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## COMPUTER SCIENCE AND ENGINEERING

### **Bioinformatics and Bioprogramming in C**

*Chavali, L N*

*Bioinformatics and Bioprogramming in C* is designed to introduce C language to the biology, biochemistry, microbiology and biotechnology community as a tool for solving biological problems. To help in understanding the concepts, most of the terminology used is biocentric and the programs help in real-life problems like gene sequence analysis and prediction.

The book moves gradually from simple ideas to more complex programming concepts, thus equipping the reader to comprehend the case studies on dynamic programming and PAM matrices included at the end.

**2009 ♦ 224 pp. ♦ Paperback**  
**978-81-7371-648-5 ♦ ₹ 250.00**

### **Bioinformatics: Basics, Algorithms and Applications**

*Singh, Ruchi & Sharma, Richa*

This book provides a simple and concise explanation of the basic principles, tools and applications of bioinformatics. It explains subjects that are part of a conventional bioinformatics course such as databases, database access and analyses tools; principles of computer science that underlie the algorithms which are built into these tools; core algorithms of sequence analyses and phylogeny construction.

The book has been planned and structured as an undergraduate textbook for a one-semester foundation course in bioinformatics. Care has been taken to design the algorithms such that even beginners can understand them without difficulty.

**2010 ♦ 272 pp. ♦ Paperback**  
**978-81-7371-713-0 ♦ ₹ 195.00**

### **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 ♦ ₹ 195.00**

### **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 ♦ ₹ 275.00**

Prices are subject to change without notice

## COMPUTER SCIENCE

### **Computer Algebra and Symbolic Computation: Elementary Algorithms** (with CD)

*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**  
**978-81-7371-532-7 ♦ ₹ 495.00**

### **Computer Algebra and Symbolic Computation: Mathematical Methods** (with CD)

*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.

**2005 ♦ 344 pp. ♦ Paperback**  
**978-81-7371-531-0 ♦ ₹ 495.00**

### **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.

**2008 ♦ 808 pp. ♦ Paperback**  
**978-81-7371-611-9 ♦ ₹ 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, ring adders, and fused multiply-add units.

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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](http://www.ecs.umass.edu/ece/koren/arith/simulator).

**2005 ♦ 300 pp. ♦ Paperback**  
**978-81-7371-533-4 ♦ ₹ 375.00**

### **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.

**2000 ♦ 216 pp. ♦ Paperback**  
**978-81-7371-258-6 ♦ ₹ 250.00**

### **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 ♦ ₹ 450.00**

### **Data Mining Techniques (Second Edition)**

*Pujari, Arun K*

*Data Mining Techniques* addresses all the major and latest techniques of data mining and data warehousing. It deals in detail with the latest algorithms for discovering association rules, decision trees, clustering, neural networks and genetic algorithms. The book contains the algorithmic details of different techniques such as A priori, Pincer-search, Dynamic Itemset Counting, FP-Tree growth, SLIQ, SPRINT, BOAT, CART, RainForest, BIRCH, CURE, BUBBLE, ROCK, STIRR, PAM, CLARANS, DBSCAN, GSP, SPADE, SPIRIT, etc. Interesting and recent developments such as Support Vector Machines and Rough Set Theory are also covered in the book. The book also discusses the mining of web data, spatial data, temporal data and text data. This book can serve as a textbook for students of computer science, mathematical science and management science. It can also be an excellent handbook for researchers in the area of data mining and data warehousing.

The revised edition includes a comprehensive chapter on rough set theory. The rough set theory, which is a tool of sets and relations for studying imprecision, vagueness, and uncertainty in data analysis, is a relatively new mathematical and artificial intelligence technique.

The discussion on association rule mining has been extended to include rapid association rule mining (RARM), FP-Tree Growth Algorithm for discovering association rule and the Eclat and dEclat algorithms. These appear in Chapter 4.

**2010 ♦ 340 pp. ♦ Paperback**  
**978-81-7371-672-0 ♦ ₹ 350.00**

## COMPUTER SCIENCE

### **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 ♦ ₹ 395.00**

### **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.

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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 ♦ ₹ 495.00**

### **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 ♦ ₹ 475.00**

### **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

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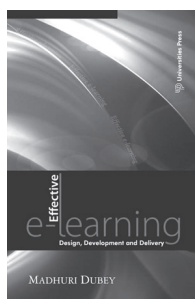
simple concepts such as relations, functions and the pigeon-hole principle have.

2006 ♦ 264 pp. ♦ Paperback  
978-81-7371-500-6 ♦ ₹ 250.00

**NEW**

**Effective E-learning: Design, Development and Delivery** (First Edition)

*Dubey, Madhuri*



*Effective E-learning* deals with the fundamentals of content design, development and delivery. Universities across India can use it as a textbook for their e-learning programmes. Content designers and developers in the corporate, academic, vocational and government domains can use it to develop e-learning course material.

Real-life examples and hypothetical scenarios have been included. Illustrations, worksheets, exercises, check lists, questionnaires and a glossary make this a useful tool for the learner.

**Contents:** **Section I:** E-learning—the big picture—ICT and E-learning ♦ An Overview of E-learning ♦ E-learning in India ♦ **Section II:** Holistic approach to design, development and delivery—Theoretical background ♦ The Framework ♦ Analysis ♦ Design ♦ Development ♦ Delivery ♦ Evaluation ♦ Looking ahead ♦ Glossary ♦ Appendix 1: Learner analysis ♦ Appendix 2: Subject matter expert (SME)

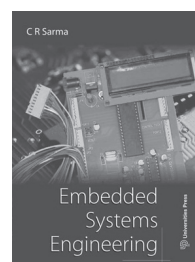
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♦ Appendix 3: Content analysis ♦ Appendix 4: E-learning evaluation ♦ Bibliography ♦ Index

2011 ♦ 300 pp. ♦ Paperback  
978-81-7371-728-4 ♦ ₹ 525.00

**Embedded Systems Engineering**

*Sarma, C R*



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

**Contents:** Preface ♦ Embedded Computing ♦ The 8051 Architecture ♦ Concepts in Assembly Language ♦ Arithmetic Transfer Control Instructions ♦ Application Programming ♦ Real-Time Operating

## COMPUTER SCIENCE

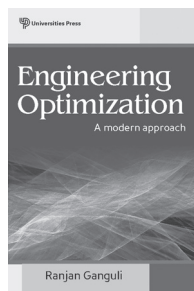
Systems ❖ Basic Design Using a Real-Time Operating System ❖ Introduction to Advanced Architectures ❖ Appendix A: Instruction Set of 8051 ❖ Appendix B: 8051 Timer Programming ❖ Appendix C: 8051 Counter Programming ❖ Appendix D: 8051 Serial Programming ❖ Appendix E: 8051 Interrupt Programming ❖ Appendix F: Keil IDE Project, Build, Debug ❖ Index

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**2011 ❖ 208 pp. ❖ Paperback**  
**978-81-7371-676-8 ❖ ₹ 260.00**

### Engineering Optimization: A Modern Approach

*Ganguli, Ranjan*



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

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

approaches have been focussed upon to bridge the gap between nonlinear programming and engineering optimization techniques.

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

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

**2011 ❖ 268 pp. ❖ Paperback**  
**978-81-7371-739-0 ❖ ₹ 350.00**

### 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.

**2008 ♦ 808 pp. ♦ Paperback**  
**978-81-7371-612-6 ♦ ₹ 375.00**

### **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 ♦ ₹ 650.00**

### **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 ♦ ₹ 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 ♦ ₹ 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 ♦ ₹ 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 ♦ ₹ 675.00**

**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 ♦ ₹ 395.00**

**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 ♦ ₹ 595.00**

**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**  
**978-81-7371-393-4 ♦ ₹ 595.00**

**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 ♦ ₹ 350.00**

**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.

**2007 ♦ 245 pp. ♦ Paperback**  
**978-81-8128-651-2 ♦ ₹ 450.00**



**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.

**2007 ♦ 216 pp. ♦ Paperback**  
**978-81-8128-652-9 ♦ ₹ 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 ♦ ₹ 525.00**

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

*Balachandra Rao, S & Shantha, C K*

See page 24  
.....

**Numerical Methods**

*Boehm, W & Prautzsch, H*

See page 24  
.....

**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.

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**2006 ♦ 492 pp. ♦ Paperback**  
**978-81-7371-572-3 ♦ ₹ 395.00**

**Object Recognition: Fundamentals and Case Studies**

*Bennamoun, M & Mamic, G J*

This volume introduces the fundamental concepts and tools involved in the design and implementation of object recognition systems. Divided into three parts, it first introduces the

topic and covers the acquisition of images, then details 3-D object reconstruction, modelling and matching, and finally describes typical recognition systems using case studies. Key features include: Extensive literature surveys of state-of-the-art systems Recognition will be essential reading for research scientists, advanced undergraduate and postgraduate students in computer vision, image processing and pattern classification. It will also be of interest to practitioners working in the field of computer vision.

