

## Engineering Mechanics Rajasekwaran Ebook For Free

Intended as a companion volume to the author's Limit State Design of Reinforced Concrete (published by Prentice-Hall of India), the Second Edition of this comprehensive and systematically organized text builds on the strength of the first edition, continuing to provide a clear and masterly exposition of the fundamentals of the theory of concrete design. The text meets the twin objective of catering to the needs of the postgraduate students of Civil Engineering and the needs of the practising civil engineers as it focuses also on the practices followed by the industry. This text, along with Limit State Design, covers the entire design practice of revised Code IS456 (2000). In addition, it analyzes the procedures specified in many other BIS codes such as those on winds, earthquakes, and ductile detailing. What's New to This Edition Chapter 18 on Earthquake Forces and Structural Response of framed buildings has been completely revised and updated so as to conform to the latest I.S. Codes 1893 (2002) entitled Criteria for Earthquake Resistant Design of Structures (Part I - Fifth Revision). Chapters 19 and 21 which too deal with earthquake design have been revised. A Summary of elementary design of reinforced concrete members is added as Appendix. Valuable tables and charts are presented to help students and practising designers to arrive at a speedy estimate of the steel requirements in slabs, beams, columns and footings of ordinary buildings.

This class-room tested book, representing the teaching experience of over two decades by the authors, is designed to cater to the needs of senior undergraduate and first-year postgraduate students of civil engineering for a course in Advanced Structural Analysis/Matrix Methods of Structural Analysis/Computer Methods of Structural Analysis. The book endeavours to fulfil two principal objectives. First, it acquaints students with the matrix methods of structural analysis and their underlying concepts and principles. Second, it demonstrates the development of well-structured computer programs for the analysis of structures by the matrix methods. After a thorough presentation of the mathematical tools and theory required for linear elastic analysis of structural systems, the text focuses on the flexibility and stiffness methods of analysis for computer usage. The direct stiffness method which forms the backbone of most computer programs is also discussed. Besides, the physical behaviour of structures is analyzed throughout with the help of axial thrust, shear force, bending moment and deflected shape diagrams. A large number of worked-out examples are included to amplify the concepts and to illustrate the effect of external loads, including the effect of temperature, lack of fit, and settlement of supports, etc. The CD-ROM contains many illustrative computer programs and the usage of modern packages such as Excel and Matlab. The book will also be a useful reference for practising structural engineers who wish to pursue the versatility of matrix methods as a tool for computer applications.

The Finite Element Method in Engineering, Fifth Edition, provides a complete introduction to finite element methods with applications to solid mechanics, fluid mechanics, and heat transfer. Written by bestselling author S.S. Rao, this book provides students with a thorough grounding of the mathematical principles for setting up finite element solutions in civil, mechanical, and aerospace engineering applications. The new edition of this textbook includes examples using modern computer tools such as MatLab, Ansys, Nastran, and Abaqus. This book discusses a wide range of topics, including discretization of the domain; interpolation models; higher order and isoparametric elements; derivation of element matrices and vectors; assembly of element matrices and vectors and derivation of system equations; numerical solution of finite element equations; basic equations of fluid mechanics; inviscid and irrotational flows; solution of quasi-harmonic equations; and solutions of Helmholtz and Reynolds equations. New to this edition are examples and applications in Matlab, Ansys, and Abaqus; structured problem solving approach in all worked examples; and new discussions throughout, including the direct method of deriving finite element equations, use of strong and weak form formulations, complete treatment of dynamic analysis, and detailed analysis of heat transfer problems. All figures are revised and redrawn for clarity. This book will benefit professional engineers, practicing engineers learning finite element methods, and students in mechanical, structural, civil, and aerospace engineering. Examples and applications in Matlab, Ansys, and Abaqus Structured problem solving approach in all worked examples New discussions throughout, including the direct method of deriving finite element equations, use of strong and weak form formulations, complete treatment of dynamic analysis, and detailed analysis of heat transfer problems More examples and exercises All figures revised and redrawn for clarity

