachet’s problem - B Bagchi | Mathematical induction - An impresario of the infinite - B Sury | On the infinitude of prime numbers-Euler’s Proof - Shailesh A Shirali | On Fermat’s two squares theorem - Shailesh A Shirali | Fermat’s two squares theorem revisited - B Bagchi | Factoring Fermat numbers—A unique computational experiment for factoring F_9 - C E Veni Madhavan | The class number problem -binary quadratic forms - Rajat Tandon | The class number problem -an introduction to algebraic number theory - Rajat Tandon | Roots are not contained in cyclotomic fields - Rajat Tandon | Die ganzen Zahlen hat Gott gemacht- polynomials with integer values - B Sury | Prime representing quadratics - N V Tejaswi | The Congruent number problem - V Chandrasekar | Fermat’s last theorem - a theorem at last! - C S Yogananda | Some unsolved problems in number theory-progress made in recent times - K Ramachandra | When and where the articles appeared in resonance | Index

**2003 • 112 pp. • Paperback
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Numerical Methods

Boehm, W. & Prautzsch, H.

The development and analysis of constructive algorithms in numerical mathematics has become a focus of applied mathematics since the practical realisation 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.

**2005 • 196 pp. • Paperback
978-81-7371-534-1 • Rs. 225.00**

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

Balachandra Rao, S. & Shantha, C.K.

The book discusses the important numerical methods which are frequently used in mathematical, physical, engineering and 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: 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

**2004 • 504 pp. • Paperback
978-81-7371-472-6 • Rs. 410.00**

Path to Combinatorics for Undergraduates, A

Andreescu, Titu & Feng, Zuming

This is a lively introduction not only to combinatorics, but also to mathematical ingenuity, rigour and the joy of solving puzzles. The unique approach to combinatorics is centered around challenging examples, fully worked out solutions and hundreds of problems—many from Olympiads and other competitions and many original to the authors. Each chapter highlights a particular aspect of the subject and casts combinatorial concepts in the guise of questions, illustrations and exercises that are designed to encourage creativity, improve problem-solving techniques and widen the reader’s mathematical horizons.

Contents: Addition or multiplication? | Combinations | Properties of binomial Coefficients | Bijections | Recursions | Inclusion and exclusion | Calculating in two ways: Fubini’s principle | Generating

functions | Review exercises | Glossary |
Further reading | Afterward

2005 • 248 pp. • Paperback
978-81-8128-336-8 • Rs. 275.00

Percolation Theory and Particle Systems

Roy, R. (Ed.)

This book presents the basic tools and some important results in percolation theory and particle systems. Besides this, applications to queuing systems and random graphs are also presented. Moreover, there are articles on the physics of percolation theory and particle systems which are intended to whet the reader's appetite for further research. This book will be of interest to both students and researchers in mathematical physics, mathematical probability, statistical mechanics, and phase transitions.

2000 • 224 pp. • Paperback
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Pi: A Biography of the World's Most Mysterious Number

Posamentier, Alfred S. & Lehmann, Ingmar

Pi—this seemingly mundane number—holds a world of mystery, which has fascinated mathematicians from ancient times to the present. What is Pi? What is the real value of Pi? How do mathematicians determine the value of Pi? In what ways is Pi used? How was it calculated in ancient times? Its elusive nature has led investigators over the years to ever-closer approximations.

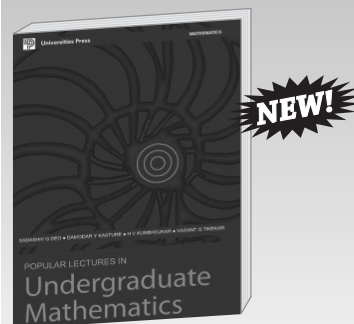
In this delightful introduction to one of math's most interesting phenomena, Drs Posamentier and Lehmann review Pi's history from pre-biblical times to the twenty-first century and the many amusing and often mind-boggling attempts to estimate its precise value. This enlightening, intriguing, and stimulating approach to mathematics

will entertain and fascinate readers while honing their mathematical literacy.

2006 • 324 pp. • Paperback
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Popular Lectures in Undergraduate Mathematics

Deo, Sadashiv G. et al.



“What is mathematics?”, “What does it have to do with real life?”—These are questions which are rarely answered while teaching mathematics. But once students realise the meaning of mathematics, its strengths and limitations, its history and future, its relations with real-life situations, its beauty and intellectual challenges, the learning process becomes a fountain of delight and pleasure. The aim of this book is to provide just such an approach to teaching and learning. The present volume is the outcome of a series of lectures delivered at many universities, colleges, seminars and conferences to reduce the gap between class-room teaching and learning. The lectures will help mathematics teachers make their classroom discussions more innovative, promising and fruitful. The book also provides scope for students and teachers to formulate interesting mathematical projects for their curriculum requirements.

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Probability and Statistics

Delampady, M., Krishnan, T. & Ramasubramanian, S. (Eds.)

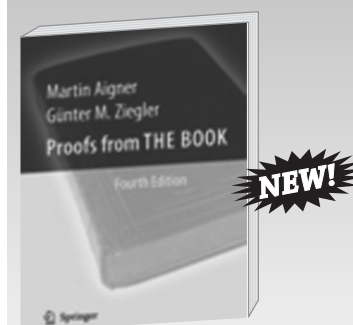
This book covers probability, statistical decision theory, stochastic processes, sampling, model building, etc. It can be used by students of mathematics and statistics to complement what they learn in their regular courses. It will also be of interest to students of other sciences like biology and physics for understanding the role that probability and statistics play in their respective fields.

2000 • 200 pp. • Paperback
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Proofs from THE BOOK

(Fourth Edition)

Aigner, Martin & Ziegler, Günter M.



This revised and enlarged fourth edition of *Proofs from THE BOOK* features five new chapters, which treat classical results such as the fundamental theorem of algebra, problems about tilings, but also quite recent proofs, for example of the Kneser conjecture in graph theory. The new edition also presents further improvements and surprises, among them, a new proof for Hilbert's third problem.

2010 • 282 pp. • Paperback
978-81-8489-533-9 • Rs. 450.00

Shaping of Indian Science, The ISCA-Indian Science Congress Association Presidential Addresses

These are a compendium of the speeches of the Presidents of the Indian Science

Congress Association (ISCA) from 1914–2003. Through the years, these Presidents have inspired the Congress by their speeches—some of them visionary, some impassioned in their plea for Science, but all of them with a message that Science must be used for the good of the human race. The Presidents have been eminent personalities in the world of Science and have left their mark on the course of Science in India. This series was inspired by the belief that these luminaries deserved greater coverage in a reference source devoted exclusively to providing their messages and brief biographical sketches, in the hope that they will inspire a wider audience to take up the noble pursuit of Science.

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 978-81-7371-432-0 • Rs. 850.00

Volume 2
 2003 • 704 pp. • Hardback
 978-81-7371-433-7 • Rs. 850.00

Volume 3
 2003 • 788 pp. • Hardback
 978-81-7371-434-4 • Rs. 850.00

Short Courses in Mathematics

Kumaresan, S.

This book is a collection of lectures delivered by the author at mathematics instructional workshops and refresher courses. Topics covered include the spectral theorem for operators in the finite dimensional case, Lebesgue integration theory via the Daniell method, Fourier transform on \mathbb{R} , solution of the Dirichlet problem for the potential equation in the plane by Perron's method, the Sturm – Liouville problem, the interior regularity of the solutions of elliptic equations and a thorough introduction to representation theory of topological groups.

2003 • 136 pp. • Paperback
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Slicing Pizzas, Racing Turtles, and Further Adventures in Applied Mathematics

Banks, R.B.

Covering a broad range of fields, Banks uses basic algebra and geometry to solve problems. Designed to entertain and to stimulate thinking, this book can be read for sheer personal enjoyment. The phenomena he describes are ones that we encounter in our daily lives or can visualize without much trouble.

2001 • 344 pp. • Paperback
 978-81-7371-366-8 • Rs. 425.00

Statistical Mechanics:

An Elementary Outline
 (Revised Edition)

Lahiri, Avijith

Compared to the previous edition where the quantum theoretic development of the subject was chosen from the very beginning, the present edition chooses the classical theory as the launching pad by introducing a number of key concepts so as to make the subject accessible to a wider section of readers. At the same time, the technical soundness of presentation has been raised to a higher level by way of using the concepts of the mixed state and the reduced state as the basic building blocks of the theory and of relating equilibrium statistical mechanics to the long-term time evolution of the reduced state.

Contents: Introduction | The Microcanonical ensemble and its applications | The canonical and the grand canonical ensembles | Statistical mechanics: Simple applications | References

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

2008 • 290 pp. • Paperback
 978-81-7371-614-0 • Rs. 250.00

Survey of Modern Algebra, A
 (Fifth Edition)

Garrett, Birkhoff & Mac Lane, Saunders

This classic text introduces abstract algebra using familiar and concrete examples that illustrate each concept as it is presented. It covers such topics as the role of careful proof in algebra; linear algebra as grounded in geometry; groups as expressions of symmetry; subgroups and subsystems leading to lattice theory; and much more. To develop the student's power to think for himself in terms of these new concepts, the authors have included a wide variety of exercises on each topic. Some of these exercises are computational, some explore further examples, and others give additional theoretical development. This fundamental text, now in its fifth edition, continues to show that the vital aspects of abstract algebra as they relate to the body of modern mathematics can be presented to undergraduates in an effective and innovative manner.

Contents: The integers | Rational numbers and fields | Polynomials | Real numbers | Complex numbers | Groups | Vectors and vector spaces | The algebra of matrices | Linear groups | Determinants and canonical forms | Boolean algebras and lattices | Transfinite arithmetic | Rings and ideals | Algebraic number fields | Galois theory |

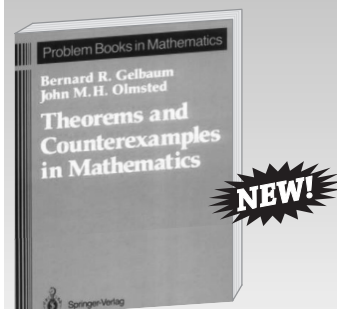
2003 • 512 pp. • Paperback
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Theorems and Counterexamples in Mathematics

Gelbaum, Bernard R. & Olmsted, John M.H.



This text is intended to provide graduate and advanced undergraduate students as well as the general mathematical public with a modern treatment of various theorems and examples in mathematics. A carefully arranged mixture of theorems, examples, exercises, hints and discussions sharpens and highlights many of the fundamental aspects of the subject matter, and constitutes a rounding out and elaboration of the standard parts of algebra, analysis, geometry, logic, probability, set theory, and topology. Essentially self-contained, the book presents this material with a treatment sensitive to the progress mathematics has made in the last 25 years.

2010 • 339 pp. • Paperback
978-81-8489-543-8 • Rs. 595.00

Topics in Abstract Algebra

(Second Edition)

Mukhopadhyay, P., Ghosh, Shamik, A.M. & Sen, Mridul Kanti

This book covers the elements of abstract algebra, which is a major mathematics course for undergraduate students all over the country and also for first year postgraduate students of many universities. It is designed according to the new UGC syllabus prescribed for all Indian universities.

Each chapter is divided into sections according to the needs of the subject

and problems have been given at the end of every section under two categories: solved and unsolved.

The book is designed to satisfy the basic needs of a student with reference to the syllabus and examination. It begins without any prerequisite, then gradually unfolds the inner essence of the subject, its gradual development with a hint of history here and there, and tries to develop the flavour of abstraction from the proper perspective.

This edition has a complete chapters with workedout examples and exercises on Boolean algebra. the chinese remainder theorem Euler's Phi function has also been discussed in the appendix.

Contents: Preliminaries | Integers | Groups | Permutation groups | Subgroups | Homomorphisms of groups | Direct product of groups | Symmetry | Sylow theorems | Simple groups | Rings | Ideals and homomorphisms of rings | Factorization in integral domains | Polynomial rings | Boolean algebra | Appendices

2004 • 436 pp. • Paperback
978-81-7371-551-8 • Rs. 325.00

Towing Icebergs, Falling Dominoes, and Other Adventures in Applied Mathematics

Banks, R.B.

The book's twenty-four concise chapters are each centered on a real-world phenomenon, and are presented in an informal and engaging manner. Banks shows how mathematics and simple reasoning together may produce elegant models that explain everything from the national debt to the proper technique for cricket.

2001 • 344 pp. • Paperback
978-81-7371-359-0 • Rs. 300.00

Trigonometric Delights

Maor, E.

Maor rejects the usual arid descriptions of the sine and cosine functions and

their trigonometric relatives. He brings the subject to life in a compelling blend of mathematics, history, and biography. From the 'proto-trigonometry' of the Egyptian pyramid builders to Renaissance Europe's quest for more accurate artillery, from the earliest known trigonometric table, carved on a clay tablet by an unknown Babylonian scholar, to Fourier's famous theorem, which finally explained the source of musical harmony, here is a rich tapestry of almost four thousand years of trigonometric history. Trigonometric Delights will change forever our view of a once-dreaded subject.

2000 • 256 pp. • Paperback
978-81-7371-206-7 • Rs. 275.00

Ubiquitous Harmonic Relation, The

Metz, James

The harmonic relation, $1/a + 1/b = 1/c$, expresses a wonderful connection among three variables—the sum of the reciprocals of two variables being the reciprocal of the third. Unassumingly, this magnificent equation has made its presence felt in many and diverse applications such as optics, electric circuits and planetary motion. It finds expression in a variety of geometric figures. Many algebraic equations reduce to this simple statement. The author has taken it upon himself to illustrate the beauty and utility of this fascinating equation. By the end of the journey, the reader will realise the truly ubiquitous nature of the harmonic relation.

Contents: Part I: Applications – Introduction | Work | Production of Gadgets | Pipe delivery | On queue | Electricity | Planetary motion | Springs | Crossed wires | Shortest distance | Optics | Coffee and cream | Markup and markdown | Appendix A: Applications | Part II: Geometry - Introduction | Bisector of a 120 angle of a triangle | Isosceles triangle base angle bisector | Square inscribed in a right triangle | Square inscribed in a triangle | Square on a leg of a right triangle

(I) | Square on a leg of a right triangle
 (II) | Rhombus inscribed in a triangle |
 Triangle inscribed in a regular heptagon |
 Triangles in a rectangle | Square adjoining
 a rectangle | Secant through a vertex of a
 parallelogram | Secant through a vertex of
 an inscribed equilateral triangle | Inscribed
 and circumscribed polygons | Ellipse with
 tangent line | Line intersecting the line |
 Graphs of the harmonic relation with
 constant | Graph of the harmonic relation in
 three dimensions | Ratios in a right triangle |
 Appendix B: Geometry | Part III: Algebra
 - Introduction | The harmonic mean |
 Algebraic relationships |
 Fibonacci numbers | Integer solutions | The
 five regular polyhedra

2008 • 164 pp. • Paperback
978-81-7371-603-4 • Rs. 190.00

Understanding Mathematics

Sinha, K.B., et al.