**2008 ♦ 362 pp. ♦ Paperback**  
**978-1-85233-398-0 ♦ ₹ 450.00**

### **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. 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

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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.

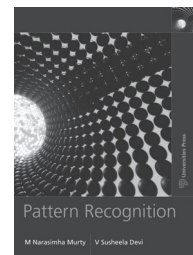
*Distributed worldwide (except India) by Springer Science + Business Media*

**2010 ♦ 496 pp. ♦ Paperback**  
**978-81-7371-711-6 ♦ ₹ 395.00**

## NEW

### **Pattern Recognition: An Introduction**

*Narasimha Murty, M & Susheela Devi, V*



Observing the environment and recognising patterns for the purpose of decision making is fundamental to human nature. This book deals with the scientific discipline that enables similar perception in machines through pattern recognition, which has application in diverse technology areas—character recognition, image processing, industrial automation, internet searches, speech recognition, medical diag-nostics, target recognition, space science, remote sensing, data mining, biometric identification—to name a few. This book is an exposition of principal topics in pattern recognition using an algorithmic approach. It provides a thorough introduction to the concepts of pattern recognition and a systematic account of the major topics in pattern recognition besides

## COMPUTER SCIENCE

reviewing the vast progress made in the field in recent times. It includes basic techniques of pattern recognition, neural networks, support vector machines and decision trees. While theoretical aspects have been given due coverage, the emphasis is more on the practical. The book is replete with examples and illustrations and includes chapter-end exercises.

**Contents:** Introduction ❖ Representation ❖ Nearest Neighbour Based Classifiers ❖ Bayes Classifier ❖ Hidden Markov Models ❖ Decision Trees ❖ Support Vector Machines ❖ Combination of Classifiers ❖ Clustering ❖ Summary ❖ An Application: Hand-written Digit Recognition

2011 ♦ 352 pp. ♦ Paperback  
978-81-7371-725-3 ♦ ₹ 225.00

### 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 ♦ ₹ 550.00

### 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.

2007 ♦ 310 pp. ♦ Paperback  
978-81-8128-674-1 ♦ ₹ 495.00

### 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 secondary teachers who bring robotics into their classrooms.

**2010 ♦ 288 pp. ♦ Paperback**  
**978-81-7371-680-5 ♦ ₹ 395.00**

### **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 ♦ ₹ 225.00**

### **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 ♦ ₹ 595.00**

### **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

## COMPUTER SCIENCE

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 ♦ ₹ 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 ♦ ₹ 150.00

### 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 ♦ ₹ 595.00

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### SYSTEMS, MODELS, INFORMATICS AND CONTROL (SMIC) SERIES

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This series 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.

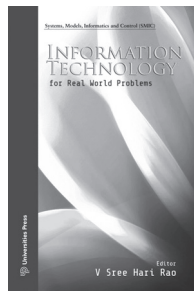
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2011 ♦ 352 pp. ♦ Paperback  
978-81-7371-734-5 ♦ ₹ 675.00

NEW

## Information Technology for Real World Problems

Rao, Sree Hari, V



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

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

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

## 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.

2008 ♦ 304 pp. ♦ Paperback  
978-81-7371-630-0 ♦ ₹ 450.00

# ENGINEERING

## AERONAUTICAL ENGINEERING

### Basic Engineering Thermodynamics

*Venkatesh, A*

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### First Course in Fluid Mechanics, A

*Narasimhan, S*

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*Sarkar, Samir*

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*Pillai, Narayana N*

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### Recent Advances in Experimental Fluid Mechanics

*Rathakrishnan, E*

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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.

Prices are subject to change without notice

❖ 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.

2010 ♦ 608 pp. ♦ Paperback  
978-81-7371-678-2 ♦ ₹ 390.00

### 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.

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

2008 ♦ 356 pp. ♦ Paperback  
978-81-7371-627-0 ♦ ₹ 325.00

### 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 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 ♦ ₹ 175.00

### Optical Communication

*Mukunda Rao, M*

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### Physics of Semiconductor Devices

(Revised Edition)

*Roy, D K*

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## ENGINEERING

### **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, optomechatronics and multisensor data fusion. The steps involved in the design are presented without the aid of design tools such as the NVTherm model or the FLIR-92 model. Examples of applications of thermal imaging in varied fields, primarily military, but increasingly in remote sensing, medical imaging, astronomy, space missions, fault detection and security in industry, etc., bring home the immense potential of this technology. The book provides an interesting insight into the phenomenon of mirages in IR and looks at the effect of the same on image quality. The book adopts an engineering-oriented rather than a theoretical approach, but enough basic physics has been included to cater to the requirements of a beginner. Graduate students of physics, amateur designers and specialists in the area dealing with design, testing and fabrication of thermal imagers will find the wide ranging discussions on thermal imaging useful.

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

### **Wavelets: A Primer**

*Blatter, Christian*

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### **Wavelets: Theory, Applications, Implementation**

*Altaisky, M V*

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## AUTOMOBILE ENGINEERING

### **Computer Simulation of Compression-Ignition Engine Processes**

*Ganesan, V*

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### **Computer Simulation of Spark-Ignition Engine Processes**

*Ganesan, V*

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## 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

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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.

2000 ♦ 288 pp. ♦ Paperback  
978-81-7371-257-9 ♦ ₹ 295.00

### 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 ♦ ₹ 275.00

## BIOTECHNOLOGY

### Bioinformatics and Bioprogramming in C

*Chavali, L N*

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### Bioinformatics: Basics, Algorithms and Applications

*Singh, Ruchi & Sharma, Richa*

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### Cell Biology

*Channarayappa*

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

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

2010 ♦ 624 pp. ♦ Paperback  
978-81-7371-716-1 ♦ ₹ 875.00

### Concepts in Biotechnology (Second Edition)

*Balasubramanian, D, et al.*

The book covers the fundamental principles and concepts in biotechnology which form the basis for the subject and illustrates their applications in selected areas such as health care, agriculture, animal systems, food and beverage, production, environment maintenance and bioprocess technologies. This textbook is the outcome of a COSTED-IBN project on curriculum development in biotechnology for undergraduate study. It

## ENGINEERING

is designed to provide a strong base in this emerging, interdisciplinary area which holds great promise for economic development.

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

**2004 ♦ 502 pp. ♦ Paperback**  
**978-81-7371-483-2 ♦ ₹ 495.00**

### **Molecular Biotechnology: Principles and Practices**

*Channarayappa*

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

**Special Features:** Comprehensive and up-to-date coverage of key concepts in biotechnology; logical format to provide easy access to the information; clear and well-labelled figures; extensive cross-referencing between chapters.

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

**2006 ♦ 1228 pp. ♦ Paperback**  
**978-81-7371-501-3 ♦ ₹ 795.00**

### **Plant Biotechnology: Methods in Tissue Culture and Gene Transfer**

*Keshavachandran, R & Peter, K V (Eds.)*

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

**2008 ♦ 312 pp. ♦ Paperback**  
**978-81-7371-616-4 ♦ ₹ 350.00**

### **Plant Tissue Culture: Basic and Applied**

*Jha, Timir Baran & Ghosh, Biswajit*

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

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

**2005 ♦ 232 pp. ♦ Paperback**  
**978-81-7371-488-7 ♦ ₹ 295.00**

**Practical Biotechnology: Methods and Protocols***Janarthanan, S & Vincent, S*

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

2007 ♦ 136 pp. ♦ Paperback  
978-81-7371-582-2 ♦ ₹ 175.00

**Principles and Practice of Animal Tissue Culture** (Second Edition)*Gangal, Sudha*

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

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

The book explains ♦ The principles of animal tissue culture in simple terms; ♦ How to set up a laboratory for tissue culture in India with the equipment and facilities available locally; ♦ The

procedures for various experiments and specialised techniques in a clear and lucid manner; ♦ How to use a primary culture to help in the study of cell-cell interactions, maintenance of functional ability of cells and effect of external stimuli of cell functions (in the new chapter). ♦ Various methods with the help of photographs and drawings of equipment in twenty colour plates

2010 ♦ 248 pp. ♦ Paperback  
978-81-7371-719-2 ♦ ₹ 275.00

**CHEMICAL ENGINEERING****Basic Engineering Thermodynamics***Venkatesh, A*

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**Chemical Engineering Thermodynamics***Rao, YVC*

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.