The Finite Element Analysis today is the leading engineer's tool to analyze structures concerning engineering mechanics, i.e. statics, heat flows, eigenvalue problems and many more. Thus, this book wants to provide well-chosen aspects of this method for students of engineering sciences and engineers already established in the job in such a way, that they can apply this knowledge immediately to the solution of practical problems. Over 30 examples along with all input data files on DVD allow a comprehensive practical training of engineering mechanics. Two very powerful FEA programs are provided on DVD, too: Z88, the open source finite elements program for static calculations, as well as Z88Aurora, the very comfortable to use and much more powerful freeware finite elements program which can also be used for non-linear calculations, stationary heat flows and eigenproblems, i.e. natural frequencies. Both are full versions with which arbitrarily big structures can be computed – only limited by your computer memory and your imagination. For Z88 all sources are fully available, so that the reader can study the theoretical aspects in the program code and extend it if necessary. Z88 and Z88Aurora are ready-to-run for Windows and LINUX as well as for Mac OS X. For Android devices there also exists an app called Z88Tina which can be downloaded from Google Play Store.

This book introduces a variety of advanced machine learning approaches covering the areas of neural networks, fuzzy logic, and hybrid intelligent systems for the determination and diagnosis of cancer. Moreover, the tactical solutions of machine learning have proved its vast range of significance and, provided novel solutions in the medical field for the diagnosis of disease. This book also explores the distinct deep learning approaches that are capable of yielding more accurate outcomes for the diagnosis of cancer. In addition to providing an overview of the emerging machine and deep learning approaches, it also enlightens an insight on how to evaluate the efficiency and appropriateness of such techniques and analysis of cancer data used in the cancer diagnosis. Therefore, this book focuses on the recent advancements in the machine learning and deep learning approaches used in the diagnosis of different types of cancer along with their research challenges and future directions for the targeted audience including scientists, experts, Ph.D. students, postdocs, and anyone interested in the subjects discussed. .

"If ever a book on turbulence could be called definitive," declared Science, "it is this book by two of Russia's most eminent and productive scientists in turbulence, oceanography, and atmospheric physics." Noted for its clarity as well as its comprehensive treatment, this two-volume set serves as text or reference. 1975 edition.

Primarily intended for senior undergraduate and postgraduate students of civil, mechanical and aerospace/aeronautical engineering, this text emphasises the importance of reliability in engineering computations and understanding the process of computer aided engineering. Written with a view to promote the correct use of finite element technology and to present a detailed study of a set of essential computational tools for the practice of structural dynamics, this book is a ready-reckoner for an in-depth discussion of finite element theory and estimation and control of errors in computations. It is specifically aimed at the audience with interest in vibrations and stress analysis. Several worked out examples and exercise problems have been included to describe the various aspects of finite element theory and modelling. The exercise on error analysis will be extremely helpful in grasping the essence of posteriori error analysis and mesh refinement. **KEY FEATURES** • Thorough discussion of numerical algorithms for reliable and efficient computation. • Ready-to-use finite element system and other scientific applications. • Tips for improving the quality of finite element solutions. • Companion DVD containing ready to use finite element applications. **AUDIENCE:** Senior Undergraduate and Postgraduate students of Civil, Mechanical and Aerospace/Aeronautical engineering  
Engineering Mechanics (For Anna)Vikas Publishing House

This volume comprises select peer reviewed papers presented at the international conference - Advanced Research and Innovations in Civil Engineering (ARICE 2019). It brings together a wide variety of innovative topics and current developments in various branches of civil engineering. Some of the major topics covered include structural engineering, water resources engineering, transportation engineering, geotechnical engineering, environmental engineering, and remote sensing. The book also looks at emerging topics such as green building technologies, zero-energy buildings, smart materials, and intelligent transportation systems. Given its contents, the book will prove useful to students, researchers, and professionals working in the field of civil engineering.