The book explains the 'hows' and 'whys' and also whets the appetite of a good student for more of good mathematics.

2000 • 264 pp. • Paperback
978-81-7371-355-2 • Rs. 225.00

Understanding Probability and Statistics: A Book of Problems

Falk, Ruma

This 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 humour 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: I. Problems to solve - Descriptive statistics I; Probability I; Reasoning across domains | II. Multiple-choice problems - Descriptive statistics II; Probability II; Normal distribution, Sampling distribution, and inference | III. Answers - Answers for Part I: Problem to solve; Answer for Part II: Multiple-choice problems

2003 • 256 pp. • Paperback
978-81-7371-440-5 • Rs. 195.00

Universities Press Dictionary of Mathematics (Third Edition)

Daintith, J. & Clark, J.O.E. (Eds.)

Extensively revised and expanded, the dictionary contains approximately 3,000 entries that explain, clearly and concisely, the most important and commonly used terms in every branch of mathematics. More than 200 new terms increase coverage of applied mathematics and computer science. An extensive Appendix contains information about conversion factors and formulas. Almost 100 line drawings illustrate complex concepts, and extensive cross-references guarantee that no user will waste time searching for physical quantities, units of measure, conversion factors, formulas, important constants, and the Greek alphabets.

2000 • 248 pp. • Paperback
978-81-7371-300-2 • Rs. 235.00

Wavelets: A Primer

Blatter, Christian

The wavelet transform, with its many applications, has become a major new mathematical technique. It has stimulated research unparalleled since the invention of the Fast Fourier Transform (FFT) and opened new avenues of application in signal processing, image compression, radiology, cardiology, and many other areas. It provides a solid, yet accessible, mathematical foundation for those

interested in learning about wavelets and pursuing the broad range of applications for which the wavelet transform has proved successful. Numerous illustrations and fully worked-out examples further enhance the value of this exemplary introduction to the field.

Contents: Formulating the problem | Fourier analysis | The continuous wavelet transform | Frames | Multiresolution analysis | Orthonormal wavelets with compact support

2003 • 216 pp. • Paperback
978-81-7371-449-8 • Rs. 225.00

Wavelets:

Theory, Applications, Implementation
Altaisky, M.V.

This book aims 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 schemes; 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

2004 • 164 pp. • Paperback
978-81-7371-503-7 • Rs. 195.00

When Least is Best:

How Mathematicians Discovered Many Clever Ways to Make Things as Small (or as Large) as Possible

Nahin, Paul J.

What is the best way to photograph a speeding bullet? Why does light move through glass in the least amount of time possible? How can lost hikers find their way out of a forest? What will rainbows look like in the future? Why do soap bubbles have a shape that gives them the least area?

By combining the mathematical history of extrema with contemporary examples, Paul J. Nahin answers these intriguing questions and more in this engaging and witty volume. Nahin tells the story of Dido's problem, Fermat and Descartes, Torricelli, Bishop Berkeley, Goldschmidt, and more.

This is the first book on optimisation written for a wide audience, and math enthusiasts of all backgrounds will delight in its lively topics.

2004 • 392 pp. • Paperback
978-81-7371-510-5 • Rs. 375.00

Winning Solutions

Lozansky, Edward & Rousseau, Cecil



This book is intended to provide students with the appropriate mathematical tools and problem-solving experience to successfully compete in high-level problem solving competitions. In each section, the authors attempt to “fill in” the appropriate background and then provide the student with a variety of worked examples and exercises to help bridge the gap between what he or she may already know and what is required

for high-level competitions. Answers or sketches of the solutions are given for all exercises. The book makes an attempt to introduce each area “gently”, assuming little in the way of prior background—and teach the appropriate techniques, rather than simply providing a compilation of high-level problems.

2010 • 270 pp. • Paperback
978-81-8489-526-1 • Rs. 495.00

Zen of Magic Squares, Circles, and Stars, The:

An Exhibition of Surprising Structures Across Dimensions

Pickover, Clifford A.

This is the most comprehensive and exciting book in many decades on magic squares—arrays filled with numbers or letters in particular arrangements. Clifford Pickover offers a colourful history of these and similar structures, their construction, and classification along with a remarkable variety of newly discovered objects ranging from ornate inlaid magic cubes to hypercubes. He explains why Chinese emperors, Babylonian astrologer-priests, prehistoric cave people in France, and ancient Mayans of the Yucatan were convinced that magic squares held the secret of the universe.

Illustrated examples occur throughout, with some patterns from the author's own experiments. The tesseract, circles, spheres, and stars that he presents perfectly convey the age-old devotion of the math-minded to this Zen-like quest.

2004 • 432 pp. • Paperback
978-81-7371-466-5 • Rs. 395.00

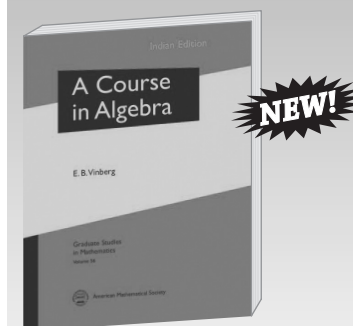
**AMERICAN MATHEMATICAL SOCIETY
(INDIAN EDITION)**

This delightful series is for students, general readers and teachers. In fact anyone with an interest in mathematics

will enjoy these books and find much to gain from them. They will be of use particularly to students who wish to appear for the Mathematical Olympiads, and to teachers who are looking for material and sources outside the regular curriculum to enliven their mathematics programme.

Course in Algebra, A

Vinberg, E. B.

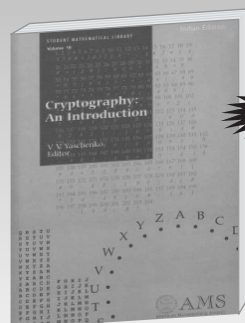


This is a comprehensive textbook on modern algebra written by an internationally renowned specialist. It covers material traditionally found in advanced undergraduate and basic graduate courses and presents it in a lucid style. The author includes almost no technically difficult proofs, and reflecting his point of view on mathematics, he tries wherever possible to replace calculations and difficult deductions with conceptual proofs and to associate geometric images to algebraic objects. The effort spent on the part of students in absorbing these ideas will pay off when they turn to solving problems outside of this textbook. Another important feature is the presentation of most topics on several levels, allowing students to move smoothly from initial acquaintance with the subject to thorough study and a deeper understanding. Basic topics are included, such as algebraic structures, linear algebra, polynomials, and groups, as well as more advanced topics, such as affine and projective spaces, tensor algebra, Galois theory, Lie groups, and associative algebras and their representations. Some applications of linear algebra and group theory to

physics are discussed. The book is written with extreme care and contains over 200 exercises and 70 figures. It is ideal as a textbook and also suitable for independent study for advanced undergraduates and graduate students.

2009 • 511 pp. • Paperback
978-0-8218-4858-6 • Rs. 995.00

Cryptography: An Introduction
V.V. Yaschenko



NEW!

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 an 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 from *Cryptography Olympiads for (Russian) High School Students*.

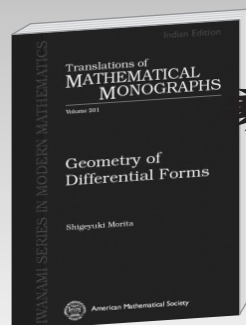
This is an English translation of a Russian textbook. It is suitable for advanced high school students and undergraduates studying information security. It is also appropriate for

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*.

2009 • 240 pp. • Paperback
978-0-8218-4850-0 • Rs. 600.00

Geometry of Differential Forms
Morita, Shigeyuki



NEW!

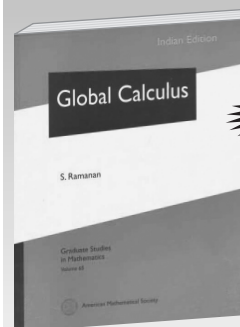
Since the times of Gauss, Riemann, and Poincaré, one of the principal goals of the study of manifolds has been to relate local analytic properties of a manifold with its global topological properties. Among the high points on this route are the Gauss – Bonnet formula, the de Rham complex, and the Hodge theorem: these results show, in particular, that the central tool in reaching the main goal of global analysis is the theory of differential forms. This book is a comprehensive introduction to differential forms. It begins with a quick presentation of the notion of differentiable manifolds and then develops basic properties of differential forms as well as fundamental results about them, such as the de Rham and Frobenius theorems. The second half of the book is devoted to more advanced material, including Laplacians and harmonic forms on manifolds, the concepts of vector bundles and fibre bundles and the theory of characteristic classes. Among the less traditional topics treated in the book is a detailed

description of the Chern – Weil theory. With the minimal prerequisites, the book can serve as a textbook for an advanced undergraduate or a graduate course in differential geometry.

2009 • 352 pp. • Paperback
978-0-8218-4852-4 • Rs. 720.00

Global Calculus

Ramanan, S.



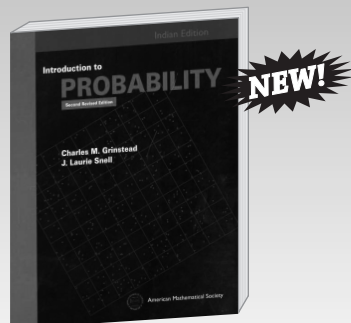
NEW!

Analysis, topology and algebra brought new power to geometry, revolutionising the way geometers and physicists look at conceptual problems. Some of the key ingredients in this interplay are sheaves, cohomology, Lie groups, connections and differential operators. In *Global Calculus*, the appropriate formalism for these topics is laid out with numerous examples and applications by one of the experts in differential and algebraic geometry. Ramanan has chosen an uncommon but natural path through the subject. In this almost completely self-contained account, these topics are developed from scratch. The basics of Fourier transforms, Sobolev theory and interior regularity are proved at the same time as symbol calculus, culminating in beautiful results in global analysis, real and complex. Many new perspectives on traditional and modern questions of differential analysis and geometry are the hallmarks of the book. The book is suitable for a first year graduate course on global analysis.

2009 • 328 pp. • Paperback
978-0-8218-4860-9 • Rs. 675.00

Introduction to Probability (Second Edition)

Grinstead, Charles M. & Snell, J. Laurie



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.

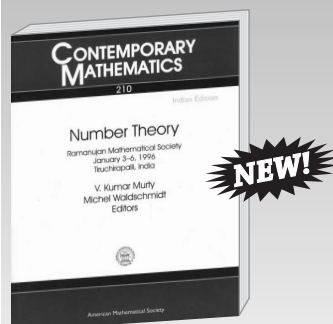
The text is also recommended for use in discrete probability courses. The material is organised so that the discrete and continuous probability discussions are presented in a separate, but parallel, manner. This organisation does not emphasise an overly rigorous or formal view of probability and therefore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

Special features: • Key ideas are developed in a somewhat leisurely style, providing a variety of interesting applications to probability and showing some non-intuitive ideas. • Over 600 exercises provide the opportunity for practising skills and developing a sound understanding of ideas. • Numerous historical comments deal with the development of discrete probability.

2009 • 528 pp. • Paperback
978-0-8218-4857-9 • Rs. 995.00

Number Theory

Kumar Murty, V. & Waldschmidt, Michel

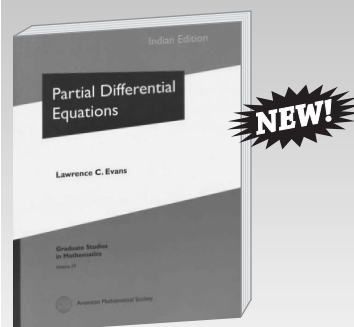


To observe the tenth anniversary of the founding of the Ramanujan Mathematical Society, an international conference on Discrete Mathematics and Number Theory was held in January 1996 in Tiruchirapalli, India. This volume contains the proceedings from the number theory component of that conference. Papers are divided into four groups: arithmetic algebraic geometry, automorphic forms, elementary and analytic number theory and transcendental number theory. This work deals with recent progress in current aspects of number theory and covers a wide variety of topics.

2009 • 408 pp. • Paperback
978-0-8218-4861-6 • Rs. 750.00

Partial Differential Equations

Evans, Lawrence C.



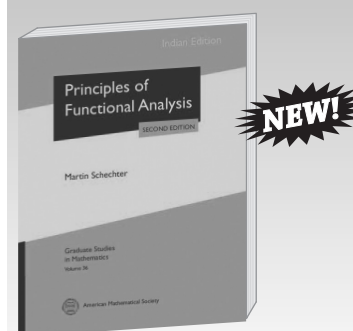
This text gives a comprehensive survey of modern techniques in the theoretical study of partial differential

equations (PDEs), with particular emphasis on nonlinear equations. The exposition is divided into three parts: 1) representation formulas for solutions, 2) theory for linear partial differential equations, and 3) 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 summarises 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 emphasises 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.

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

Principles of Functional Analysis (Second Edition)

Schechter, Martin



Functional analysis plays a crucial role in the applied sciences as well as in

mathematics. It is a beautiful subject that can be motivated and studied for its own sake. In keeping with this basic philosophy, the author has made this introductory text accessible to a wide spectrum of students, including beginning-level graduates and advanced undergraduates. The exposition is inviting, following threads of ideas, describing each as fully as possible, before moving on to a new topic. Supporting material is introduced as appropriate, and only to the degree needed. Some topics are treated more than once, according to the different contexts in which they arise. The prerequisites are minimal, requiring little more than advanced calculus and no measure theory. The text focusses on normed vector spaces and their important examples, Banach spaces and Hilbert spaces. The author also includes topics not usually found in texts on the subject. This Second Edition incorporates many new developments while not overshadowing the book's original flavour. Areas in the book that demonstrate its unique character have been strengthened. In particular, new material concerning Fredholm and semi-Fredholm operators is introduced, requiring minimal effort as the necessary machinery was already in place. Several new topics are presented, but relate to only those concepts and methods emanating from other parts of the book. These topics include perturbation classes, measures of noncompactness, strictly singular operators, and operator constants. Overall, the presentation has been refined, clarified, and simplified, and many new problems have been added.