1997 ♦ 624 pp. ♦ Paperback  
978-81-7371-048-3 ♦ ₹ 495.00

## ENGINEERING

### *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

### **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.

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

2007 ♦ 264 pp. ♦ Paperback  
978-81-7371-594-5 ♦ ₹ 325.00

### **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.

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

2006 ♦ 504 pp. ♦ Paperback  
978-81-7371-557-0 ♦ ₹ 625.00

### **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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LLC, USA, Taylor and Francis Group

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978-81-7371-669-0 ♦ ₹ 395.00

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**NEW**

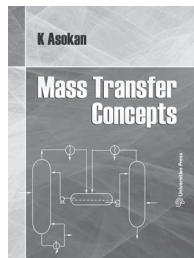

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### Mass Transfer Concepts

Asokan, K



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

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

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

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

2011 ♦ 428pp. ♦ Paperback  
978-81-7371-727-7 ♦ ₹ 375.00

### Mechanics of Composite Materials and Structures

Mukhopadhyay, Madhujit

See page 29

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### Recent Advances in Experimental Fluid Mechanics

Rathakrishnan, E

See page 57

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### Understanding Combustion (Second Edition)

Mukunda, HS

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

## ENGINEERING

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.

2009 ♦ 184 pp. ♦ Paperback  
978-81-7371-685-0 ♦ ₹ 295.00

## CIVIL ENGINEERING

### **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 ♦ Print on demand

### **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.

2006 ♦ 516 pp. ♦ Paperback  
978-81-7371-559-4 ♦ ₹ 450.00

### **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 ♦ ₹ 275.00

**Engineering Mechanics***Seshagiri Rao, MV & Ramadurgaiah, D*See page 54  
.....**Engineering Thermodynamics Through Examples: More than 765 Solved Examples***Rao, YVC*See page 55  
.....**Finite Element Analysis and Procedures in Engineering***Lakshminarayana, HV*

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 ♦ ₹ 275.00**

**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.

**2003 ♦ 268 pp. ♦ Paperback**  
**978-81-7371-427-6 ♦ ₹ 350.00**

**First Course in Fluid Mechanics, A***Narasimhan, S*See page 55  
.....**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

## ENGINEERING

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. ♦ Paperback  
978-04-154-6959-3 ♦ ₹ 485.00

### 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 ♦ Print on demand

### Fundamentals of Computational Fluid Dynamics

*Sengupta, Tapan K*

See page 44  
.....

### 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.

2005 ♦ 488 pp. ♦ Paperback  
978-81-7371-535-8 ♦ ₹ 450.00

### Gas Tables (Revised Edition)

*Rathakrishnan, E*

See page 55  
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### 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.

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

**2008 ♦ 292 pp. ♦ Paperback**  
**978-81-7371-628-7 ♦ ₹ 325.00**

### 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 ♦ ₹ 275.00**

### 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

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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.

**2003 ♦ 452 pp. ♦ Paperback**  
**978-81-7371-425-2 ♦ ₹ 495.00**

### 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 ♦ ₹ 350.00**

### Heat Transfer

*Rao, Y V C*

See page 56  
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*Solutions Manual for Heat Transfer*

*Rao, Y V C*

See page 56  
.....

## ENGINEERING

### **Introduction to Geomorphology**

*Kale, Vishwas S and Gupta, Avijit*

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

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

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

**2010 ♦ 274 pp. ♦ Paperback**  
**978-81-7371-720-8 ♦ ₹ 295.00**

### **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.

**2005 ♦ 208 pp. ♦ Paperback**  
**978-81-7371-481-8 ♦ ₹ 295.00**

### **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.

**2002 ♦ 172 pp. ♦ Paperback**  
**978-81-7371-405-4 ♦ ₹ 200.00**

### **Introduction to Thermodynamics, An** (Revised Edition)

*Rao, Y V C*

See page 56  
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*Solutions Manual for Introduction to Thermodynamics, An*

*Rao, Y V C*

See page 56  
.....

### **Invention by Design: How Engineers Get from Thought to Thing**

*Petroski, H*

See page 57  
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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 ♦ ₹ 375.00**

### **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.

**2004 ♦ 388 pp. ♦ Paperback**  
**978-81-7371-477-1 ♦ ₹ 450.00**

### **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 ♦ ₹ 595.00**

### **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 ♦ Print on demand**

### **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 ♦ ₹ 550.00**

## ENGINEERING

### **Principles of Fluid Mechanics and Fluid Machines** (Third Edition)

*Pillai, Narayana N*

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### **Recent Advances in Experimental Fluid Mechanics**

*Rathakrishnan, E*

See page 57  
.....

### **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.

**2005 ♦ 408 pp. ♦ Paperback**  
**978-81-7371-493-1 ♦ ₹ 695.00**

### **Remote Sensing and Its Applications**

*Narayan L R A*

This compilation of articles published in *THE HINDU* provides a clear understanding of Remote Sensing, the amazing technology which is opening up new vistas for the mapping, management,

and monitoring of our natural resources. Richly illustrated and easy to read, the book will be of interest to students, teachers, scientists and non-specialists.

**1999 ♦ 234 pp. ♦ Paperback**  
**978-81-7371-268-5 ♦ ₹ 395.00**

### **Strength of Materials** (Third Edition)

*Basavarajiah, B S & Mahadevappa, P*

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

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

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

**2010 ♦ 768 pp. ♦ Paperback**  
**978-81-7371-458-0 ♦ ₹ 395.00**

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

*Rao, Prakash, 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

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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.

**1999 ♦ 664 pp. ♦ Paperback**  
**978-81-7371-125-1 ♦ ₹ 495.00**

### Structural Analysis: A Unified Approach

*Rao, Prakash, 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 ♦ ₹ 525.00**

### 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.

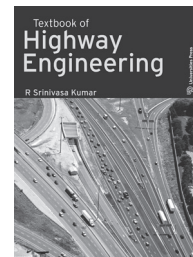
The third edition incorporates the various changes required in the design of steel structures to conform to the recently revised Indian Standard Code IS: 800-2007.

**2009 ♦ 248 pp. ♦ Paperback**  
**978-81-7371-670-6 ♦ ₹ 395.00**

## NEW

### Textbook of Highway Engineering

*Kumar, Srinivasa, R*



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

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

**Contents:** Preface ❖ Acknowledgements ❖ Organisation of Text ❖ Highway Development Programmes and Surveys ❖ Highway Geometric

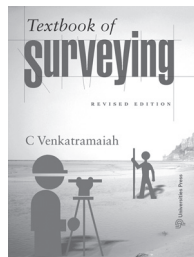
## ENGINEERING

Design ❖ Characterisation of Sub-Grade Soil and Mineral Aggregate ❖ Bituminous Materials ❖ Design of Cement Concrete Mixes for Pavements ❖ Factors Affecting Pavement Design ❖ Analysis and Design of Flexible Pavements ❖ Analysis and Design of Rigid Pavements ❖ Structural Evaluation of Pavements ❖ Structural Evaluation of Unbound Granular and Sub-grade Layers Using Dynamic Cone Penetrometer (DCP) 520 ❖ Annexure ❖ References ❖ Index

**2011 ❖ 616 pp. ❖ Paperback**  
**978-81-7371-681-2 ❖ ₹ 425.00**

**Textbook of Surveying** (Revised Edition)

*Venkatramaiah, C*



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

**Contents:** Foreword ❖ Preface to the Second Edition ❖ Preface to the First Edition ❖ Introduction ❖ Survey Measurements and Errors ❖ Angles, Bearings and Azimuths ❖ Chain Surveying ❖ Compass Surveying ❖ Plane Table Surveying ❖ Levelling and Contouring ❖ Minor Instruments

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❖ Theodolite Surveying ❖ Areas and Volumes ❖ Tacheometry ❖ Curve Ranging ❖ Triangulation and Baseline Measurement ❖ Trigonometric Levelling ❖ Hydrographic Surveying ❖ Construction Surveys

**2011 ❖ 616 pp ❖ Paperback**  
**978-81-7371-740-6 ❖ ₹ 425.00**

**Textbook on Heat Transfer, A**  
(Fourth Edition)

*Sukhatme, S P*

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**Theory of Plates**

*Chandrashekhara, 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 ❖ ₹ 700.00**

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**Thin Shells: Theory & Problems***Raamachandran, J*

This comprehensive textbook on thin shells meets the requirements of Indian and selected universities abroad. It will provide a main text covering the theory of shells and concrete shell structures for advanced undergraduate and postgraduate students as well as for practising engineers.