Primarily intended for the undergraduate and postgraduate students of computer science and engineering, this textbook (earlier titled as Artificial Intelligence and Machine Learning), now in its second edition, bridges the gaps in knowledge of the seemingly difficult areas of artificial intelligence. This book promises to provide the most number of case studies and worked-out examples among the books of its genre. The text is written in a highly interactive manner which fulfils the curiosity of any reader. Moreover, the content takes off from the introduction to artificial intelligence, which is followed by explaining about intelligent agents. Various problem-solving strategies, knowledge representation schemes are also included with numerous case studies and applications. Different aspects of learning, nature-inspired learning, along with natural language processing are also explained in depth. The algorithms and pseudo codes for each topic make this book useful for students. Book also throws light into areas like planning, expert system and robotics. Book concludes with futuristic artificial intelligence, which explains the fascinating applications, that the world will witness in coming years. **KEY FEATURES** • Day-to-day examples and practical representations for deeper understanding of the subject. • Learners can easily implement the AI applications. • Effective and useful case studies and worked-out examples for AI problems. **Target Audience** • Students of B.E./B.Tech Computer Science Engineering • Students of M.E./M.Tech Computer Science Engineering

The second edition of this book provides a comprehensive introduction to a consortium of technologies underlying soft computing, an evolving branch of computational intelligence, which in recent years, has turned synonymous to it. The constituent technologies discussed comprise neural network (NN), fuzzy system (FS), evolutionary algorithm (EA), and a number of hybrid systems, which include classes such as neuro-fuzzy, evolutionary-fuzzy, and neuro-evolutionary systems. The hybridization of the technologies is demonstrated on architectures such as fuzzy backpropagation network (NN-FS hybrid), genetic algorithm-based backpropagation network (NN-EA hybrid), simplified fuzzy ARTMAP (NN-FS hybrid), fuzzy associative memory (NN-FS hybrid), fuzzy logic controlled genetic algorithm (EA-FS hybrid) and evolutionary extreme learning machine (NN-EA hybrid) Every architecture has been discussed in detail through illustrative examples and applications. The algorithms have been presented in pseudo-code with a step-by-step illustration of the same in problems. The applications, demonstrative of the potential of the architectures, have been chosen from diverse disciplines of science and engineering. This book, with a wealth of information that is clearly presented and illustrated by many examples and applications, is designed for use as a text for the courses in soft computing at both the senior undergraduate and first-year postgraduate levels of computer science and engineering. It should also be of interest to researchers and technologists desirous of applying soft computing technologies to their respective fields of work.

This practice-oriented book, now in its second edition, presents a lucid yet comprehensive coverage of the engineering properties and uses of the materials commonly used in building construction in India. Profusely illustrated with tables and diagrams, the book brings into light the basics of building materials and their specifications. Besides giving information regarding the traditional building materials, the text now acquaints the reader with up-to-date and in-depth information pertaining to modern materials available in the market. The references to IS codes and standards make this text suitable for further study and field use. The second edition possesses some substantial changes in Chapters 12, 13, 14 and 20. Now, the book offers a new section on durability of concrete in Chapter 12; a modified section regarding revision of IS 10262 (1982) code on concrete mix design to IS 10262 (2009) and a new section on classification of exposure conditions in Chapter 13; and a new section relating to large advances made in concrete construction and repair chemicals in Chapter 14. Besides, the content of Chapter 20 has been completely updated, with a particular emphasis on the extensive use of aluminium in building construction. Primarily intended for the students pursuing undergraduate degree (B.E./B.Tech.) and diploma courses in civil engineering and architecture, the book, on account of lecture-based presentation of the subject, should also prove eminently utilitarian for the young teachers to use it in their classroom lectures as well as for practising engineers to get a clear understanding of the fundamentals of the subject. **NEW TO THE SECOND EDITION** Review questions at the end of each chapter enable the reader to recapitulate the topics Considerable attention is given on field practice Syllabus of laboratory work on construction materials and a model question paper (Anna University) are given in appendices to guide the reader.

This book addresses a range of complex issues associated with condition monitoring (CM), fault diagnosis and detection (FDD) in smart buildings, wide area monitoring (WAM), wind energy conversion systems (WECSs), photovoltaic (PV) systems, structures, electrical systems, mechanical systems, smart grids, etc. The book's goal is to develop and combine all advanced nonintrusive CMFD approaches on a common platform. To do so, it explores the main components of various systems used for CMFD purposes. The content is divided into three main parts, the first of which provides a brief introduction, before focusing on the state of the art and major research gaps in the area of CMFD. The second part covers the step-by-step implementation of novel soft computing applications in CMFD for electrical and mechanical systems. In the third and final part, the simulation codes for each chapter are included in an extensive appendix to support newcomers to the field.