2009 • 425 pp. • Paperback
978-0-8218-4856-2 • Rs. 760.00

Problems in Mathematical Analysis I: Real Numbers, Sequences and Series

Kaczor, W.J. & Nowak, M.T.

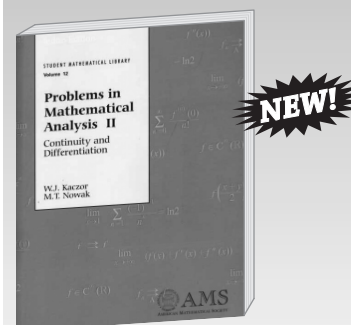


We learn by doing. We learn mathematics by doing problems. This book is the first volume of a series of books of problems in mathematical analysis. It is mainly intended for students studying the basic principles of analysis. However, given its organisation, level, and selection of problems, it would also be an ideal choice for tutorial or problem-solving seminars, particularly those geared toward the Putnam exam. The volume is also suitable for self-study. Each section of the book begins with relatively simple exercises, yet may also contain quite challenging problems. Very often several consecutive exercises are concerned with different aspects of one mathematical problem or theorem. This presentation of material is designed to help student comprehension and to encourage them to ask their own questions and to start research. The collection of problems in the book is also intended to help teachers who wish to incorporate the problems into lectures. Solutions for all the problems are provided.

2009 • 380 pp. • Paperback
978-0-8218-4854-8 • Rs. 760.00

Problems in Mathematical Analysis II: Continuity and Differentiation

Kaczor, W.J. & Nowak, M.T.



We learn by doing. We learn mathematics by doing problems. And we learn more mathematics by doing more problems. If you want to hone your understanding of continuous and differentiable functions, this book contains hundreds of problems to help you do so. The emphasis here is on real functions of a single variable. Topics include: continuous functions, the intermediate value property, uniform continuity, mean value theorems, Taylor's formula, convex functions, sequences and series of functions. The book is mainly geared toward students studying the basic principles of analysis. However, given its selection of problems, organisation, and level, it would be an ideal choice for tutorial or problem-solving seminars, particularly those geared toward the Putnam exam. It is also suitable for self-study. The presentation of the material is designed to help student comprehension, to encourage them to ask their own questions, and to start research. The collection of problems will also help teachers who wish to incorporate problems into their lectures. The problems are grouped into sections according to the methods of solution. Solutions for the problems are provided. Problems in *Mathematical Analysis I and III*

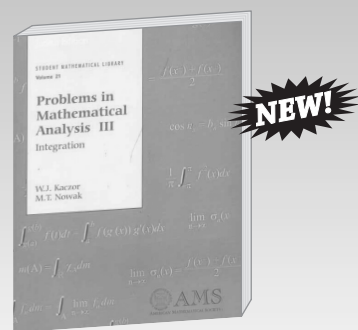
- You can also purchase our publications online.
- Request for specimen copy can be placed by faculty members.
- Register online for regular updates on our publications.

are available as Volumes 4 and 21 in the AMS series Student Mathematical Library.

2009 • 416 pp. • Paperback
978-0-8218-4855-5 • Rs. 760.00

Problems in Mathematical Analysis III: Integration

Kaczor, W.J., Nowak, M.T.



The best way to penetrate the subtleties of the theory of integration is by solving problems. This book, like its two predecessors, is a wonderful source of interesting and challenging problems. As a resource, it is unequalled. It offers a much richer selection than is found in any current textbook. Moreover, the book includes a complete set of solutions. This is the third volume of *Problems in Mathematical Analysis*. The topic here is integration for real functions of one real variable. The first chapter is devoted to the Riemann and the Riemann – Stieltjes integrals. Chapter 2 deals with Lebesgue measure and integration. The authors include some famous, and some not so famous, inequalities related to Riemann integration. Many of the problems for Lebesgue integration concern convergence theorems and the interchange of limits and integrals. The book closes with a section on Fourier series, with a concentration on Fourier coefficients of functions from particular classes and on basic theorems for convergence of Fourier series. The book is mainly geared toward students studying the basic principles of analysis. However, given

its selection of problems, organisation, and level, it would be an ideal choice for tutorial or problem-solving seminars, particularly those geared toward the Putnam exam. It is also suitable for self-study. The presentation of the material is designed to help student comprehension, to encourage them to ask their own questions, and to start research. The collection of problems will also help teachers who wish to incorporate problems into their lectures. The problems are grouped into sections according to the methods of solution. Solution for the problems are provided. *Problems in Mathematical Analysis I and II* are available as Volumes 4 and 12 in the AMS series Student Mathematically Library.

2009 • 368 pp. • Paperback
978-0-8218-4853-1 • Rs. 720.00

Representations of Finite and Compact Groups

Simon, Barry



Barry Simon, I.B.M. Professor of Mathematics and Theoretical Physics at the California Institute of Technology, is the author of several books, including such classics as *Methods of Mathematical Physics* (with M. Reed) and *Functional Integration and Quantum Physics*. This new book, based on courses given at Princeton, Caltech, ETH-Zurich, and other universities, is an introductory textbook on representation theory. According to the author, “Two facets distinguish my approach. First, this book is relatively

elementary, and second, while the bulk of the books on the subject is written from the point of view of an algebraist or a geometer, this book is written with an analytical flavor”. The exposition in the book centres around the study of representation of certain concrete classes of groups, including permutation groups and compact semi-simple Lie groups. It culminates in the complete proof of the Weyl character formula for representations of compact Lie groups and the Frobenius formula for characters of permutation groups. Extremely well tailored, both for a one-year course in representation theory and for independent study, this book is an excellent introduction to the subject which, according to the author, is unique in having “so much innate beauty so close to the surface”.

2009 • 266 pp. • Paperback
978-0-8218-4851-7 • Rs. 640.00

LITTLE MATHEMATICAL TREASURES

This series, in association with the Ramanujan Mathematical Society, is addressed to mathematically mature readers and students in their last two years of school education. The books in this series will contain expository material not generally included in standard school or college texts.

Gateway to Modern Mathematics: Adventures in Iterations I

Shirali, Shailesh A.

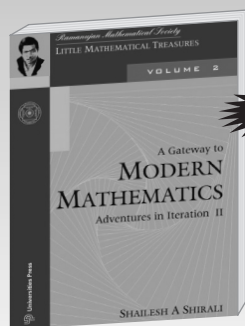
Iterations are an exciting topic to study, for the amateur as well as the professional. Many of the iterations in elementary mathematics offer scope for extended investigation. They are like a gateway for learning important themes of modern mathematics, such as fractals and chaos; they offer a route for experiencing the experimental and visually aesthetic side of mathematics.

This book is at an elementary level, and is suitable for students aged 13–18 years. The idea of iteration is introduced together with various associated notions (fixed points, orbits, cycles, limit points, convergence, solution of equations, cobwebbing, and so on). A large number of examples are studied from the world of arithmetic, algebra and geometry.

2009 • 236 pp. • Paperback
978-81-7371-626-3 • Rs. 295.00

Gateway to Modern Mathematics, A: Adventures in Iteration II

Shirali, Shailesh A.



This is the concluding part of the two-volume work on iterations.

The present work continues the study of iterations, started in *Iteration I*, but at a higher level. It examines the insights on iteration provided by differential calculus. Various approaches to the numerical solution of equations using iterations are studied. The book includes a brief account of two fascinating discoveries made in recent years—the theorems of Li and Yorke, and of Sakovskii. Julia sets of fractional linear maps and quadratic maps, and some associated notions, including the famous Mandelbrot set are introduced.

2010 • 260 pp. • Paperback
978-81-7371-692-8 • Rs. 350.00

MATHEMATICAL MARVELS

(A series by Shirali, Shailesh A.)

Adventures in Problem Solving

This book deals with an important area in mathematics—Problem Solving—making it an exciting adventure. Having been associated with the Mathematical Olympiad programme since its inception in India, the author has drawn a lot on this experience in terms of material as well as in terms of the lucid style of writing. In this book, which is addressed to problem buffs, you will find many topics in ‘serious’ and ‘recreational’ mathematics developed through problems (surds, logarithms, geometry, inequalities, magic squares, cryptarithms, logic, counting, number theory, games such as Nim, . . .). It will be particularly useful to students who wish to appear for the Mathematical Olympiads.

2002 • 328 pp. • Paperback
978-81-7371-413-9 • Rs. 295.00

First Steps in Number Theory: A Primer on Divisibility

This book deals with tests of divisibility and the rich theory behind them. Along the way, the reader will study a subject called Number Theory. To study this book, all that is required is familiarity with elementary arithmetic and algebra (addition and subtraction of algebraic expressions, the laws of exponents, the idea of prime factorization of an integer, the notion of relative primeness of two integers, etc.); in short, material which would normally be covered in grades 7–9 in most countries. Plenty of exercises are scattered throughout the book, with solutions at the end.

2000 • 200 pp. • Paperback
978-81-7371-368-2 • Rs. 225.00

Primer on Logarithms, A

The book describes how logarithms are used in scales of measurement: for intensity of sound (decibel scale), intensity of earthquakes (Richter scale), level of acidity of a solvent (pH level), brightness of stars (absolute and apparent magnitude). The key properties of the log function are presented, those that make it so attractive and so indispensable in science—for describing population growth, radioactivity, cooling, etc. This book will be particularly useful to students who wish to appear for the Mathematical Olympiads. The presentation is enhanced with snippets and illustrated by line drawings.

2002 • 200 pp. • Paperback
978-81-7371-414-6 • Rs. 225.00

Primer on Number Sequences, A

This book offers an excursion into the world of number sequences, objects that occur widely all through Mathematics. Part I deals with the generating formula of a sequence, and Part II with individual sequences such as the squares, the cubes, the primes, the unit fractions, the Fibonacci numbers, and so on. The book is aimed at students and general readers. It will be particularly useful to students who wish to appear for the Mathematical Olympiads.

2001 • 172 pp. • Paperback
978-81-7371-369-9 • Rs. 320.00

MATHEMATICAL WORLD

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This exciting series brings the beauty and captivation of mathematics to the undergraduate, to the mathematics teacher, to the scientist or engineer, and to the lay reader with a strong interest in mathematics. It features well-written, challenging expository works that capture the fascination and usefulness of mathematics.

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Essays on Numbers and Figures*Prasolov, V.V.*

This book contains 20 essays, each dealing with a separate mathematical topic. The topics range from brilliant mathematical statements with interesting proofs, to simple and effective methods of problem-solving, to interesting properties of polynomials, to exceptional points of the triangle. The essays are independent of one another for the most part, and each presents a vivid mathematical result that led to current research in number theory, geometry, polynomial algebra, or topology.

2002 • 86 pp. • Paperback
978-81-7371-419-1 • Rs. 150.00

Fixed Points*Shashkin, Yu. A.*

The theory of fixed points belongs to topology, a part of mathematics created at the end of the nineteenth century, and makes extensive use of such topological notions as continuity, compactness, homotopy and the degree of a mapping. The subject of this book is essentially one single problem: whether a closed interval, square, disc or sphere has the fixed point property.

1998 • 88 pp. • Paperback
978-81-7371-120-6 • Rs. 150.00

Groups and Symmetry:*A Guide to Discovering Mathematics**Farmer, D.*

The subject studied here is the mathematics behind the idea of symmetry, but the methods and ideas apply to all of mathematics. The only prerequisites are enthusiasm and a knowledge of basic high-school maths.

1998 • 112 pp. • Paperback
978-81-7371-107-7 • Rs. 175.00

Order Online: www.universitiespress.com

Intuitive Topology*Prasolov, V.V.*

This is an introductory course on topology and begins by defining the main notions in a tangible and perceptible way, and then progressing to more precise and rigorous definitions and results, reaching the level of fairly sophisticated yet completely understandable proofs. An important feature of the book is that it deals mainly with construction of objects (like surfaces, knots and links in space) and maps between these objects, rather than with general theorems. It contains a number of illustrations and problems with solutions.

1998 • 104 pp. • Paperback
978-81-7371-118-3 • Rs. 175.00

Knots and Surfaces:*A Guide to Discovering Mathematics**Farmer, D. & Stanford, T.*

The subject studied here is the mathematics behind the idea of connectedness, but the methods and ideas apply to all of mathematics.

1998 • 112 pp. • Paperback
978-81-7371-110-7 • Rs. 165.00

KVANT SELECTA:*Algebra and Analysis**Tabachnikov, Serge (Ed.)*

These two books are the first volumes of articles published from 1970 to 1990 in the Russian journal, *Kvant*. The influence of this magazine on mathematics and physics education in Russia is unmatched. Articles selected for these two volumes are written by leading Russian mathematicians and expositors. Some articles contain classical mathematical gems still used in university curriculae today. The articles in these books are written so as to present genuine mathematics in a conceptual, entertaining, and accessible way. The volumes are designed to be used by students and

teachers who love mathematics and want to study its various aspects, thus deepening and expanding the school curriculum. The articles in the first volume are mainly devoted to various topics in number theory, and the second volume treats diverse aspects of analysis and algebra.

Volume 1
2002 • 168 pp. • Paperback
978-81-7371-417-7 • Rs. 225.00

Volume 2
2002 • 176 pp. • Paperback
978-81-7371-418-4 • Rs. 225.00

Mathematical Circles*(Russian Experience)**Fomin, D., Genkin, S. & Itenberg, I.*

This book was produced by a remarkable cultural circumstance in the former Soviet Union which fostered the creation of groups of students, teachers, and mathematicians called *Mathematical Circles*. The work is predicated on the idea that studying mathematics can generate the same enthusiasm as playing a team sport—without necessarily being competitive. This book is intended for both students and teachers who love mathematics and want to study its various branches beyond the limits of the school curriculum. It is also a book of mathematical recreation and, at the same time, a book containing vast theoretical and problem material in the main areas of what the authors consider to be 'extracurricular mathematics'.

1998 • 288 pp. • Paperback
978-81-7371-115-2 • Rs. 275.00

Primer of Mathematical Writing, A*Krantz, S.G.*

This book is about writing in the professional mathematical environment. There are few people equal to this task, yet Steven Krantz is one who

qualifies. While the book is nominally about writing, it is also about how to function in the mathematical profession. Krantz has produced a quality work which makes evident the power and significance of writing in the mathematical profession.