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

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

**1993 ♦ 508 pp. ♦ Paperback**  
**978-0-86311-272-0 ♦ Print on demand**

**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 ♦ ₹ 295.00**

══════ FORTHCOMING ══════

**Generalised Electrical Machine Analysis***Venkataratnam, K*

The study of transients in an electrical rotating machine is generally more complex than the study of transients in stationary circuits. The conventional tools of analysis proves to be inadequate for estimating the rating of fast switching devices, motor windings and noise, and it is the generalised machine theory that comes in handy in this context. This book provides the fundamentals of generalised electrical machine analysis for studying the machine behaviour in both transient and steady-state conditions.

**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—

## ENGINEERING

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 ♦ ₹ 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.

**2000 ♦ 224 pp. ♦ Paperback**  
**978-81-7371-325-5 ♦ ₹ 225.00**

### Physics of Semiconductor Devices

(Revised Edition)

*Roy, D K*

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### 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.

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

**2008 ♦ 280 pp. ♦ Paperback**  
**978-81-7371-631-7 ♦ ₹ 350.00**

**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 ♦ ₹ 350.00

**Thermal Imaging Technology: Design and Applications***Singh, R N*See page 18  
.....**Utilisation of Electric Energy in SI Units***Taylor, E O*

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

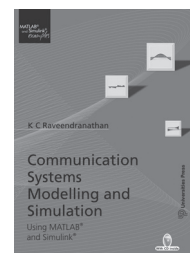
1971 ♦ 392 pp. ♦ Paperback  
978-81-7371-700-0 ♦ ₹ 350.00

**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.

2008 ♦ 256 pp. ♦ Paperback  
978-81-7371-620-1 ♦ ₹ 295.00

NEW

**Communications System Modelling and Simulation Using MATLAB and Simulink***Raveendranathan, K C*

This book employs the technique of simulation experiments as a means of reinforcing

## ENGINEERING

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

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

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

**2011 ♦ 480 pp. ♦ Paperback**  
**978-81-7371-722-2 ♦ ₹ 375.00**

### **Digital Communications and Signal Processing** (Second Edition)

*Vasudevan, K*

Digital Communications and Signal Processing covers a wide variety of topics of digital communications from a theoretical as well as practical perspective. The subject matter is well laid out and the purpose of study of each topic made clear. Some of the notable features of the book include expression of the probability of error in terms of the Euclidean distance instead 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 the ease of understanding, the turbo decoding algorithm is described using the classical MAP detection rule instead of the log-MAP and max-log-MAP procedures that are widely adopted in the literature. The second edition of the book, which has several new examples and C programs, is a result of the continuing efforts by the author to unify the areas of discrete-time signal processing and communications. The use of discrete-time techniques allows implementation of the transmitter and receiver algorithms in software.

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

**2010 ♦ 344 pp. ♦ Paperback**  
**978-81-7371-710-9 ♦ ₹ 375.00**

### **Digital Microwave Communication Systems with Selected Topics in Mobile Communications**

*Srekanth, 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 ♦ ₹ 625.00**

**Digital Transmission Hierarchies and Networks: PDH, SDH and OTH***Sreekanth, P V*

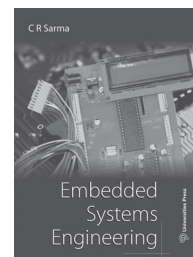
Digital Transmission Hierarchies and Networks is one of the very few books dealing with all the three generations of digital multiplexing hierarchies, namely plesiochronous digital hierarchy (PDH), synchronous digital hierarchy (SDH) and optical transport hierarchy (OTH) in a full-fledged manner. Perhaps 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 is such that it offers a thorough understanding of digital transmission hierarchies, which students of communications engineering as well as practising engineers and professionals dealing with OFC projects will find useful for the insight it provides on both the practical and the conceptual aspects of networking.

2010 ♦ 560 pp. ♦ Paperback  
978-81-7371-699-7 ♦ ₹ 475.00

**Effective E-learning: Design, Development and Delivery** (First Edition)*Dubey, Madhuri*

See page 5

**Embedded Systems Engineering***Sarma, C R*

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

**Contents:** Preface ♦ Embedded Computing ♦ The 8051 Architecture ♦ Concepts in Assembly Language ♦ Arithmetic Transfer Control Instructions ♦ Application Programming ♦ Real-Time Operating Systems ♦ Basic Design Using a Real-Time Operating System ♦ Introduction to Advanced Architectures ♦ Appendix A: Instruction Set of 8051 ♦ Appendix B: 8051 Timer Programming ♦ Appendix C: 8051 Counter Programming ♦ Appendix D: 8051 Serial Programming ♦ Appendix E: 8051 Interrupt Progra-

## ENGINEERING

mming ❖ Appendix F: Keil IDE Project, Build, Debug  
❖ Index

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LLC, USA, Taylor and Francis Group*

**2011 ♦ 208 pp. ♦ Paperback**  
**978-81-7371-676-8 ♦ ₹ 260.00**

### **Global Electronic Commerce: Theory and Case Studies**

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

See page 8  
.....

### **Lasers: The New Technology of Light**

*Billings, C*

See page 17  
.....

### **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.

**2000 ♦ 208 pp. ♦ Paperback**  
**978-81-7371-090-2 ♦ ₹ 250.00**

### **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.

**2004 ♦ 488 pp. ♦ Paperback**  
**978-81-7371-494-8 ♦ ₹ 450.00**

### **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.

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

**2007 ♦ 600 pp. ♦ Paperback**  
**978-81-7371-601-0 ♦ ₹ 395.00**

## ══════ FORTHCOMING ══════

### **Solid state, Microelectronic and Optoelectronic Devices**

*Sarkar, Angsuman and Sarkar, Chandan Kumar*

This introductory textbook on solid state physics and microelectronics provides an balanced integration of modern developments in VLSI and microelectronics with the traditional subject of solid state physics and solid state devices to facilitate an intuitive understanding of how electronic devices operate. New technologies like MEMS in microelectronics, double gate MOSFET, FINFET, SOI devices, high-k material devices, etc., and some of the most recent techniques for modelling these devices are discussed in the book. Aimed at (a) teaching the fundamental concepts in classical semiconductor physics and devices and (b) providing a firm understanding of the recent developments in the area of electronic devices, the approach used in the book is a mix of simple explanations and in-depth treatment of concepts with the appropriate mathematical development. The book includes a chapter on optoelectronic devices to give the reader an understanding of optical processes in semiconductors.

### **Theory of Probability and Stochastic Processes**

*Ghosh, Pradip Kumar*

See page 47  
.....

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

2010 ♦ 472 pp. ♦ Paperback  
978-81-7371-690-4 ♦ ₹ 465.00

### **Advances in Computational Optimization and its Applications**

*Deb, Kalyanmoy, et al.*

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

## ENGINEERING

academia and industries abroad, such practices are yet to be popular in Indian industries and academics. This workshop proceedings 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 proceedings useful.

**2007 ♦ 224 pp. ♦ Paperback**  
**978-81-7371-585-3 ♦ Print on demand**

### Analytical Solid Geometry

*Pirzada, S & Chishti, TA*

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

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

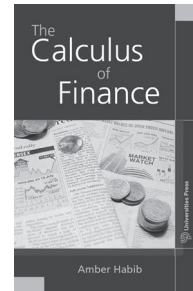
The book is rich in exercise problems and solved examples.

**2007 ♦ 336 pp. ♦ Paperback**  
**978-81-7371-580-8 ♦ ₹ 350.00**

## NEW

### Calculus of Finance, The

*Habib, Amber*



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

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

The book will serve well as an introductory book on applied mathematics in finance, of interest to students of mathematics, finance and financial management. For those starting out as

practitioners of mathematical finance, this is an ideal introduction.

2011 ♦ 296 pp. ♦ Paperback  
978-81-7371-723-9 ♦ ₹ 370.00

**Computer Algebra and Symbolic Computation: Elementary Algorithms**  
(with CD)

*Cohen, Joel S*

See page 2  
.....

**Computer Algebra and Symbolic Computation: Mathematical Methods**  
(with CD)

*Cohen, Joel S*

See page 2  
.....

**Computer Arithmetic Algorithms**  
(Second Edition)

*Koren, Israel*

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

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

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

New algorithms and implementations have been added to almost all chapters. An on-line JavaScript-based simulator for many of the

algorithms contained in the book is available at [www.ecs.umass.edu/ece/koren/arith/simulator](http://www.ecs.umass.edu/ece/koren/arith/simulator).

2005 ♦ 300 pp. ♦ Paperback  
978-81-7371-533-4 ♦ ₹ 375.00

**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 ♦ 512 pp. ♦ Paperback  
978-81-7371-451-1 ♦ ₹ 450.00

**Convex Optimization Theory**

*Bertsekas, Dimitri P*

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

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The Indian edition of the book alone carries a supplementary chapter containing the most popular convex optimization algorithms and some of the new optimization algorithms otherwise available at <http://www.athenasc.com/convexduality.html>.