1998 • 240 pp. • Paperback
978-81-7371-127-5 • Rs. 175.00

Stories about Maxima and Minima

Tikhomirov, V.M.

This book aims to acquaint the reader with the whole circle of ideas and provide an understanding of how and why a mathematical theory is born. In Part I the reader will get to know many concrete problems and, in the course of the discussion of their solutions, will get to know the creative work of some of the best mathematicians of the past. In Part II the author introduces a method to solve maximum and minimum problems that originated with Lagrange and concludes by solving all the problems that are dealt with in Part I (problems marked by the dissimilarity of their solutions) by means of a single general method, in a standard way, by using one and the same solution.

1998 • 200 pp. • Paperback
978-81-7371-121-3 • Rs. 200.00

Techniques of Problem Solving

Krantz, S.G.

The purpose of this book is to teach the basic principles of problem solving, including both mathematical and non-mathematical problems. Taking a direct and practical approach to the subject matter, Krantz's book stands apart from others like it in that it incorporates exercises throughout the text. Additional problems are included for readers to tackle at the end of each chapter. There are more than 350 problems in all. A Solutions Manual

to most end-of-chapter exercises is available.

1998 • 480 pp. • Paperback
978-81-7371-116-9 • Rs. 495.00

Solutions Manual for Techniques of Problem Solving

Fernández, L. & Gooransarab, H.

This manual contains solutions to most of the exercises in the book *Techniques of Problem Solving* by Steven G. Krantz. It is essential that this manual be used only as a reference, and never as a way to learn how to solve the exercises. It is strongly encouraged never to look up the solution of any exercise before attempting to solve it. The 'attempt time' will always be as rewarding to the student—or maybe more—as solving the exercise itself.

1998 • 200 pp. • Paperback
978-81-7371-117-6 • Rs. 225.00

RECREATIONAL MATHEMATICS

This series of books is for those interested in recreational mathematics. Whether a newcomer or an old-timer in the field, each reader will find in these books a brand new experience. The books in this series are collections of closely-related articles from a magazine, *The Journal of Recreational Mathematics*.

At Last !! Encoded Totals Second Addition

Kahan, S.

This long-awaited sequel to *Have Some Sums to Solve* deals with alphametics or cryptarithms interspersed with fascinating facts in Number Theory. The appeal of these puzzles can really be traced to the fact that achieving success is virtually independent of one's mathematical prowess.

1998 • 140 pp. • Paperback
978-81-7371-138-1 • Rs. 150.00

Have Some Sums to Solve

Kahan, S.

This fine publication, which enjoys a worldwide circulation, presents stimulating articles and problems dealing with all facets of the world of recreational mathematics.

1998 • 128 pp. • Paperback
978-81-7371-137-4 • Rs. 135.00

Mathematical Solitaires and Games

Schwartz, B.L.

Solving games in combinatorial geometry requires an ability to imagine the various possibilities that are allowed. Mathematical toys made by modelling objects, shapes, colours, numbers and arrangements have been used for solitaire amusement or as part of competitive games.

1998 • 160 pp. • Paperback
978-81-7371-136-7 • Rs. 150.00

Take a Look at a Good Book

Kahan, S.

This book is the third collection of additive alphametics for the connoisseur, the major difference being the prevalence of 'wider' ideal doubly-true alphametics, wherein the sums span nine or more columns.

1998 • 140 pp. • Paperback
978-81-7371-139-8 • Rs. 125.00

SYSTEMS, MODELS, INFORMATICS AND CONTROL (SMIC)

The series Systems, Models, Informatics and Control (SMIC) encompasses books in the broad areas of dynamical systems; mathematical modelling in actuarial, biological, behavioural, physical, sociological and engineering

sciences; economics and finance; artificial intelligence, bio informatics, data warehousing and mining; neural networks and their implementations; and control theory and robotics.

Introduction to Mathematical Computer Science, An

Viswanath, Kasturi

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: 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

**2008 • 304 pp. • Paperback
978-81-7371-630-0 • Rs. 425.00**



PHYSICS

Classical Mechanics

Srinivasa Rao, K.N.

An attempt is made in this book to present a logical development of mechanics starting from its basic principles, and it may be regarded as a companion volume to the standard texts by well-known authors.

While the material on rigid bodies and analytical mechanics can be taught at the postgraduate level, selected topics from the earlier chapters serve as instructional material even at lower levels. Another feature of the book is the unusually large number of worked examples to enable the student to gain a deeper insight into the basic principles of mechanics.

Contents: Kinematics of a material point | Change of frame of reference | Dynamics of a material point (inertial frame) | Dynamics of relative motion (non-inertial frame) | Rigid bodies—mathematical preliminaries | Rigid bodies—kinematics | Rigid bodies—dynamics | Elements of analytical mechanics | Small oscillations of mechanical systems

2003 • 360 pp. • Paperback
978-81-7371-436-8 • Rs. 450.00

Deterministic Chaos:

Complex Chance out of Simple Necessity

Kumar, N.

This book defines, describes, and prescribes the newly emerged paradigm of complexity of change—how a simple system ruled by a deterministic law can evolve in a manner too complex to predict in detail in the long run. After explaining, through examples, the underlying idea of sensitive dependence on initial conditions caused by non-linearity, it describes the powerful qualitative techniques. The emphasis is on robust qualitative methods, and mathematics has been kept to a bare minimum.

1996 • 112 pp. • Paperback
978-81-7371-042-1 • Rs. 130.00

Elements of Mechanics

Reddy, K.R., Raghavan, S. & Sarma, D.V.N.

The book begins with vector analysis which should be treated as a resource chapter. The concept of the rate of change of a vector plays an important role throughout mechanics. Analytical as well as geometrical treatment of vectors are presented for visualisation of the dynamical motions, specifically of rotational dynamics. The rotating coordinate system is used to illustrate the nature of non-inertial coordinate systems to avoid confusion between forces and accelerations.

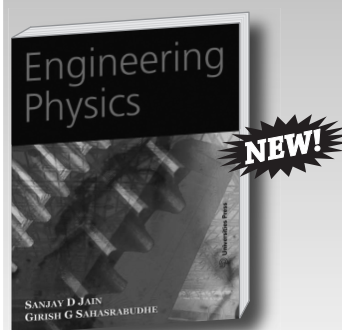
The book also attempts to emphasise the connection between relativity and classical thought in a separate chapter on the special theory of relativity.

Contents: Vector analysis | Motion of a particle | Central force | Gravity and the two-body problem | Scattering | Motion in non-inertial frames | Motion of a rigid body | Dynamic of a rigid body | Lagrange and hamilton equations | Motion of fluids | Special theory of relativity | Four-vectors and relativistic invariance | Appendix to Chapter 12

1994 • 348 pp. • Paperback
978-81-7371-019-3 • Rs. 295.00

Engineering Physics

Jain, Sanjay D. & Sahasrabudhe, Girish G.



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:

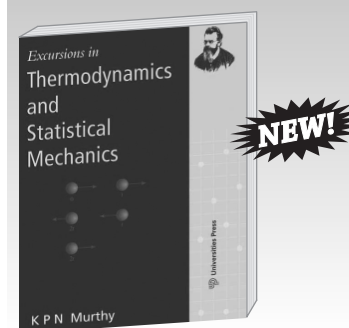
- The historical development of the subject is traced to show interesting links between the various topics.
- Theory and experiment are integrated and learning through scientific method is emphasised by seeking agreement between theory and experiment.
- Experiments are included at appropriate places 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

2010 • 608 pp. • Paperback
978-81-7371-678-2 • Rs. 375.00

Excursions in Thermodynamics and Statistical Mechanics

Murthy, K.P.N.



The book provides a pedagogical introduction to the history of concepts in heat, thermodynamics and statistical mechanics. The selection of topics is excellent; the prose is reader-friendly; the subject matter of the book is of fundamental importance to all students of science. The book motivates, excites and at times surprises the reader. The book is primarily on basic concepts and modern ideas. Some of the concepts described in the book are quite advanced, but they have been rendered understandable to undergraduate and perhaps to even pre-university students.

2009 • 152 pp. • Paperback
978-81-7371-651-5 • Rs. 190.00

From Clockwork to Crapshot:

A History of Physics

Newton, Roger G.

The book provides the perspective needed to understand contemporary developments in physics in relation to philosophical traditions as far back as ancient Greece.

Roger G Newton presents a history of physics from the early beginning to our day—with the associated mathematics, astronomy, and chemistry. Along the way, he gives brief explanations of the scientific concepts at issue, biographical thumbnail sketches of the protagonists, and descriptions of the new instruments that enabled scientists to make their discoveries. He traces a profound transformation from a deterministic explanation of the world—accepted at least since the time of the ancient Greek and Taoist Chinese civilizations—to the notion of probability, enshrined as the very basis of science with the quantum evolution at the beginning of the twentieth century. This brought about a fundamental shift in the focus of physicists—from dynamics or motion to the underlying architecture of the universe. Their new goal—to explain being rather than change—may well be

the defining characteristic of physics in the twenty-first century.

2008 • 352 pp. • Paperback
978-81-7371-625-6 • Rs. 350.00

Frontiers of Fundamental Physics

Sidharth, B.G. & Burinskii (Eds.) Vol. 1
Sidharth, B.G. (Ed.) Vol. 2

These volumes contributed by distinguished researchers worldwide are an overview of the recent developments in the challenging realm of the unification theory of Cosmology, Quantum gravity, Particle physics, General relativity and Gravitation complexity theory, evolutionary models, astro-particle and high-energy physics. Theoretical and experimental physicists and philosophers will find this book a valuable and essential resource.

Volume 1

2001 • 191 pp. • Paperback
978-81-7371-154-1 • Rs. 550.00

Volume 2

2001 • 204 pp. • Paperback
978-81-7371-249-4 • Rs. 550.00

Frontiers of Fundamental Physics (Vol. 3)

Sidharth, B.G. (Ed.)

The topics covered in the book are in the realm of complexity theory, evolutionary models, astro-particle and high-energy physics. Of general interest to the every reader will be the paper describing the boldly innovative theories of physics beyond the standard model by Nobel Laureate Charles Townes.

2007 • 376 pp. • Paperback
978-81-7371-577-8 • Rs. 550.00

Frontiers in Materials Science

Raj, Baldev & Bhanu Sankara Rao, K.

This volume presents contributions by a galaxy of eminent scientists and technologists from the world over in

a broad spectrum of areas in materials science, providing a global perspective on complex issues of current concern and the direction of research in these areas. The topics covered include nanocrystalline materials, mechanical behaviour of advanced materials, development and processing of intermetallics, composites and ceramics, welding science and technology, corrosion and surface engineering, science and engineering of bio-materials, testing and evaluation of advanced metallic and intermetallic materials, computational materials science, teaching of material science.

2004 • 876 pp. • Paperback
978-81-7371-507-5 • Rs. 1100.00

Geometrical and Physical Optics

Longhurst, R.S.

First published in India in 1986, this book is intended primarily for undergraduate students of physics. It will also be useful for postgraduate students specializing in optics. This revised edition incorporates new material, including the techniques of matrix algebra and Fourier methods in solving problems in optics. The chapter on photometry has been revised. Important problems have been outlined along with comments, at the end of the book.

1986 • 651 pp. • Paperback
978-81-250-1623-6 • Rs. 395.00

How and Why in Basic Mechanics

Kumar, A. & Barve, S.

Among the formal physics textbooks, problem manuals and general expository books lies the domain of non-formal physics—the world of content-specific strategies and styles of reasoning that practising physicists employ but do not fully articulate in print. This book tries to capture some elements of this world through the medium of a teacher – student dialogue which runs through the many conceptual barriers that most students and teachers face in different

topics of physics, and offers helpful points, clarifications and insights.

2002 • 296 pp. • Paperback
978-81-7371-420-7 • Rs. 325.00

Introduction to Mechanics

Verma, Mahendra K.

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.

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: 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

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

2008 • 356 pp. • Paperback
978-81-7371-627-0 • Rs. 290.00

Introduction to Metallurgy, An (Second Edition)

Cottrell, Sir Alan

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: The atomic nucleus | Atomic structure | Chemical bonding | 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

Also relevant to: Metallurgy

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Introductory AC Circuit Theory

Mann, K. & Russell, G.J.

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 1–6, 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 degree in physics. The book gives a thorough

grounding in the fundamental concepts as the basis of such a course.

Contents: 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

2000 • 224 pp. • Paperback
978-81-7371-325-5 • Rs. 225.00

Lasers: The New Technology of Light

Billings, C.

Once the stuff of science fiction legend, lasers are now employed for everything, from clocking the speed of moving traffic to performing delicate eye surgery. This book addresses the basic questions—What is a laser? What are the theories about light?—and gives the details about different types of lasers and how they are used. It also includes information about the pioneers in the field and about how lasers are employed in medicine, the military, industry, research, and communications.

Also relevant to: Electrical engineering | Physics

2000 • 128 pp. • Paperback
978-81-7371-344-6 • Rs. 175.00

Mathematical Methods in Classical and Quantum Physics

Dass, Tulsi & Sharma, S.K.

The book is intended to provide an adequate background for various theoretical physics courses, especially those in classical mechanics, electrodynamics, quantum mechanics and statistical physics. Each topic is dealt with in a generally self-contained manner and the text is interspersed with a number of solved examples and a large number of exercise problems.

Contents: Vector analysis | Matrices and linear vector spaces | Tensors | Complex variables | Ordinary differential equations | Special functions | Calculus of variations |

Function spaces, orthogonal expansions and Sturm – Liouville theory | Integral transforms: Generalized functions | Partial differential equations | Green's functions | Probability and statistics | Elements of group theory | Appendix

1998 • 716 pp. • Paperback
978-81-7371-089-6 • Rs. 625.00

Mathematical Physics:

Advanced Topics

Joglekar, S.D.

This is the companion volume to *Mathematical Physics: The Basics*. The *Basics* covered topics like vectors, tensors, Cartesian coordinates, Lorentz tensors, curvilinear coordinates, linear vector spaces, linear operators, matrices, complex variables and their applications. This book *Topics* covers more advanced topics: ODE, gamma and beta functions, Bessel functions, spherical harmonics and special functions, partial differential equations, generalised functions, and group theory. Together, the two volumes cover the subject of mathematical physics for a PG course in physical sciences.