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

**2010 ♦ 420 pp. ♦ Paperback**  
**978-81-7371-714-7 ♦ ₹ 595.00**

### **Cryptography: An Introduction**

*Yaschenko, V V (Ed.)*

*Series: Indian Editions of AMS Titles*

Learning about cryptography requires examining fundamental issues about information security. Questions abound, ranging from "From whom are we protecting ourselves?" and "How can we measure levels of security?" to "what are our opponent's capabilities?" and "What are their goals?" Answering these questions requires 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 ♦ ₹ 600.00**

### **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.

**1996 ♦ 416 pp. ♦ Paperback**  
**978-81-7371-023-0 ♦ ₹ 395.00**

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

2006 ♦ 264 pp. ♦ Paperback  
978-81-7371-500-6 ♦ ₹ 250.00

### Engineering Mathematics

Sarveswara Rao, Koneru

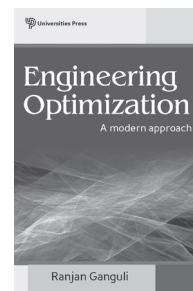
This book incorporates in one volume the material covered in the mathematics course of undergraduate programmes in engineering and technology. The topics discussed include sequences and series, mean value theorems, evolutes, functions of several variables, solutions of ordinary and partial differential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

2002 ♦ 520 pp. ♦ Paperback  
978-81-7371-424-5 ♦ ₹ 450.00

### Engineering Optimization: A Modern Approach

Ganguli, Ranjan



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

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

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

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

**2011 ❖ 268 pp. ❖ Paperback**  
**978-81-7371-739-0 ❖ ₹ 350.00**

### Fourier Analysis and Its Applications

*Folland, Gerald B*

*Series: Indian Editions of AMS Titles*

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

**2010 ❖ 433 pp. ❖ Paperback**  
**978-0-8218-5208-8 ❖ ₹ 950.00**

### 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.

**2004 ❖ 364 pp. ❖ Paperback**  
**978-81-7371-478-8 ❖ ₹ 775.00**

### Introduction to Probability

(Second Edition)

*Grinstead, Charles M & Snell, J Laurie*

*Series: Indian*

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

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

#### Features:

- Key ideas are developed in a somewhat leisurely style, providing a variety of

interesting applications to probability and showing some nonintuitive ideas.

- Over 600 exercises provide the opportunity for practicing skills and developing a sound understanding of ideas.
- Numerous historical comments deal with the development of discrete probability.

2009 ♦ 528 pp. ♦ Paperback  
978-0-8218-4857-9 ♦ ₹ 995.00

### 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 ♦ ₹ 350.00

### Linear Optimization and Extensions: Problems and Solutions

*Alevras, Dimitris & Padberg, Manfred W*

*Series: Low Priced Edition of Springer Mathematics Titles*

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

The main topics treated in the book are: Simplex algorithms and their derivatives including the duality theory of linear programming; Polyhedral theory, pointwise and linear descriptions of polyhedra, double description algorithms, Gaussian elimination with and without division,

[www.universitiespress.com](http://www.universitiespress.com)

the complexity of simplex steps; Projective algorithms, the geometry of projective algorithms, Newtonian barrier methods; Ellipsoids algorithms in perfect and infinite precision arithmetic, the equivalence of linear optimisation and polyhedral separation; The foundations of mixed-integer programming and combinatorial optimisation.

2010 ♦ 558 pp. ♦ Paperback  
978-81-7371-524-7 ♦ ₹ 725.00

### Numerical Analysis: Mathematics of Scientific Computing (Third Edition)

*Kincaid, David & Cheney, Ward*

*Series: Indian Editions of AMS Titles*

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

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

2010 ♦ 788 pp. ♦ Paperback  
978-0-8218-5207-1 ♦ ₹ 1375.00

## ENGINEERING

### **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++.

**2004 ♦ 504 pp. ♦ Paperback**  
**978-81-7371-472-6 ♦ ₹ 425.00**

### **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.

**2005 ♦ 196 pp. ♦ Paperback**  
**978-81-7371-534-1 ♦ ₹ 275.00**

### **Partial Differential Equations**

*Rauch, Jeffrey*

**Series: Low Priced Edition of Springer Mathematics Titles**

The objective of this book is to present an introduction to the ideas, phenomena, and

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

**2010 ♦ 280 pp. ♦ Paperback**  
**978-81-7371-623-7 ♦ ₹ 475.00**

### **Partial Differential Equations**

*Evans, Lawrence C*

*Series: Indian Editions of AMS Titles*

This text gives a comprehensive survey of modern techniques in the theoretical study of partial differential equations (PDEs), with particular emphasis on nonlinear equations. The exposition is divided into three parts:

- 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 summarizes the relevant mathematics required to understand current research in PDEs, especially nonlinear PDEs.

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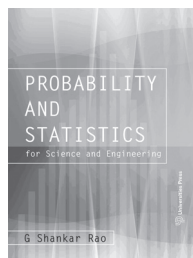
While he has reworked and simplified much of the classical theory (particularly the method of characteristics), he primarily emphasizes the modern interplay between functional analytic insights and calculus type estimates within the context of Sobolev space. Treatment of all topics is complete and self-contained.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

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## NEW

### Probability and Statistics for Engineers and Scientists

*Rao, Shankar, G*



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

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### Theory of Probability and Stochastic Processes

*Ghosh, Pradip Kumar*

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.

**2010 ♦ 284 pp. ♦ Paperback**  
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**Topics in Applied Abstract Algebra***Nagpaul, S R & Jain, S K**Series: Indian Editions of AMS Titles*

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

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**Understanding Probability and Statistics:  
A Book of Problems***Falk, Ruma*

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

**2003 ♦ 256 pp. ♦ Paperback**  
**978-81-7371-440-5 ♦ ₹ 250.00**

**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.

**2003 ♦ 216 pp. ♦ Paperback**  
**978-81-7371-449-8 ♦ ₹ 250.00**

**Wavelets: Theory, Applications,  
Implementation***Altaisky, M V*

Wavelet analysis has been at the centre stage of applied mathematics over the last two decades. It is the preferable alternative to Fourier analysis in signal processing when the signals are random and comprised of fluctuations of different scales. The beauty of wavelets reveals itself when applied to fractals or self-similar objects. This book 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.

2004 ♦ 164 pp. ♦ Paperback  
978-81-7371-503-7 ♦ ₹ 250.00

## 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.

2008 ♦ 220 pp. ♦ Paperback  
978-81-7371-608-9 ♦ ₹ 195.00

### Fundamentals of Remote Sensing (Second Edition)

*Joseph, George*

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### Geographical Information Science

*Panigrahi, Narayan*

See page 26  
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### Remote Sensing and Its Applications

*Narayan L R A*

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

1999 ♦ 234 pp. ♦ Paperback  
978-81-7371-268-5 ♦ ₹ 395.00

## MATERIALS 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.

2000 ♦ 176 pp. ♦ Paperback  
978-81-7371-360-6 ♦ ₹ 295.00

### Frontiers in Materials Science

*Raj, Baldev & Rao, Bhanu Sankara, K*

This volume presents contributions by a galaxy of eminent scientists and technologists from

## ENGINEERING

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 ♦ Print on demand**

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### SERIES IN METALLURGY AND MATERIALS SCIENCE

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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.

## ≡≡≡ FORTHCOMING ≡≡≡

### **Advances in Manufacturing Technology**

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

This book is part of the Universities Press–IIM Series in Metallurgy and Materials Science. It covers a broad spectrum of topics spanning the entire gamut of manufacturing—from the development of technologies, to realisation of products, their inspection and enterprise. It is organised thematically into four sections: trends in manufacturing technology, modelling and simulation, non-destructive evaluation and product development and technology enterprise. It includes 40 papers from world-renowned experts.

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### **Advances in Materials Characterization**

*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.

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

**2006 • 228 pp. • Hardback**  
**978-81-7371-568-6 • Print on demand**

**Advances in Stainless Steels***Raj, Baldev, 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.

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

**2010 ♦ 692 pp. ♦ Hardback**  
**978-81-7371-696-6 ♦ ₹ 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 ♦ Print on demand**

## ══════ FORTHCOMING ══════

**Functional Materials: A Chemist's Perspective***Pillai, Vijayamohan and Parthasarathy, Meera*

When we look at the evolution of materials from a historical perspective, it is very clear

that materials are becoming more and more functional with time. This book looks at the various aspects of functional materials, including the basic concepts, line of development, their main characteristics, and applications using selected examples taken from the amazing variety of functional materials developed during the last two decades. The preparation and characterization of some of these functional materials are explained from a chemist's point of view since the use of the skill and resources of a synthetic chemist is an essential prerequisite for developing many of these materials. Although research in these areas is a daunting challenge involving multidisciplinary teams of physicists, chemists, engineers and biologists, the role of chemistry has not been emphasized in many available books on advanced materials. This book attempts to fill this gap by building a coherent framework with emphasis on the chemistry of this selected class of materials. Many emerging applications of functional materials in the area of energy storage, polymer electronics, chemical sensors, nanobiotechnology and medicine will be highlighted mentioning their limitations and futuristic promise.

### **India's Legendary Wootz Steel: An Advanced Material of the Ancient World**

*Srinivasan, Sharada and Ranganathan, S*

A fascinating history of India's legendary high-grade steel—wootz steel— which was highly prized and much sought after across the world for over two millennia. Wootz steel was used to make the fabled Damascus blades. Although Indian wootz steel was such an important material in the metallurgical history of mankind, there are no books devoted to Indian contributions. First brought out by Tata Steel in November 2004 as a celebration of the twin centenaries of J.N. Tata and J.R.D. Tata, the book has been widely acclaimed. It has been cited in the prestigious *Progress in Materials Science* 2006 and recently in the *Journal of Metals*. It is both scholarly as

well as highly readable at the level of popular archaeo-science. Original cartoons that are both colourful and humorous have been added to make the book more interesting and bring alive the times in which important developments were made.

### **Perspectives in Materials Characterization**

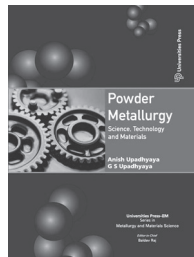
*Amarendra, G, Raj, Baldev & Manghnani, M H (Eds.)*

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.

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

**2009 ♦ 192 pp. ♦ Hardback**  
**978-81-7371-649-2 ♦ ₹ 675.00**

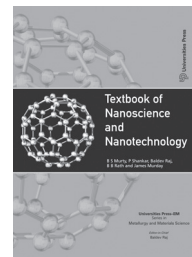
**NEW****Powder Metallurgy: Science, Technology and Materials***Upadhyaya, Anish & Upadhyaya, G S*

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

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

11—ceramics materials in Chapter 12—Wide range of practically applied parts in Chapter 13

2011 ♦ 536 pp. ♦ Paperback  
978-81-7371-717-8 ♦ ₹ 525.00

**Textbook of Nanoscience and Nanotechnology***Murty, B S, Shankar, P, Raj, Baldev, Rath, B B, Murday, James*

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

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

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

**2011 ♦ 254 pp. ♦ Paperback**  
**978-81-7371-738-3 ♦ ₹ 325.00**

## MECHANICAL ENGINEERING

### **Advances in Computational Optimization and its Applications**

*Deb, Kalyanmoy, et al.*

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### **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.

**2007 ♦ 495 pp. ♦ Paperback**  
**978-81-7371-587-7 ♦ ₹ 375.00**

### **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.

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

**1996 ♦ 248 pp. ♦ Paperback**  
**978-81-7371-015-5 ♦ ₹ 325.00**

### **Engineering Mechanics**

*Rao, Seshagiri, 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 ♦ ₹ 325.00

### Engineering Thermodynamics Through Examples: More than 765 Solved Examples

*Rao, YVC*

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

2003 ♦ 704 pp. ♦ Paperback  
978-81-7371-423-8 ♦ ₹ 625.00

### 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.

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

2006 ♦ 452 pp. ♦ Paperback  
978-81-7371-564-8 ♦ ₹ 395.00

### Fracture Mechanics for Modern Engineering Design

*Simha, KRY*

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### Fuels and Combustion (Third Edition)

*Sarkar, Samir*

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### Fundamentals of Computational Fluid Dynamics

*Sengupta, Tapan K*

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### 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.

## ENGINEERING

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.

**2004 ♦ 188 pp. ♦ Paperback**  
**978-81-7371-468-9 ♦ ₹ 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.

**2001 ♦ 488 pp. ♦ Hardback**  
**978-81-7371-384-2 ♦ ₹ 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**

### Introduction to Strength of Materials

*Prakash Rao, D S*

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### 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.

**2003 ♦ 500 pp. ♦ Paperback**  
**978-81-7371-461-0 ♦ ₹ 395.00**

### *Solutions Manual for Introduction to Thermodynamics, An*

*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

### **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 ♦ ₹ 395.00

### **Mechanics of Composite Materials and Structures**

*Mukhopadhyay, Madhujit*

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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 ♦ ₹ 450.00

### **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.

1996 ♦ 248 pp. ♦ Paperback  
978-81-7371-028-5 ♦ ₹ 295.00

### **Recent Advances in Experimental Fluid Mechanics**

*Rathakrishnan, E*

*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 visualization techniques, measurements in high- and low-speed flows, flow control techniques,

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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 ♦ Print on demand**

### **Robotics Primer, The**

*Mataric, Maja J*

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### **Textbook on Heat Transfer, A** (Fourth Edition)

*Sukhatme, S P*

This classic text deals with the elementary aspects of heat transfer, with special emphasis on the fundamental laws so that the subject is perceived by the student as both a science and an art. The text is supported by a large number of solved examples. Each chapter contains many problems with answers provided at the end of the book.

The fourth edition is an expanded version of the earlier editions. It is written as a stand-alone text which can be read and understood by the student on his own. Thus, it contains many more explanatory passages, solved problems and figures to illustrate the text. Earlier editions of the book contained a number of figures from which values had to be used in order to solve certain types of problems. The present edition essentially eliminates the need for reading numerical values from graphs by giving appropriate equations. An added feature is the inclusion of a new chapter on mass transfer.

**2005 ♦ 412 pp. ♦ Paperback**  
**978-81-7371-544-0 ♦ ₹ 375.00**

### **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.

**2001 ♦ 216 pp. ♦ Paperback**  
**978-81-7371-388-0 ♦ ₹ 195.00**

## METALLURGY

### **Basic Course in Crystallography, A**

*Tareen, J A K & Kutty, T R N*

See page 49  
.....

### **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.

**2000 ♦ 564 pp. ♦ Paperback**  
**978-81-7371-239-5 ♦ ₹ 650.00**

**Powder Metallurgy: Science, Technology and Materials***Upadhyaya, Anish & Upadhyaya, G S*See page 59  
.....**PHARMACEUTICAL ENGINEERING****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.

**2001 ♦ 216 pp. ♦ Paperback****978-81-7371-385-9 ♦ ₹ 225.00****Chemical Process Calculations***Asokan, K.*See page 22  
.....**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.

**2003 ♦ 136 pp. ♦ Paperback****978-81-7371-452-8 ♦ ₹ 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—

## ENGINEERING

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

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

**2010 ♦ 432 pp. ♦ Paperback**  
**978-81-7371-677-5 ♦ ₹ 475.00**

### 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 ♦ ₹ 175.00**

### Mass Transfer Concepts

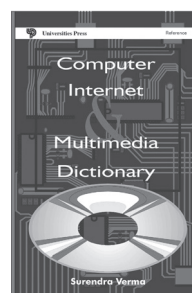
*Asokan K*

See page 23

## DICTIONARIES

### Computer, Internet and Multimedia Dictionary

*Verma, S*

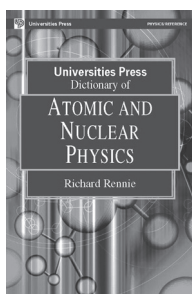


This dictionary covers the core of Information Technology featuring about 3500 entries on computing, telecommunications, and digital electronics. It also covers the Internet and World Wide Web technologies and includes important people, machines and events in the history of computing, and provides glimpses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

**1998 ♦ 256 pp. ♦ Paperback**  
**978-81-7371-091-9 ♦ ₹ 295.00**

### 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.

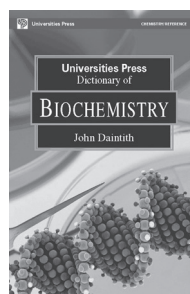
Among the many topics covered are  
 ❖ absolute temperature ❖ kinetic theory  
 ❖ singularity ❖ magnetism ❖ spectroscopy  
 ❖ cathode ray ❖ plutonium ❖ transmutation  
 ❖ half-life ❖ resolving power ❖ valence bond theory ❖ hydrogen molecule

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 ♦ ₹ 205.00**

### Universities Press Dictionary of Biochemistry

Daintith, J



*Universities Press Dictionary of Biochemistry* contains more than 2,000 entries that explain, clearly and concisely, the most relevant and frequently used terms in the field of biochemistry. The dictionary is an ideal tool, articulating the basics of modern biochemistry, including basic organic and physical chemistry, cell metabolism and signaling, nutrition, and recent advances in the field.