Contents: Ordinary differential equations | Gamma (factorial) and beta functions | Bessel functions | Some special functions and spherical harmonics | Partial differential equations | Generalized functions, the Dirac delta function and the Fourier transform | Group theory | Appendix

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

2006 • 264 pp. • Paperback
978-81-7371-560-0 • Rs. 280.00

Mathematical Physics:

The Basics

Joglekar, S.D.

This is the first of a two-volume set which covers the basic mathematical techniques that are essential at the master's level in physics and chemistry. The basic underlying preparation needed for any research student in either branch.

This volume deals with vectors, tensors, Cartesian coordinates, Lorentz tensors, curvilinear coordinates, linear vector spaces, linear operators, matrices, complex variables and their applications at an advanced level.

Contents: Coordinate transformations, vectors and Cartesian tensors | Lorentz transformation, 4-vectors and 4-tensors | Curvilinear coordinates | Linear vector spaces I | Linear vector spaces II: Linear operators | Complex variables I | Complex variables II | Complex variables III

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

2005 • 256 pp. • Paperback
978-81-7371-422-1 • Rs. 275.00

Monte Carlo Methods in Statistical Physics

Murthy, K.P.N.

This book elucidates the methodology of the Monte Carlo technique starting from the very beginning, and leads the reader to a level where he or she can take it up for serious research projects. Enough background material has been provided to make the text self-contained; there are several simple examples from physics that lucidly illustrate the concept. The style of presentation is informal yet informative, and conceptual complexity has been handled in a user-friendly manner without sacrificing logical rigour. Students should find the presentation absorbing and educative.

Contents: Prologue | What is a Monte Carlo method? | Generation of a sequence of pseudo random numbers | How do we know a sequence of numbers is random? | Random sampling techniques | Monte Carlo integration | Basic principle of importance sampling | Using spin model | How do we simulate an using spin system? | Markov chain | Metropolis algorithm | Monte Carlo averages and error bars | How do an using spin system behave in the vicinity of phase transition? | Finite size scaling | What is the n-fold way? | Critical slowing down | Error bars from correlated data: blocking

technique | What is percolation? | Swendsen – Wang algorithm | Hoshen – Kopelman cluster counting algorithm | What are the improvements to the Swendsen-Wang cluster algorithm? | Histogram technique | Entropic or multicanonical sampling | Wang – Landau algorithm | Jarzynski's equality | Epilogue | Appendix

2004 • 144 pp. • Paperback
978-81-7371-499-3 • Rs. 195.00

Mysterious Motions and Other Intriguing Phenomena in Physics

Ranganath, G.S.

This book dwells upon intriguing examples and situations that are not generally analysed or discussed in standard textbooks and formal courses in physics. In this book, a majority of the examples are from classical physics, which forms an essential part of our education. Each of the six chapters covers a major area of physics, and is subdivided into sections, each of which has a running theme. The sections encourage the reader to be aware of allied situations, covering a large part of classical physics comprising mechanics, heat, light, elasticity, electricity and magnetism. Attention has been paid to examples that are realistic and meaningful. Special care has been taken to illustrate the central principles of physics through these examples.

2001 • 160 pp. • Paperback
978-81-7371-401-6 • Rs. 225.00

Nuclear Physics

Henderson, H.

This volume explores the relatively new field of nuclear physics. Henderson recounts important discoveries of renowned nuclear physicists and how these discoveries have affected chemistry, physics, medicine, and philosophy in the 20th century.

1999 • 144 pp. • Paperback
978-81-7371-182-4 • Rs. 195.00

Optical Communication

Mukunda Rao, M.

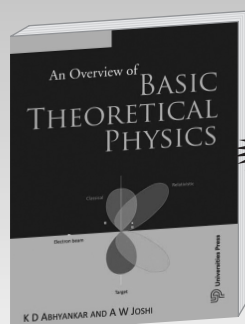
This book deals with optical electronics and communication, and is intended as a core textbook for use both at the undergraduate and postgraduate levels in engineering colleges. The author discusses a number of important aspects like optical sources, transmission mediums, optical fibres, photodetectors,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

Contents: 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

2000 • 208 pp. • Paperback
978-81-7371-090-2 • Rs. 250.00

Overview of Basic Theoretical Physics An

Abhyankar, K.D. & Joshi, A.W.



This book covers both the pre-quantum and post-quantum development of theoretical physics in a straightforward but fairly rigorous style. Unlike most modern physics courses which gloss over the basic physics subjects in

preference to specialised topics like solid state physics, electronics, plasma physics, nanotechnology, cosmology, astrophysics and computer science, this book brings together the various branches of theoretical physics on one platform to give a panoramic view of the subject. The first four chapters of the book deal with the classical topics of Hamiltonian mechanics, theories of relativity, electromagnetic theory of radiation and thermodynamics. They are followed by chapters on atomic spectra and quantum mechanics, spectra of diatomic molecules, quantum theory of radiation, statistical mechanics, and nuclear and particle physics. Guided exercises form a unique feature of this book.

Contents: Hamiltonian mechanics | Special and general theories of relativity | Classical theory of radiation | Thermodynamics | Atomic spectra and quantum mechanics bohr's | Molecular spectra | Quantum theory of radiation | Statistical mechanics | Elements of nuclear and particle physics | Problems |

2009 • 512 pp. • Paperback
978-81-7371-655-3 • Rs. 450.00

Physics of Semiconductor Devices (Revised Edition)

Roy, D.K.

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: 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: Shockley-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

2004 • 488 pp. • Paperback
978-81-7371-494-8 • Rs. 450.00

Princeton Problems in Physics with Solutions

Newbury, N., et al.

Aimed at helping the physics student to develop a solid grasp of basic graduate-

level material, this book presents worked solutions to a wide range of informative problems. These problems have been culled from the preliminary and general examinations created by the physics department at Princeton University for its graduate programme. The authors, all students who have successfully completed the examinations, selected these problems on the basis of usefulness, interest, and originality, and have provided highly detailed solutions to each one. The first four chapters pose problems in the areas of mechanics, electricity and magnetism, quantum mechanics, and thermodynamics and statistical mechanics, thereby serving as a review of material typically covered in undergraduate courses. Later chapters deal with material new to most first-year graduate students, challenging them on such topics as condensed matter, relativity and astrophysics, nuclear physics, elementary particles, and atomic and general physics.

2000 • 336 pp. • Paperback
978-81-7371-277-7 • Rs. 325.00

QED and the Men Who Made It:

Dyson, Feynman, Schwinger and Tomonaga

Schweber, S.S.

This book covers the development of quantum electrodynamics from its beginning to the present. It is a book full of extraordinary riches, replete with abundantly detailed accounts of the scientific reasoning of the principal contributors, with lengthy quotations from original sources, and with a frank but loving presentation of their personalities.

2001 • 764 pp. • Paperback
978-81-7371-365-1 • Rs. 900.00

QED: The Strange Theory **of Light and Matter**

Feynman, R.

This book is a straightforward, honest explanation of a rather difficult subject—

the theory of quantum electrodynamics—for a non-technical audience. It is designed to give the interested reader an appreciation for the kind of thinking that physicists have resorted to in order to explain how Nature behaves. It is a record of the lectures on quantum electrodynamics given at UCLA by Richard Feynman. If you are planning to study physics (or are already doing so), there is nothing in this book that has to be ‘unlearned’: it is a complete description, accurate in every detail, of a framework onto which more advanced concepts can be attached without modification. For those of you who have already studied physics, it is a revelation of what you were really doing when you were making all those complicated calculations.

1999 • 172 pp. • Paperback
978-81-7371-211-1 • Rs. 190.00

Quantum Field Theory:

In a Nutshell

Zee, A.

An esteemed researcher and acclaimed popular author takes up the challenge of providing a clear, relatively brief, and fully up-to-date introduction to one of the most vital but notoriously difficult subjects in theoretical physics. A quantum field theory text for the twenty-first century, this book makes the essential tool of modern theoretical physics available to any student who has completed a course on quantum mechanics and is eager to go on.

Stressing critical ideas and insights, Zee uses numerous examples to lead students to a true conceptual understanding of quantum field theory—what it means and what it can do. He covers an unusually diverse range of topics, including various contemporary developments, while guiding readers through thoughtfully-designed problems. In contrast to previous texts, Zee incorporates gravity from the outset and discusses the innovative use of quantum field theory in modern condensed matter

theory. Offering a remarkably accessible conceptual introduction, this text will be widely welcomed and used.

2004 • 536 pp. • Paperback
978-81-7371-512-9 • Rs. 425.00

Quantum Generations:

A History of Physics in the Twentieth Century

Kragh, H.

The past century has seen the rise of quantum mechanics, relativity, cosmology, particle physics, and solid-state physics, among other fields. These subjects have fundamentally changed our understanding of space, time, and matter. This book is a rich, erudite history of physics from the end of the nineteenth century to the end of the twentieth. It includes developments at the physics-applied|physics-technology interface and gives an unusually comprehensive and balanced account of twentieth-century physics with a sure sense of the broad contours of historical change. It is a fitting tribute to the scientists who have played such a decisive role in the making of the modern world.

2001 • 512 pp. • Paperback
978-81-7371-367-5 • Rs. 525.00

Quantum Mechanics

Pradhan, Trilochan

This book presents a novel treatment of some unusual topics of non-relativistic theory of quantum mechanics, not often covered in classic texts. Notable among these are the first quantised theory of photons and neutrons (most books give the second quantised theory); Bohr–Sommerfeld ‘action’ as differential operators with their eigenvalues n and l and their corresponding eigenfunctions; parabolic and parafermi symmetries of identical particles; Dirac’s initiation of Lagrangian formulation of quantum mechanics (also known as transformation theory) and its elaboration and

completion by Feynman; topological phase of the wavefunction in Bohm–Aharonov, Aharonov–Casher and neutron interferometer experiments (examples of the Berry phase); and quantum beats such as Stark and exchange oscillations similar to $\overline{K}_0 K_0$ and neutrino oscillations in particle physics.

Distributed worldwide (except India) by Anshan Limited, UK

**2008 • 252 pp. • Paperback
978-81-7371-624-9 • Rs. 350.00**

Quantum Philosophy:

Understanding and Interpreting Contemporary Science

Omnes, R.

Roland Omnes takes us from the academies of ancient Greece to the laboratories of modern science as he seeks to rebuild the foundations of the philosophy of knowledge. One of the world's leading quantum physicists, Omnes reviews the history and recent development of mathematics, logic, and the physical sciences to show that current work in quantum theory offers new answers to questions that have puzzled philosophers for centuries. It is a profound work of contemporary science and philosophy and an eloquent history of the long struggle to understand the nature of the world and of knowledge itself.

**2000 • 316 pp. • Paperback
978-81-7371-270-8 • Rs. 400.00**

Schrödinger's Kittens and The Search for Reality

Gribbin, J.

In this fascinating book, *John Gribbin* presents the latest evidence about the nature of light, the phenomenon that is the key ingredient in both quantum theory and relativity. The 'kittens' of his title are the offspring of Schrödinger's famously indeterminate cat, and their adventures as they are carried to opposite

ends of the universe, are a neat way of visualizing the many perplexing paradoxes of the new view of reality. All of this is of much more than just theoretical interest. The practical applications are equally astounding, as John Gribbin describes the serious possibility that quantum theory could eventually be used to develop a Star Trek-style teleportation machine, and how it has already found applications in the development of uncrackable codes.

**1999 • 272 pp. • Paperback
978-81-7371-242-5 • Rs. 275.00**

Shock Waves: Proceedings of the 25th International Symposium on Shock Waves-ISSW25, Bangalore, India

Jagadeesh, G., Arunan, E. & Reddy, K.P.J. (Eds.)

A shock wave is a phenomenon in the realm of fluid mechanics, characterised by a sudden change in the characteristics of the medium, such as pressure, temperature and speed. It may arise at explosions, detonation, supersonic movements of bodies, powerful electric discharges, etc. The scope of the research pertaining to this phenomena varies from basic shock wave phenomena in gases, liquids and solids to their interdisciplinary applications in earth sciences (e.g., to clarify the mechanism of volcanic eruption and to predict and overcome blast disasters), medical treatment (in urology, orthopaedics, rheumatology, cardiology, gastroenterology, cancer treatment, orthopaedic surgery, neuro-surgery, etc), and industry (automobile, semiconductor, space, etc).

The topics covered span a wide range of interdisciplinary areas of research in shock waves including hypersonic, scramjet engine development; space travel; and physical, chemical, biological and medical applications of shock waves.

This book will be an invaluable reference for researchers, particularly in fluid dynamics, and has relevance to

the sciences (physics, chemistry, life sciences) and engineering (mechanical, aerospace, biomedical, defence, space). Departmental libraries of universities, research centres, defence labs, department of space and industries with R&D facilities will find this book useful.

**2006 • 1178 pp. • Hardback
978-81-7371-571-6 • Rs. 4350.00**

Space and Time to Spacetime

Prasanna, A.R.

This book is intended to familiarise readers who have some background in undergraduate/graduate physics with the subject of relativity—both special and general. It traces the history of the development of ideas associated with the subject from the late nineteenth century as expressed by Lorentz and Poincaré, leading to Einstein's paper of 1905 on special relativity, and ends with a sketch of the current status of the subject as regards to its role in physics today. The book is written in a narrative style, but for some mathematics and equations which are absolutely necessary and which have been made self-explanatory.

**2008 • 212 pp. • Paperback
978-81-7371-629-4 • Rs. 310.00**

Statistical Mechanics:

An Elementary Outline (Revised Edition)

Lahiri, Avijith

Compared to the previous edition where the quantum theoretic development of the subject was chosen from the very beginning, the present edition chooses the classical theory as the launching pad by introducing a number of key concepts so as to make the subject accessible to a wider section of readers. At the same time, the technical soundness of presentation has been raised to a higher level by way of using the concepts of the mixed state and the reduced state as the basic building blocks of

the theory and of relating equilibrium statistical mechanics to the long-term time evolution of the reduced state. The author avoids technically rigorous, formal analysis in favour of offering a clear understanding at a semi-intuitive level. The book combines soundness of presentation with lucidity, so essential for the student aiming at a serious but enjoyable first exposure to the subject.

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**2008 • 290 pp. • Paperback
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Superconductivity Today:

An Elementary Introduction
(Second Edition)

Ramakrishnan, T.V. & Rao, C.N.R.

This book explains the fascinating subject of superconductivity in an easily understandable language. It exhaustively reviews the developments in this area, covering both experimental results and present theoretical understanding, and arouses the excitement of readers and research workers by highlighting new areas of its application.