Among the many topics covered are; amino acids; light reactions; protein synthesis; dehydration; metamorphosis; secretion; gene cloning; nitrogen cycle; transpiration; immunization; pollution; vaccination.

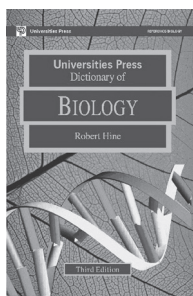
More than 60 line drawings and a set of appendices (including a bibliography) help to simplify many complex concepts, and cross-references guarantee that the reader will waste no time in finding the right definition.

**2006 ♦ 256 pp. ♦ Paperback**  
**978-81-7371-539-6 ♦ ₹ 205.00**

## ENGINEERING

### **Universities Press Dictionary of Biology** (Third Edition)

*Hine, Robert (Ed.)*

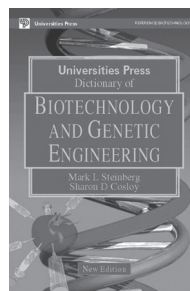


Extensively revised and expanded, the *Universities Press Dictionary of Biology* contains approximately 3,000 entries that explain, clearly and concisely, the most frequently used terms in the biological sciences. More than 200 new terms reflect the many advances in genetics, cell biology, and biochemistry. An extensive Appendix contains information about the animal kingdom, the plant kingdom, and amino acid structures. Almost 50 line drawings illustrate complex biological concepts, and extensive cross-references guarantee that no user will waste time searching for the right definition.

**2000 ♦ 368 pp. ♦ Paperback**  
**978-81-7371-299-9 ♦ ₹ 295.00**

### **Universities Press Dictionary of Biotechnology and Genetic Engineering** (New Edition)

*Steinberg, Mark L & Cosloy, Sharon D*



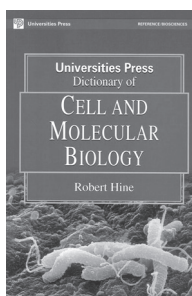
Revised and expanded by more than 300 new terms, the *Universities Press Dictionary of Biotechnology and Genetic Engineering, New Edition* is an essential reference tool on modern biotechnology and genetic engineering that lucidly articulates the flood of advances and discoveries in these areas.

In addition to 100 black-and-white line drawings, the dictionary includes four helpful appendixes. The dictionary will benefit students, teachers, physicians, science and technical writers, and others looking for a concise source of current information on these interdisciplinary fields.

**2003 ♦ 240 pp. ♦ Paperback**  
**978-81-7371-447-4 ♦ ₹ 225.00**

### Universities Press Dictionary of Cell and Molecular Biology

Hine, Robert



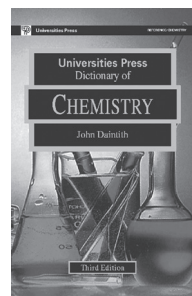
*Universities Press Dictionary of Cell and Molecular Biology* contains more than 2,000 entries that explain, clearly and concisely, the most relevant and frequently used terms in one of the most fascinating areas of contemporary biosciences. The dictionary is an ideal tool, articulating modern cell and molecular biology, including cell structure, molecular genetics, cell metabolism, cell physiology, and laboratory techniques. Among the many topics covered are: AIDS, HIV, parthenogenesis, chromosome map, lymphatic tissue, spore, endorphin, molecular weight, transplantation, fission, nitrification, vascular tissue

More than 60 line drawings and a set of appendices (including a bibliography) help to simplify many complex concepts, and cross-references guarantee that the reader will waste no time in finding the right definition.

**2006 ♦ 256 pp. ♦ Paperback**  
**978-81-7371-537-2 ♦ ₹ 205.00**

### Universities Press Dictionary of Chemistry (Third Edition)

Daintith, J (Ed.)



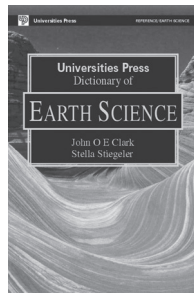
Extensively revised and expanded, this dictionary contains approximately 3,000 entries that explain, clearly and concisely, the techniques, materials, applications, and specialised uses of everyday chemical terms. More than 250 new terms reflect modern chemical nomenclature and the most up-to-date information on properties of the elements. An extensive appendix contains information about the chemical elements, fundamental constants, elementary particles, the periodic table, the Greek alphabet, and other often-consulted information. More than 50 line drawings illustrate many complex structures, and extensive cross-references guarantee that no user will waste time searching for the right definition.

**2000 ♦ 272 pp. ♦ Paperback**  
**978-81-7371-298-2 ♦ ₹ 250.00**

## ENGINEERING

### Universities Press Dictionary of Earth Science

Clark, J O E & Stiegeler, Stella

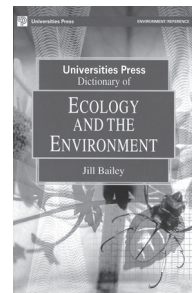


The *Universities Press Dictionary of Earth Science* contains more than 3,000 entries that explain, clearly and concisely, the most frequently used terms in Earth science. Given the constant and often unexpected changes in our global environment, the dictionary is an ideal resource for understanding how these events impact our planet and our lives. More than 100 line drawings illustrate many complex concepts, and extensive cross-references guarantee that no student, teacher, or Earth science professional will waste time searching for the right definition.

**2003 ♦ 362 pp. ♦ Paperback**  
**978-81-7371-446-7 ♦ ₹ 225.00**

### Universities Press Dictionary of Ecology and the Environment

Bailey, Jill



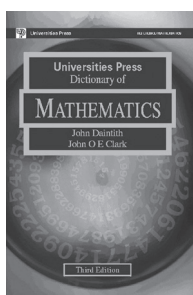
This dictionary contains more than 2000 entries that explain, clearly and concisely, the most relevant and frequently used terms associated with the subjects. An ideal resource, the dictionary articulates the scope of modern research and discoveries in the Earth's natural and artificial components, the atmosphere, the biosphere, and human population dynamics. Among the many topics covered are: acid rain, nuclear energy, biodiversity, pollutant, deforestation, resource management, global warming, smog, halon, waste disposal, life cycle, wildlife management

More than 30 line drawings and a set of appendixes (including a bibliography of print and Web resources) help to simplify many complex concepts, and cross-references guarantee that the reader will waste no time in finding the right definition.

**2006 ♦ 256 pp. ♦ Paperback**  
**978-81-7371-538-9 ♦ ₹ 205.00**

### Universities Press Dictionary of Mathematics (Third Edition)

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

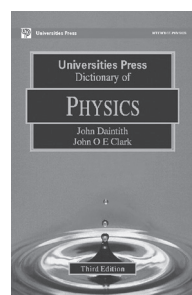


Extensively revised and expanded, the dictionary contains approximately 3,000 entries that explain, clearly and concisely, the most important and commonly used terms in every branch of mathematics. More than 200 new terms increase coverage of applied mathematics and computer science. An extensive appendix 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 ♦ ₹ 235.00**

### Universities Press Dictionary of Physics (Third Edition)

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

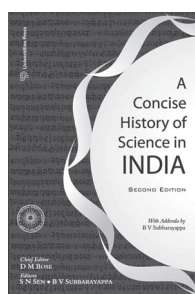


Extensively revised and expanded, this dictionary contains approximately 3,000 entries that explain, clearly and concisely, the most important and commonly used terms relating to all aspects of physical science. More than 200 new terms reflect new developments in the areas of particle physics, cosmology, 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 ♦ ₹ 225.00**

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

*Bose, D M, Sen, S N, Subbarayappa, B V (Ed.)*



India's contributions in the field of science have been very influential in the development of human civilisation. The decimal place value system and the Ayurvedic way of life are just two well-known legacies of this ancient culture. Yet there are only a few books which provide an unbiased and authentic view of this world. One reason for this is that the study of Indian science through the ages involves the complex integration of the knowledge of many languages and diverse scientific disciplines. Through the years, there has been growing interest in this study as an important aspect in understanding man's interaction with nature, his material life and cultural patterns. The Indian National Science Academy, through its History of Science Board (1958) and the National Commission for the Compilation of History of Sciences in India (1967) renamed in 1989 as the Indian National Commission for History of Science sought further means to stimulate this interest among universities and scholars. The result was the publication of *A Concise History of Science in India*.