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Turning the World Inside Out and 174 Other Simple Physics Demonstrations

Ehrlich, Robert

Here is a collection of physics demonstrations costing very little to produce, yet illustrating key concepts in amazingly simple and playful ways. Intended for instructors, students, and curious lay readers, these demonstrations make use of easily accessible, everyday items. Each demonstration outlines the objective, the equipment needed, the procedure and in many instances, ways for a teacher to perform the demonstration on an overhead projector.

These diverse and flexible demonstrations will serve a wide range of educational levels, from middle school physical science to university physics.

**2000 • 244 pp. • Paperback
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Ubiquity: The Physics of Complex Systems

Buchanan, Mark

Scientists have recently discovered a new law of nature. Its footprints are virtually everywhere. Wherever we look, the world appears to be modeled on a simple template: like a steep pile of sand, it is poised on the brink of upheaval, with avalanches—in events, ideas or whatever—following a single universal pattern of change.

This remarkable finding heralds the advent of 'ubiquity', a science whose secret lies in the stuff of the everyday world. *Mark Buchanan* tells the story of the maverick researchers who are exploring the law, their ingenious work and unexpected insights. He shows how this new universal principle will transform our understanding of the science of prediction and make it easier for us to manage and control the future.

At the dawn of a new century we are witnessing the emergence of the biggest new idea in scientific research since chaos and complexity—an idea of tremendous power, beauty and scope, the implications of which go way beyond science. This book, the first to document the discovery and its impact in full detail, will unify the way we think about the world and our place in it.

**2005 • 240 pp. • Paperback
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Universities Press Dictionary of Atomic and Nuclear Physics

Rennie, Richard

Universities Press Dictionary of Atomic and Nuclear Physics contains more than 2000 entries that explain, clearly

and concisely, the most relevant and frequently used terms associated with atomic and nuclear physics. An ideal tool, the dictionary articulates the scope of modern research and discoveries in particle physics, questions of philosophical interest, and applications for nuclear physics in nuclear energy and nuclear medicine.

Among the many topics covered are
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• singularity • magnetism • spectroscopy
• cathode ray • plutonium •
transmutation • half-life • resolving
power • valence bond theory • hydrogen
molecule

More than 40 line drawings and a set of appendices (including a bibliography) help to illustrate many complex concepts, and cross-references guarantee that the reader will waste no time in finding the right definition.

**2006 • 256 pp. • Paperback
978-81-7371-536-5 • Rs. 205.00**

Universities Press Dictionary of Physics

Daintith, J. & Clark, J.O.E. (Eds.)

Extensively revised and expanded, this dictionary contains approximately 3,000 entries that explain, clearly and concisely, the most important and commonly used terms relating to all aspects of physical science. More than 200 new terms reflect new developments in the areas of particle physics, cosmology, low-temperature physics, and quantum theory. An extensive Appendix contains information about chemical elements, symbols for physical quantities, useful conversion factors, and other often-consulted information. More than 80 line drawings illustrate many complex physical principles, and extensive cross-references guarantee that no user will waste time searching for the right definition.

**2000 • 256 pp. • Paperback
978-81-7371-301-9 • Rs. 225.00**

Wavelets: A Primer*Blatter, Christian*

The wavelet transform, with its many applications, has become a major new mathematical technique. It has stimulated research unparalleled since the invention of the Fast Fourier Transform (FFT) and opened new avenues of application in signal processing, image compression, radiology, cardiology, and many other areas. This book grew out of a short course for mathematics students at the ETH in Zurich; it provides a solid, yet accessible, mathematical foundation for those interested in learning about wavelets and pursuing the broad range of applications for which the wavelet transform has proved successful. Numerous illustrations and fully worked-out examples further enhance the value of this exemplary introduction to the field.

Contents: Formulating the problem | Fourier analysis | The continuous wavelet transform | Frames | Multiresolution analysis | Orthonormal wavelets with compact support | References

2003 • 216 pp. • Paperback
978-81-7371-449-8 • Rs. 225.00

Wavelets: Theory, Applications, Implementation*Altaisky, M.V.*

This book aims 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 schemes; 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: Fundamental concepts of wavelets transform | The method of wavelet transform | Wavelets and fractals | Wavelets and functional analysis | Discretization | Applications | Wavelets in mathematical physics | Conclusion

2004 • 164 pp. • Paperback
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ASTROPHYSICS**Astrophysics of the Solar System***Abhyankar, K.D.*

This book attempts to broadly deal with the mechanics and dynamics of the Solar System with additional emphasis on celestial mechanics. Important planetary laws and theories like the geocentric theory, Kepler's laws, Newton's law of gravitation, the catastrophic theories of Moulten, Russel and Schmidt, and the nebular hypothesis of Kant and Laplace are clearly explained. The book also deals with space dynamics and rocket propulsion, solar activities, lunar studies, small bodies and extraterrestrial life.

1999 • 272 pp. • Paperback
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Astrophysics: Stars and Galaxies*Abhyankar, K.D.*

This book introduces the subject of astrophysics to honours and postgraduate students of physics, without the necessity of their being familiar with all the practical details of modern astronomical techniques of observation and deduction of data. The emphasis is on showing how an application of the commonly known laws of physics gives us important information about the properties of celestial objects and phenomena.

Contents: The celestial coordinates | Apparent luminosities of stars | Stellar distances and absolute luminosities | Surface temperature of stars | Masses and radii of stars | Structure of stellar atmospheres | Chemical composition of stellar atmospheres | Internal structure of stars | Stellar evolution | Large scale motions in stellar atmospheres | Stellar magnetic Fields | Hot stars and gaseous nebulae | Distribution of stars in the milky way | Motions of stars in the milky way | Large-scale structure of the milky way | External galaxies | Cosmology | Astronomical Instruments | Space astronomies | Appendices

2001 • 576 pp. • Paperback
978-81-7371-381-1 • Rs. 625.00

Eclipse: A Celestial Shadow Play*Shylaja, B.S. & Madhusudan, H.R.*

This book traces the history of eclipses from ancient records, mythology and folklore, right up to the modern-day, state-of-the-art astronomical research. It also deals with other types of eclipses—the transits, the occultations and eclipses in binary stars, thus giving the reader a comprehensive overview of this extraordinary phenomenon.

1999 • 160 pp. • Paperback
978-81-7371-237-1 • Rs. 200.00

Elements of Cosmology*Narlikar, J.V.*

This book is based on lectures given by the author at a number of universities with the aim of introducing cosmology to students and teachers at the graduate level. Here, cosmology is explained within the framework of Newtonian gravity and mechanics thereby making it readily understandable to students of physics and mathematics at the undergraduate level. The description is up-to-date and includes cosmological models, their physical properties and observational tests.

Contents: The large structure of the universe - Introduction; Structural hierarchy; Hubble's law; Radiation backgrounds;

Exercises | Newtonian Cosmology: Theoretical models - Introduction; Simplifying postulates; Redshift; Luminosity distance; Cosmological models; The cosmological constant; Space – time singularity; The steady state model; Exercises | History of the universe - Matter vs radiation-dominated universe; The hot universe; The very early universe; The early universe; Conclusion; Exercises | Observational tests of cosmological models - Introduction; Tests of cosmological models based on observations of the distant parts of the universe; Observations from the nearby universe; Exercises | Present challenges in cosmology - Structure formation; Observational cosmology; Alternative cosmologies | Appendix: Mathematical, Physical and astronomical constants | Suggested further reading

1996 • 104 pp. • Paperback
978-81-7371-043-8 • Rs. 110.00

Indian Astronomy:

An Introduction

Balachandra Rao, S.

This, the first comprehensive book of its kind on Indian Astronomy, is a survey of the development of astronomy in India from the Vedic times to the present day. It aims to create an awareness about Indian Astronomy among interested students and general readers alike. The systematically-planned contents and a lucid style enable the reader to be fairly proficient in the concepts, techniques and computational procedures developed by great Indian astronomers like Aryabhata, Brahmagupta and Bhaskara II, over more than a millennium and a half. It provides, for the first time, computer programs for the computation of true planetary positions, lunar and solar eclipses, and contains a detailed and very useful bibliography.

1999 • 124 pp. • Paperback
978-81-7371-205-0 • Rs. 275.00

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MATERIAL SCIENCE

Basic Course in Crystallography, A

Tareen, J.A.K. & Kutty, T.R.N.

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.

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Amarendra, G., Raj, Baldev & Manghnani, M.H. (Eds.)

Materials Characterization is an important area of fundamental and technological interest. A variety of experimental techniques have been developed over the years for characterizing the physical and chemical properties of materials. This book provides an overview of the recent advances in this area in terms of providing an in-depth review of the latest techniques. It comprises of review articles written by experts in these areas, providing an introduction,

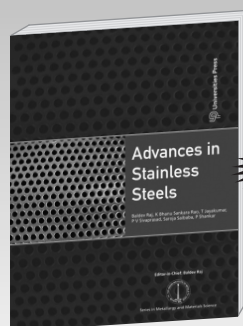
overview of the technique as well as demonstration of their applications to selected problems.

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**2006 • 228 pp. • Hardback
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Advances in Stainless Steel

Baldev Raj & et al (Eds.)



NEW!

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

This book covers a broad spectrum of topics spanning the entire life cycle of stainless steel—from alloy design and characterization to engineering design, fabrication, mechanical properties, corrosion, quality assurance of components, in-service performance assessment, life prediction and failure analysis of materials and components.

The contents provide useful feedback for further developments aimed at effective utilization of this class of materials. The book comprises articles that bring out contemporary developments in stainless steels and is thematically classified into the following sections.

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

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

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

**2010 • 692 pp. • Hardback
978-81-7371-696-6 • Rs. 1995.00**

Frontiers in the Design of Materials

Raj, Baldev, et al. (Eds.)

This book is an ensemble of a unique collection of advanced topics in the field of alloy design and development of advanced materials. The topics cover a wide range from multiscale modeling for alloy design, structural materials to nano materials, quasicrystals, amorphous metallic glasses, design of coatings, carbon based materials, metal foams as well as component|structure integrity. The book has an optimum blend of subjects of interest to physicists, materials scientists, engineers, industry as well as researchers and beginners. There has been significant progress not only in the development of advanced materials but also in understanding their constitution and

behavior with the help of modeling. This book presents a comprehensive view of the latest developments and experimental work on both these fronts and attempts to give direction to future work.

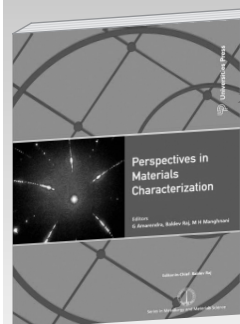
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**2006 • 392 pp. • Hardback
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Perspectives in Materials Characterization

Amarendra, G., Raj, Baldev & Manghnani, M.H. (Eds.)



NEW!

Materials characterization is an important area of fundamental and technological interest. Numerous experimental techniques for determining the physical and chemical properties of materials have developed over the years. Perspectives in Materials Characterization is the companion volume to Advances in Materials Characterization published in 2007. Both volumes comprise of review articles written by experts, providing an introduction and overview of individual characterization techniques, as well as a demonstration of their application to selected problems.

For the first time books providing such a collection of advanced techniques are being made available and will be of use to postgraduates,

researchers, and faculty in the field of metallurgy and materials science.

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POPULAR READING

8 Preposterous Propositions:

From the Genetics of Homosexuality to the Benefits of Global Warming

Ehrlich, Robert

Psychokinesis. In a time when scientific claims can sound as strange as science fiction—and can have a profound effect on individual life or public policy—assessing the merits of a far-out, supposedly scientific idea can be as difficult as it is urgent. Into the breach between helpless gullibility and unyielding scepticism steps physicist Robert Ehrlich, with an indispensable guide to making sense of scientific claims. A series of case studies of some of the most controversial (and for the judging public, deeply vexing) topics in the natural and social sciences, Ehrlich's book serves as a primer for evaluating the evidence for the sort of strange-sounding ideas that can shape our lives.

A much-anticipated follow-up to his popular *Nine Crazy Ideas in Science*, this book takes up issues close to readers' everyday reality. In each case, Ehrlich shows readers how to use the tools of science to judge the accuracy of strange ideas and the trustworthiness of ubiquitous experts. As entertaining as it is instructive, his book will make the work of living wisely a bit easier and more reliable for scientists and non-scientists alike.

**2005 • 352 pp. • Paperback
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Birth of Time, The: How we Measured the Age of the Universe

Gribbin, J.

This is an intriguing tale of false leads, blind alleys, and groping in the semi-dark towards the truth, told by a brilliant science writer who was involved, as a research astronomer, in the final breakthrough.

**2001 • 232 pp. • Paperback
978-81-7371-337-8 • Rs. 350.00**

Companion to the Cosmos

Gribbin, J.

Everybody is intrigued by ideas such as the Big Bang and black holes, and we all want to know how we fit into the Universe at large. This book is a user-friendly guide which nobody interested in the world around us can afford to be without.

**1999 • 624 pp. • Paperback
978-81-7371-245-6 • Rs. 450.00**

Nine Crazy Ideas in Science

Ehrlich, Robert

AIDS is not caused by HIV. Coal and oil are not fossil fuels. Radiation exposure is good for you. These ideas make headlines, but most educated people scoff at them. Yet some of science's most important concepts from gravity to evolution have surfaced from the pool of crazy ideas. Here, a well-known physicist with an affinity for odd ideas applies his open mind to nine controversial propositions on topical subjects. Anyone interested in unorthodox ideas will enjoy this book. And, as a fun way of learning how to think like a scientist, it has enormous educational value.

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Shaping of Indian Science, The ISCA (Indian Science Congress Association) Presidential Addresses

These are a compendium of the speeches of the Presidents of the Indian science congress association (ISCA) from 1914–2003. Through the years, these Presidents have inspired the Congress by their speeches—some of them visionary, some impassioned in their plea for science, but all of them with a message that science must be used for the good of the human race. The Presidents have been eminent personalities in the world of science and have left their mark on the course of science in India. This series was inspired by the belief that these luminaries deserved greater coverage in a reference source devoted exclusively to providing their messages and brief biographical sketches, in the hope that they will urge a wider audience to take up the noble pursuit of science.

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be called the second Creation, or man's attempt to reconstruct Creation.

2001 • 284 pp. • Paperback
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Big and the Small, The Vol. II: From the Microcosm to the Macrocosm: The Fascinating Link between Particle Physics and Cosmology

The *Big and the Small* is a two-volume set in the series *Vignettes in Physics*. It depicts the story of high-energy physics and man's attempt at reconstructing Creation. The narration, laced with glimpses of the history of events and people, makes for riveting reading; the reader is drawn irresistibly to experience the thrill of finding plausible theories—theories that sometimes they seem so audacious that challenge the very limits of human imagination.

While the first volume, *Journey into the Microcosm: The Story of Elementary Particles*, deals with the small, i.e., the world of elementary particles, the second volume, *From the Microcosm to the Macrocosm: The Fascinating Link between Particle Physics and Cosmology*, takes the reader to the other extreme, the big, or the cosmos, and then wraps up the story by briefly describing the fascinating connecting link between the two. In a sense, the small and the big are like the two strands of the DNA; in this case, they form the strands of the DNA of the cosmos itself.

2006 • 232 pp. • Paperback
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This book describes a monumental discovery made by Satyendranath Bose. It also helps the reader take a step closer in understanding Bose—the scientist—and describes the events that surround this exciting discovery.

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Chandrasekhar and His Limit

It is a heartwarming and very inspiring story about Subrahmanyam Chandrasekhar, the most distinguished mathematical physicist India has produced. In a long and remarkable career, Chandrasekhar has done many outstanding things but this book concentrates mostly on one of them, namely, the discovery of the Chandrasekhar Limit.

1992 • 144 pp. • Paperback
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Hot Story, A

This book attempts to explain the terms heat and temperature. But instead of relying mainly on technical explanations that are highly mathematical, the author takes a look at what really lies behind these phenomena.

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Many Phases of Matter, The

This book is about phase transitions. It seeks to unfold the universal connecting link between diverse physical phenomena, all involving a change of state.

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Raman and His Effect

This book deals with the famous Scattering Effect discovered by Sir C.V. Raman. It gives us deep insights into the character of this famous scientist and vividly describes the circumstances surrounding the discovery.

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Saha and His Formula

A great leap forward in unraveling the mysteries of the Sun occurred way back in 1920 when Meghnad Saha made an important discovery that paved the way for a systematic study of stellar atmospheres in general. This book is about that great discovery and the man who made it.

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Why are Things the Way They Are?

This book uses basic calculations to help the student answer questions such as, 'Why is the size of an atom roughly 10⁻⁸ cm and not 1 cm?' or 'Why is the height of Mount Everest 10 km and not 100 km?' In short, 'Why are things the way they are?' This book is an introduction to some methods of making rapid estimates, and shows how estimated answers can be made in just a few steps.

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SPACE SCIENCE TECHNOLOGY

50 Years of Space:

A Global Perspective

Manoranjan Rao, P.V. (Ed.)

On October 4, 1957 the Soviet Union launched the world's first man-made satellite Sputnik-1, opening the doors to a new cosmic era. To commemorate the 50th anniversary of this momentous occasion *50 Years of Space: A Global Perspective* gathers in a single volume, brief histories of all the major space agencies of the world written by people of impeccable credentials.

In the past 50 years, many countries have found their own, unique paths to orbit. The objectives were multi-dimensional – an opportunity for investigating and understanding outer space; a means of showcasing technological superiority; a means to solve social problems.

The essays assembled in this book illustrate the many different solutions that each country or organisation has developed. But today, the countries have realised that to move forward, international cooperation is necessary. This book affords us a means to look backward, learn from our failures, and

surge forward in a direction which will benefit all humanity.

2008 • 316 pp. • Hardback
978-81-7371-600-3 • Rs. 2225.00

Fundamentals of Remote Sensing (Second Edition)

Joseph, George

This book, authored by one of India's most senior and experienced remote sensing experts, covers the gamut of the technology and applications of remote sensing. It is an attempt to present the fundamental concepts covering various stages of remote sensing from data collection to end utilisation, in a manner which can be appreciated by the discipline in which he/she has graduated.

The book also provides an Indian perspective on remote sensing technology and applications by bringing to the fore the way the Indian Remote Sensing (IRS) programme has developed and the unique applications of the technology in India. It also contains a comprehensive bibliography and references as well as a list of useful websites for advanced reading and specialised references on remote sensing.

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: 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 | Geographical information system (GIS) | Appendices

2005 • 488 pp. • Paperback
978-81-7371-535-8 • Rs. 415.00

Next Steps in Exploring Deep Space, The

Huntress, Wes (Ed.)

The purpose of this book is to provide one possible vision for the scientific exploration of space in the first half of the 21st Century. It identifies a set of

useful and achievable destinations – first the Moon, then the Sun–Earth Libration Point L2, Near-Earth Objects and finally Mars, the ultimate destination for humans in the next 50 years. This stepping-stone approach will gradually build the required capabilities and maintain interest and support by achieving important scientific discoveries at every step.

The study that formed the basis for this book was chartered by the International Academy of Astronautics and conducted on a volunteer basis by a small number of individuals, independent

of any government space agency. It is not a strategic implementation plan for any national space program; rather, it is intended to be a vision for the future that can be considered by interested space agencies, hopefully in the context of an international cooperative endeavor.

Publishing of this book is supported by Indian Space Research Organisation (ISRO).

2008 • 164 pp. • Hardback
978-81-7371-602-7 • Rs. 1195.00



CHEMISTRY

Analytical Chemistry

Krupadanam, G.L.D., et al.

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: Evaluation of analytical data - Introduction | Accuracy and precision: Method for their expression | Significant figures and computation | Calibration | Separation methods: solvent extraction - Introduction | Principles and process of solvent extraction | Techniques of solvent extraction | Batch extraction | Continuous extraction of liquids | Extraction of solids | Counter current extraction | Advantages of solvent extraction technique | Separation methods: Chromatography - Introduction | Column chromatography | Thin-layer chromatography (TLC) | Ion-exchange chromatography | Paper chromatography | High-performance liquid chromatography (HPLC) | Instrumental methods of analysis: uv-visible spectroscopy - General features of absorption spectroscopy | Quantitative aspects of UV-visible absorption measurements | Laws of absorption of radiation | General design of instruments for absorbance measurements | Quantitative applications of UV-visible spectroscopy | Extension of Beer's law to mixtures | Analysis of water - Introduction | Water-softening methods for industrial purpose | Formation of scales and sludge | Biological oxygen demand (BOD) and chemical oxygen demand (COD) | Effluent (Sewage) water treatment

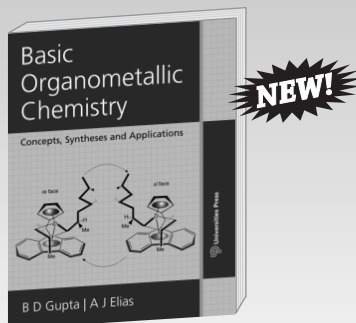
2001 • 216 pp. • Paperback
978-81-7371-385-9 • Rs. 200.00

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Basic Organometallic Chemistry:

Concepts, Syntheses and Applications

Gupta, B.D. & Elias, Anil J.



The objective of this book is to inculcate interest in understanding transition-metal organometallic chemistry. No existing book has covered such a large variety of topics in such detail. The material is up to date and the students or instructors may not be required to look for extra material unless they wish to delve deeper into the subject. *Basic Organometallic Chemistry: Concepts, Syntheses and Applications* can be used by M.Sc chemistry students in particular and by researchers in many areas of chemistry to understand the fundamentals of organometallic chemistry.

The chapters are written using very simple language. The text is lavishly complemented with figures, equations and schemes for easy comprehension. There are a large number of problems and exercises at the end of each chapter with detailed solutions. Several carefully selected and recent references lead the reader to further material. 'Boxed' matter on related material make the text more interesting. Short questions to each chapter provided in the appendix.

Contents: Introduction | The 18 valence electron rule | Metal carbonyls | Neutral spectator ligands: Phosphines and N-heterocyclic carbenes | Alkenes and alkynes as ligands | Carbenes and

carbynes: complexes with metal carbon double and triple bonds | Alkyl, aryl and ligands with higher hapticity | Unique reactions in organometallic chemistry | Ligand substitution reactions, metal-metal bonding and fluxionality in organometallic compounds | Organometallic clusters | Homogeneous catalysis using organometallic compounds | Hydrogenation, hydrosilylation and hydrocyanation of alkenes and asymmetric hydrogenation | Hydroformylation | Methanol carbonylation and olefin oxidation: Monsanto, Cativa and Wacker processes | Olefin metathesis | Palladium catalysed C-C and C-N cross coupling reactions | Olefin polymerisation reactions | Ferrocene: Structure, bonding and reactions | Organometallic polymers | Bioorganometallic chemistry | Appendix 1—Solutions to problems and exercises | Appendix 2—Quick revision questions | Appendix 3—List of abbreviations | Appendix 4—Atomic weights of elements

2010 • 544 pp. • Paperback
978-81-7371-709-3 • Rs. 675.00

Chemical and Electrochemical Energy Systems

Narayan, R. & Viswanathan, B.

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.

1998 • 272 pp. • Paperback
978-81-7371-069-8 • Rs. 270.00

Chemical Process Calculations

Asokan, K.

A range of materials like fuels, fertilisers, processed foods, life-saving pharmaceuticals and filtered clean water are being produced today. Several stages and processes take place 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 are 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 (154 in numbers) with answers are also given for practice.

Contents: 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 oroblems

Also relevant to: Chemical engineering

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

**2007 • 264 pp. • Paperback
978-81-7371-594-5 • Rs. 290.00**

Chemistry of Natural Products: A Laboratory Handbook

Krishnaswamy, N.R.

This volume is a laboratory companion to the author's book, *Chemistry of Natural Products: A Unified Approach*. Chemistry of natural products is a hybrid science combining the theory of organic chemistry with experimentation. Though there is much good source material on the theoretical aspects of the subject, the average undergraduate and postgraduate student remains unexposed to the large amount of published experimental details on isolation, characterisation and synthetic transformations of the wide variety of organic compounds occurring in nature. One reason for this lacuna is that until the advent of spectroscopy, experimentation contained the subjective characteristics of an art and skill handed down from a master to a specific group of

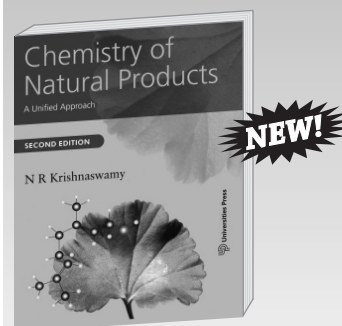
students. Spectroscopy has more or less standardised characterisation techniques. This book contains a judicious combination of both types of data—spectroscopic methods and chemical methods. The main objective is to provide students with experimental details for the successful isolation of different types of natural products. All the experiments have been successfully class-tested.

Contents: Introduction | Structure | Stereochemistry | Reactions and rearrangements | Synthesis | Biosynthesis | Biological significance of secondary metabolites

**2003 • 136 pp. • Paperback
978-81-7371-452-8 • Rs. 125.00**

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

Krishnaswamy, N.R.



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

**2010 • 432 pp. • Paperback
978-81-7371-677-5 • Rs. 475.00**

Collection of Interesting General Chemistry Experiments (Revised Edition)

Elias, Anil J.

This novel collection of twenty-two experiments, covering all areas of practical chemistry, has been introduced for the basic chemistry courses of Indian Institute of Technologies (IITs) and similar courses at other institutions where chemistry is taught at the undergraduate level. The experiments are modern and interesting and can be carried out with the existing facilities in any chemistry undergraduate laboratory. The emphasis is on experiments, which involve chemicals and products encountered in the day-to-day life of an average student. Each experiment also includes a write up on the theoretical

background required to understand the chemistry behind the experiment and to enjoy the experience of doing it in the laboratory.

The new experiments included in this revised edition cover the area of electrochemistry, an important component of under graduate practical chemistry.

Contents: General safety instructions | Experiment 1: Extraction and identification of DNA from green peas and onions | Experiment 2: Preparation of a superabsorbent polymer and exploration of its properties | Experiment 3: Determination of the amount of calcium in milk powder by EDTA complexometry | Experiment 4: Potassium trioxalatoferate III: Synthesis, analysis and photochemistry | Experiment 5: Analysis of kidney stones by permanganometric titration | Experiment 6: Preparation of $[\text{Ni}(\text{NH}_3)_6]^{2+}$ and its analysis by different methods | Experiment 7: Estimation of iodine in iodized common salt using iodometry | Experiment 8: Estimation of phosphoric acid in cola drinks by molybdenum blue method | Experiment 9: Synthesis of fluorescein, a classic fluorescent dye | Experiment 10: Synthesis and chemiluminescence of luminol | Experiment 11: Extraction of caffeine, an alkaloid, from tea leaves | Experiment 12: Diels-Alder reaction of anthracene and maleic anhydride | Experiment 13: Preparation of potash alum from scrap aluminum | Experiment 14: Photochemical reduction of ferric oxalate in cyanotype blue printing | Experiment 15: Paper and column chromatography of plant pigments | Experiment 16: An experiment to determine the energy of activation, E_a | Experiment 17: Determination of partition coefficient of acetic acid in water and butanol | Experiment 18: Aspirin synthesis: Conventional and with microwave assistance | Experiment 19: Kinetics of the iodide-hydrogen peroxide clock reaction | Experiment 20: Acetylation of ferrocene and its purification by column chromatography | Experiment 21: Potentiometric titrations using the pH meter and determination of pI | Experiment 22: Conductometric titrations and determination of dissociation constant | Appendix 1: Strength of solutions in terms of molarity and normality | Appendix 2: Preparation of standard solutions of acids and bases |

Appendix 3: Notes on procurement of chemicals and preparation of solutions

2008 • 160 pp. • Paperback
978-81-7371-599-0 • Rs. 160.00

College Practical Chemistry

Ahluwalia, V.K., Dhingra, S. & Gulati, Adarsh

This book has been written keeping in view the requirements of B.Sc. students of all universities in India. With the vast teaching experience of the authors, the problems and difficulties faced by the students have been identified and solutions/suggestions given. The book contains three sections—inorganic chemistry, organic chemistry and physical chemistry. The authors have endeavoured to present the basic theory and procedure for each experiment to make the students' work in the laboratory more methodical.