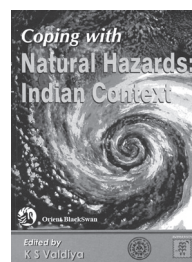
This book attempts to present a brief account of the development of science from early times to Independence, in one of the most ancient civilisations of the world. After

nearly four decades since its publication, *A Concise History of Science in India* remains one of the most extensive and authentic account of Indian science through the ages. Yet further studies in the field have brought to light new material. This revised edition, taken up by B V Subbarayappa, one of the three original editors, seeks to integrate the new information with the knowledge already at hand.

2009 ♦ 980 pp. ♦ Paperback  
978-81-7371-619-5 ♦ ₹ 995.00

**Coping with Natural Hazards:  
Indian Context**

*Edited by Valdiya, K S*



*Coping with Natural hazards: Indian Context* embodies a collection of scientific papers, each by an eminent and acknowledged authority, on various natural hazards that have been causing disasters and distresses with increasing severity. These papers were presented and discussed at a national symposium in October 2001 organised at Pune by the National Academy of Sciences, Allahabad. In addition to describing causes and effects of various disastrous natural phenomena, the papers dwell on such aspects as environmental security, strategies for disaster mitigation, public policy for hazard management, and general awareness programmes. An added attraction is a series of recommendations by the participants on hazard preparedness plans, laws relating to

strengthening of buildings and infrastructure, and developing early warning systems.

**2004 ♦ 284 pp. ♦ Paperback**  
**978-81-250-2735-5 ♦ Print on demand**

### Disaster Management

*Gupta, Harsh K (Ed.)*



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

**2003 ♦ 188 pp. ♦ Hardback**  
**978-81-7371-456-6 ♦ ₹ 470.00**

### Disaster Management: Global Challenges and Local Solutions

*Shaw, Rajib & Krishnamurthy, R R (Ed.)*



We are becoming increasingly vulnerable to natural disasters. Disaster management is therefore an important topic for all—from high school students to researchers. Disaster data in recent years show increasing trends in physical, social and economic impacts. While a global perspective of disaster management is necessary, it is also important to emphasise local solutions. This book targets some of the key issues of disaster management, focussing on innovative research and application. The chapters are organised under 5 interrelated themes: Hazards and disasters, Risk and vulnerability, Technology, Education and community, Crosscutting issues. It will serve as an up-to-date reference book for researchers and practitioners in the field of disaster management throughout the world. This book will be useful for students, teachers, researchers and practitioners in the field of disaster management. It is an invaluable resource for faculty of departments of geology and environmental science students of geology and environmental science

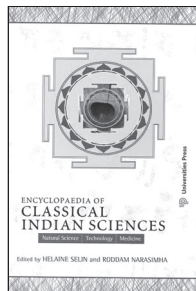
*Distributed worldwide (except India) by CRC Press LLC, USA, Taylor and Francis Group*

**2009 ♦ 664 pp. ♦ Paperback**  
**978-81-7371-656-0 ♦ ₹ 1200.00**

## ENGINEERING

### Encyclopaedia of Classical Indian Sciences

Selin, Helaine & Narasimha, Roddam



India's contributions to science and technology are among the most ancient and influential in the world. In mathematics, the decimal place value system with zero as a numeral, used universally today, owes its origin to India. The science of Ayurveda, which has been practised for millennia in India, is now gaining wider acceptance even as many ancient remedies are turned into modern drugs. Indian astronomical computations, ritual geometry, brick technology and metallurgical innovations have been among the finest achievements in the world of science and technology.

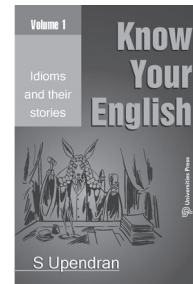
*Encyclopaedia of Classical Indian Sciences* is an attempt to provide an authentic account of natural science, technology and medicine as practised by Indians and other South Asians. It also includes biographical articles on many ancient Indian scientists, and some articles (polemic in nature) on the history of Indian science and technology, such as the essay on the effects of colonialism. All articles are contributions of acknowledged authorities on their subject drawn from across the world.

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

## NEW

### Know Your English Volume 1

Upendran, S



Idioms and their Stories is the first of a four volume series, based on the popular column, Know Your English, which has been a regular feature in The Hindu since 1982.

Teachers, students, and those who are keen on honing their speaking and writing skills will find the series useful. This volume contains a selection of more than 300 idioms, and each entry gives the meaning of the idiom, provides examples of its use, and wherever possible, traces its origin.

**2011 ♦ 216 pp. ♦ Paperback**  
**978-81-7371-729-1 ♦ ₹ 160.00**

## FORTHCOMING

### Paths of Innovators (Volumes I and II)

Parthasarathy, R

This book contains a collection of scientists' lives, their struggles, their achievements and their laurels. They have been grouped under five disciplines Engineering, Physics, Mathematics, Chemistry and Life Sciences. The aim of these brief biographical sketches is to inspire a wider audience to take up the noble pursuit of pure sciences.

[www.universitiespress.com](http://www.universitiespress.com)

In science, a spectacular achievement is remembered but the foundation on which the achievement was based is often forgotten; Dr. Parthasarathy reminds us of this basic fact. The scientists selected by the author span several centuries and almost all the persons who laid the foundation of modern science and built its edifice are there. This is a storehouse of information, there is almost nothing in it, which is not interesting—R. Chidambaram (Principal Scientific Advisor to the Government of India and DAE–Homi Bhabha Professor).

### 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.

#### Volume 1

2003 ♦ 592 pp. ♦ Hardback  
978-81-7371-432-0 ♦ Print on demand

#### Volume 2

2003 ♦ 704 pp. ♦ Hardback  
978-81-7371-433-7 ♦ Print on demand

#### Volume 3

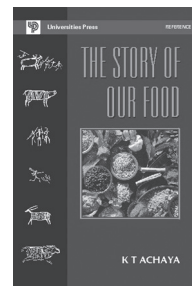
2003 ♦ 788 pp. ♦ Hardback  
978-81-7371-434-4 ♦ Print on demand

#### Volume 4:

**2010 ♦ 111 pp. ♦ Paperback**  
**978-81-7371-708-6 ♦ Print on demand**

### Story of Our Food, The

*Achaya, K T*



- Our distant ancestors speared animals for food. How do we know this?
- Why did vegetarian habits develop so long ago only in India?
- Why were food, health and natural elements considered if separable?
- What do the words hot and cold, when applied to food, mean in India?
- How old are idli, the vada and curd-based shrikand?
- When and where did the mango originate? And the papaya?
- Why were chillies not used in Akbar's kitchen?

## ENGINEERING

- What was India's first beverage—coffee or tea?

From which Indian language did the words curry, betel leaf and sugar enter into English language?

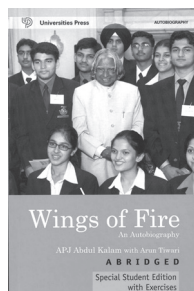
The answers to all these questions, and many more, can be found in this amazing and richly-textured little book. It shows how our wonderful Indian cuisine, with all its regional variants, is the outcome of food plants brought into India from numerous directions over thousands of years. How food occupied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

**2000 ♦ 148 pp ♦ Paperback**  
**978-81-7371-293-7 ♦ Print on demand**

### **Wings of Fire: An Autobiography**

(Abridged, Special Student Edition with Exercises)

*Kalam, A P J Abdul with Arun Tiwari*

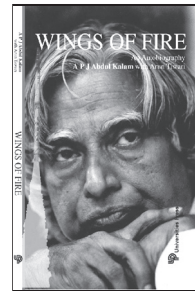


This simplified and abridged version now makes Dr Kalam's inspirational story accessible to students. A comprehensive glossary provides help in the understanding of technical terms. This Special Student Edition includes exercises.

**2004 ♦ 144 pp. ♦ Paperback**  
**978-81-7371-548-8 ♦ ₹ 125.00**

### **Wings of Fire: An Autobiography**

*Kalam, A P J Abdul with Arun Tiwari*



Avul Pakir Jainulabdeen Abdul Kalam, the son of a little-educated boat-owner in Rameswaram, Tamil Nadu, had an unparalleled career as a defence scientist, culminating in the highest civilian award of India, the Bharat Ratna. As chief of the country's defence research and development programme, Kalam demonstrated the great potential for dynamism and innovation that existed in seemingly moribund research establishments. This is the story of Kalam's rise from obscurity and his personal and professional struggles, as well as the story of Agni, Prithvi, Akash, Trishul and Nag—missiles that have become household names in India and have raised the nation to the level of a missile power of international reckoning. This is also the saga of independent India's struggle for technological self-sufficiency and defensive autonomy—a story as much about politics (domestic and international) as it is about science.

**1999 ♦ 212 pp. ♦ Paperback**  
**978-81-7371-146-6 ♦ ₹ 250.00**

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