Contents: Part I: Inorganic chemistry: Qualitative inorganic analysis | Volumetric analysis | Gravimetric analysis | Preparation of inorganic compounds | Part II: Organic chemistry: Qualitative organic analysis (systematic identification of organic compounds) | Preparation and isolation of organic compounds | Chromatography | Part III: Physical chemistry: Physical methods for determining molar masses | Measurement of viscosities and surface tensions of liquids | Measurement of solubilities | Determination of transition temperatures | Determination of order of a reaction | Adsorption studies | Polyphase heterogeneous equilibria | Thermochemical measurements | Conductance measurements in electrolytes | Potentiometric measurements in chemical systems | Polarography | Polarimetry and photometry

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978-81-7371-506-8 • Rs. 375.00

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Comprehensive Practical Organic Chemistry:

Preparations and Quantitative Analysis

Ahluwalia, V.K. & Aggarwal, R.

In this book on quantitative analysis and reagent preparation, the authors adopt a novel approach—all the preparations have been given in the form of organic reactions in alphabetical order, with their respective reaction mechanisms. The procedures of some preparations are also discussed. Estimation of various compounds and functional groups is also included. A complete chapter is devoted to chromatography, with exercises.

Contents: Section A: Preparations - Acetylation—Acids (carboxylic acids)—Acid anhydrides—Acid chlorides (carboxylic acid chlorides) (acyl halides)—Alkyl halides—Algar – flynn – oyamada oxidation (AFO)—Arndt-eister synthesis—Baeyer – villiger oxidation—Benzoin condensation—Baker – Venkataraman rearrangement—Beckmann rearrangement—Blanc reaction (chloromethylation)—Benzidine rearrangement—Benzil – benzilic acid rearrangement—Bouveault – blanc reduction—Bucherer hydantion synthesis—Carbene addition—Cannizzaro reaction—Chlorosulphonation—Claisen condensation—Claisen rearrangement—Claisen – schmidt condensation—Clemmensen reduction—Combes quinoline synthesis—Coupling—Dakin reaction—Dehydration—Dehydrogenation—Delépine reaction—Diazo reaction (griess diazo reaction)—Drugs—Duff Reaction—Dyes—Dienes synthesis—Doebner modification of knoevenagel condensation—Diels – alder reaction—Doebner reaction—Dieckmann condensation—Elbs persulphate oxidation—Enamine reaction—Erlenmyer-plochl A

2000 • 304 pp. • Paperback
978-81-7371-475-7 • Rs. 250.00

Comprehensive Practical Organic Chemistry:

Qualitative Analysis

Ahluwalia, V.K. & Dhingra, S.

This manual for practical qualitative analysis covers the use of spectroscopic

methods for identification of various functional groups. Comprehensive tables giving methods for the systematic identification of pure specimens, separation of mixtures and compounds, and procedures for the preparation of derivatives are some of the salient features of the book.

Contents: Safety in the laboratory | Introduction | Preliminary examination | Detection of functional groups | Preparation and recrystallisation of derivatives | Application of spectroscopy to the identification of organic compounds | Separation of mixtures | Tables of organic compounds | Preparation of reagent and indicators | Summary of the scheme used for identification of unknown organic compounds | Suggested books for further reading

2000 • 304 pp. • Paperback
978-81-7371-428-3 • Rs. 250.00

Drugs

Krupadanam, G.L.D., et al.

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 can be 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.

2001 • 168 pp. • Paperback
978-81-7371-386-6 • Rs. 165.00

Electronic Absorption Spectroscopy and Related Techniques

Sathyannarayana, D.N.

This book provides a conceptual and experimental basis for the interpretation of electronic absorption spectroscopy and related techniques. The basic theories, instrumentation and interpretation of the spectra of organic and coordination compounds for structural studies are presented step-by-step, in an easily understandable style. Related topics of emission spectroscopies are covered as well.

2001 • 544 pp. • Paperback
978-81-7371-371-2 • Rs. 625.00

Electrostatics of Atoms and Molecules

Gadre, S.R. & Shirsat, R.N.

This book introduces the subject of molecular electrostatics to postgraduate students, teachers and young researchers in chemistry, physics and biology. It discusses rigorous as well as applied aspects of the molecular electrostatic potential (MESP) and provides an essence of relevant mathematical arguments, without going into detailed derivations. A number of colour illustrations highlight the salient features of MESP.

2000 • 188 pp. • Paperback
978-81-7371-296-8 • Rs. 325.00

Fundamentals of Crystal Chemistry

Tareen, J.A.K. & Kutty, T.R.N.

Crystals have fascinated man from time immemorial due to their brilliant colours and symmetry. Early references to the scientific observation of crystal symmetry date back to Johannes Kepler in 1611, Steno Florence in 1869, etc. Today, a study of two fundamental aspects form the basis for an understanding of the chemistry of crystals—the nature

of chemical bonds between atoms and molecules, and the geometry of closely-packed atoms and molecules simplistically assumed to be hard spheres. This monograph is intended to introduce the student of crystallography to the fundamental principles of crystal chemistry.

Contents: Introduction | Types of chemical bonds | Geometry of molecular arrangement | Simple type structures | Pauling's rules | silicates structures | Defects in crystals | Compositional variations in crystalline substances | Interpretation of chemical analyses | Electronegativity | Polarisation | Atomic and ionic radii | Appendices

2000 • 56 pp. • Paperback
978-81-7371-297-5 • Rs. 150.00

Inorganic Chemistry for Undergraduates

Gopalan, R.



Inorganic Chemistry for Undergraduates 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: Atomic structure | Periodicity of properties | Principles of inorganic qualitative analysis | Principles of volumetric analysis | Solvents for inorganic reactions | Ionic bond | Covalent bond: VB theory | Covalent bond: Molecular orbital theory | Hydrogen | Alkali metals | Alkaline earth metals | Boron family | Carbon family | Nitrogen family | Oxygen family | Halogens | Noble gases | Principles of metallurgy | Transition elements: Introduction | Chemistry of transition elements | Inner transition elements | Coordination compounds | Bioinorganic chemistry | Nuclear Chemistry | Industrial inorganic chemistry | Environmental chemistry | Supplementary reading

2009 • 960 pp. • Paperback
978-81-7371-660-7 • Rs. 460.00

Simple Approach to Group Theory in Chemistry, A

Swarnalakshmi, S., Saroja, T. & Ezhilarasi, R.M.

The book explains the basics of group theory, what symmetry elements and operations are, how to identify point groups, the theorems involved, the applications of group theory to spectroscopy

The numerous worked-out examples and illustrations of symmetry elements and operations guide the reader in a step-wise manner through the subject. Even those without a background in mathematics will find this approach easy and helpful.

The book is based on the prescribed syllabus for M Sc Chemistry and can be used by students across India as a textbook. It can be used as a reference book by B Sc Chemistry students.

Contents: Symmetry elements and symmetry operations | Symmetry elements and point groups | Matrix representation of symmetry operations | Representation of point groups | Irreducible representations and character tables | Symmetry of hybrid

orbitals | Determination of symmetry of vibrational modes | Infrared and Raman activity of molecular vibrations | Selection rules for electronic transitions | Appendices | Exercises | References | Index

2008 • 156 pp. • Paperback
978-81-7371-623-2 • Rs. 190.00

Story of Chemistry, The

Datta, N.C.

Chemistry touches every aspect of our life, but we are largely ignorant of it. A general reader has access to many popular books in the various areas of physics and astronomy, but in the area of chemistry there is virtually no accessible material. One common perception is that chemistry is a difficult subject, which is partially true. In science, a reader grasps the subject better and becomes interested, if it deals with easily identifiable objects and theories. This is not the case with chemistry. Atoms and molecules are not seen, whereas stars, planets and rockets can be seen by the naked eye and evoke wonder in our mind.

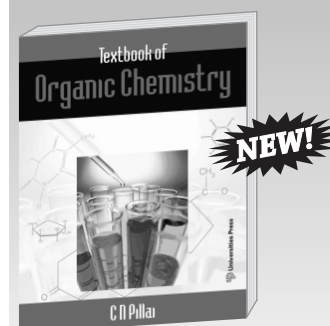
This book is an attempt to trace the development of chemistry from ancient times to the present, particularly up to the development of chemical bonding, which is the essence of chemistry. Throughout the book, the lives of the scientists and the social climate in which they worked have occupied a dominant position to evoke the drama and excitement of different discoveries.

2005 • 488 pp. • Paperback
978-81-7371-530-3 • Rs. 550.00

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Text Book of Organic Chemistry

Pillai, C.N.



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Behind La-Gajjar Chamber
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KITAB KENDRA
Sahitya Seva Sadan
Near Gujarat College
Ahmedabad 380006
Tel.: 26422136

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Opp. Jyotisingh Relief Road
Ahmedabad 380001
Tel.: 25508732/25508328

CROSSWORD
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Ahmedabad 380009

MAHAJAN BOOK DEPOT
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Near Central Bank
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M K BOOK DISTRIBUTORS
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Ambawadi
Ahmedabad 380015
Tel.: 26743012

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Opp. Nagri Hospital
Ellisbridge
Ahmedabad 380006
Tel.: 24636926

NEW ZAVERI BOOK CENTRE
Under Fernandez Bridge
Gandhi Road
Ahmedabad 380001
Tel.: 25357232/9825782902

SAGAR BOOK CENTRE
16 Celler, Kanak Chamber
Opp. Khadimandir
Gandhi Road
Ahmedabad 380001
Tel.: 2410567

VIDYARTHI BOOK DEPOT
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Ahmedabad
Tel.: 22132988/55248505

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Bhavnagar 364002
Tel.: 2568452

COLLEGE STORES

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Golwad
Navsari 396445
Tel.: 9825099121/258642

PARIMAL BOOK AGENCY

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Rajkot 360001

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1 Mahavir Complex
Near ICICI Bank
Kalawad Road
Rajkot
Tel.: 2588130/9825148130

BOOK WORLD

E-42, Kanaknidhi
Opp. Gandhi Smruti
Nanpura
Surat 395001
Tel.: 2333641/2341612/2338675

BULSAR BOOK STORES

1-2, Santok Apartment
Beside Athwa Arcade
Athwa Gate
Surat 396001

CLASSIC ENTERPRISE

401, Akash Deep Apartments
Opp. Sheetal Shopping Square
Bhatar Road
Surat 395001

LUCKY BOOK STORES

Shop No.1, Ornet House
Ring Road, Near Bus Stop
Athva Gate
Surat 395001

**SHOPPING POINT
(BOOK SELLER)**

2010/11, Vaibhav Apartment
Bhattar Road, Near Rupali Naher
Surat 395001

SHREE GAJANAN BOOK DEPOT

Tower Road,
Opp. Mohan Talkies
Surat 395003

THE POPULAR BOOK STORE

Tower Road
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**WESTERN INDIA BOOK
CORPORATION**

Daruwala Building
Athwa Lane
Surat 395001
Tel.: 23478116

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Opp. Jubilee Park
Opp. Gandhinagar Gruh
Vadodara 390001
Tel.: 2420622/2338761/2420622

BARODA BOOK CORPORATION

20 Stop N Shop Plaza
Opp. CIR House
Alkapur
Vadodara 390005
Tel.: 2358736

BINDOO BOOKSTALL

Opp. Jubilee Garden
Vadodara 390001
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SB/2, Patel Ashwamegh
Near S. Patel Statue
Sayajigunj
Vadodara 390005
Tel.: 9322253946

CHIRAG BOOK DISTRIBUTORS

102, Kama Chambers
Opp. Shiyapura Police Chowki
Raopura
Vadodara 390001
Tel.: 2410771

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Mira Dattar Takro
Navabazar
Vadodara 390001
Tel.: 2410567/2411287

CROSSWORD

2/1, Arunoday Society
Alkapuri
Vadodara 390007

MANEESH BOOK SHOP

7, Payal Complex
Near Manubhai Tower
Opp. University (Art College)
Sayajigunj
Vadodara 390005

LANDMARK

Monalisa Centre
Near Inox
Race Course
Vadodara 390007
Tel.: 2465238

SHREEJI BOOK DEPOT

4-A, Sevasharam Society
Near Atma Jyoti Ashram
Ellora Park
Vadodara 390023

AJAY BOOK CENTRE

Geetanjali
Opp. Royal Hostel
Vallabh Vidyanagar
Tel.: 235236

PUSTAK MAHAL

Nana Bazar
Opp. Gayatri Dining Hall
Vallbha Vidyanagar 388001

ROOPAL BOOK STALL

5, Shiv Apartment
Near Phoram Gas, Sardar Statue
Vallabh Vidyanagar 388120
Tel.: 237171/2570148/
9427383789

SHAH BHOGILAL NANDLAL

Bookseller & Stationer
Opp. Town Hall
Valsad 396001

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Margao 403601

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Fighter
Opp. Municipal Garden
Panaji 403001
Tel.: 26647077/26647038

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Sector 10
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Bhilai 490006

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Shop No.210-211-212,
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Bhopal

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Hoshangabad Road
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Tel.: 2573061/9303130992

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Bhopal 462001
Tel.: 2542577/ 2549730

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Arera Colony
Bhopal 462016
Tel.: 2465238/ 4277445

LYALL BOOK DEPOT

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Bhopal 462001
Tel.: 2543624/2545952

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Arera Colony
Bhopal 462016
Tel.: 2565022

RAVI BOOKS & STATIONERY MART

64, Sultaina Road
Budhwara
Bhopal
Tel.: 2531768

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Kotra Sultanabad
Bhopal

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Indore
Tel.: 5053161/ 5532161

BHAIYA STORES

166, Khajuri Bazaar
Indore 452002

JAINSON BOOK SHOP & STATIONERS

33 Bakshi Gali
Jaswant Bhawan, Rajwada
Indore 452004
Tel.: 2538787/ 4068787

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Indore 452001
Tel.: 2701337/ 2701640

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Tel.: 2701041/2701879

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Tel.: 234171

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Shop No. 03, M G Road
Indore
Tel.: 2545130

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Tel.: 4006895/4043064

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Nagar Nigam Road, Marhatal
Jabalpur 482002
Tel.: 2406919

CHILDREN BOOK HOUSE

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Near Jyothi Cinema
Jabalpur 482001
Tel.: 2622817

KHANNA BOOK DEPOT

16, Naya Bazar
Jabalpur
Tel.: 2311932

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Nagpur Road
Jabalpur 482 003

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Jabalpur 482001
Tel.: 2402210

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Moti Building, Kingsway
Cantt. Sadar Bazar
Jabalpur 482002
Tel.: 2620840/2624840

PREM BOOK DEPOT

Kingsway, Sadar Bazaar
Jabalpur 482001
Tel.: 320840

SANGAM GENERAL STORES

Main Road
Gorakhpur
Jabalpur 482001
Tel.: 2313592/2316673