This volume comprises select papers presented during the Indian Geotechnical Conference 2018, discussing issues and challenges relating to the characterization of geomaterials, modelling approaches, and geotechnical engineering education. With a combination of field studies, laboratory experiments and modelling approaches, the chapters in this volume address some of the most widely investigated geotechnical engineering topics. This volume will be of interest to researchers and practitioners alike.

The second edition of this well-organized and comprehensive text continues to provide an in-depth coverage of the theory and applications of operations research. It emphasizes the role of operations

research not only as an effective decision-making tool, but also as an essential productivity improvement tool to deal with real-world management problems. This New Edition includes new carefully designed numerical examples that help in understanding complex mathematical concepts better. The book is an easy read, explaining the basics of operations research and discussing various optimization techniques such as linear and non-linear programming, dynamic programming, goal programming, parametric programming, integer programming, transportation and assignment problems, inventory control, and network techniques. It also gives a comprehensive account of game theory, queueing theory, project management, replacement and maintenance analysis, and production scheduling. NEW TO THIS EDITION Inclusion of quantity discount models for transportation problem. Updated inventory control model and detailed discussion on application of dynamic programming in the fields of cargo loading and single-machine scheduling. Numerous new examples that explain the operations research concepts better. New questions with complete solutions to selected problems. This book, with its many student friendly features, would be eminently suitable as a text for students of engineering (mechanical, production and industrial engineering), management, mathematics, statistics, and postgraduate students of commerce and computer applications (MCA).

Given the risk of earthquakes in many countries, knowing how structural dynamics can be applied to earthquake engineering of structures, both in theory and practice, is a vital aspect of improving the safety of buildings and structures. It can also reduce the number of deaths and injuries and the amount of property damage. The book begins by discussing free vibration of single-degree-of-freedom (SDOF) systems, both damped and undamped, and forced vibration (harmonic force) of SDOF systems. Response to periodic dynamic loadings and impulse loads are also discussed, as are two degrees of freedom linear system response methods and free vibration of multiple degrees of freedom. Further chapters cover time history response by natural mode superposition, numerical solution methods for natural frequencies and mode shapes and differential quadrature, transformation and Finite Element methods for vibration problems. Other topics such as earthquake ground motion, response spectra and earthquake analysis of linear systems are discussed. Structural dynamics of earthquake engineering: theory and application using Mathematica and Matlab provides civil and structural engineers and students with an understanding of the dynamic response of structures to earthquakes and the common analysis techniques employed to evaluate these responses. Worked examples in Mathematica and Matlab are given. Explains the dynamic response of structures to earthquakes including periodic dynamic loadings and impulse loads Examines common analysis techniques such as natural mode superposition, the finite element method and numerical solutions Investigates this important topic in terms of both theory and practise with the inclusion of practical exercise and diagrams

This book offers a highly accessible introduction to natural language processing, the field that supports a variety of language technologies, from predictive text and email filtering to automatic summarization and translation. With it, you'll learn how to write Python programs that work with large collections of unstructured text. You'll access richly annotated datasets using a comprehensive range of linguistic data structures, and you'll understand the main algorithms for analyzing the content and structure of written communication. Packed with examples and exercises, Natural Language Processing with Python will help you: Extract information from unstructured text, either to guess the topic or identify "named entities" Analyze linguistic structure in text, including parsing and semantic analysis Access popular linguistic databases, including WordNet and treebanks Integrate techniques drawn from fields as diverse as linguistics and artificial intelligence This book will help you gain practical skills in natural language processing using the Python programming language and the Natural Language Toolkit (NLTK) open source library. If you're interested in developing web applications, analyzing multilingual news sources, or documenting endangered languages -- or if you're simply curious to have a programmer's perspective on how human language works -- you'll find Natural Language Processing with Python both fascinating and immensely useful.

Quantum Mechanics I: The Fundamentals provides a graduate-level account of the behavior of matter and energy at the molecular, atomic, nuclear, and sub-nuclear levels. It covers basic concepts, mathematical formalism, and applications to physically important systems. The text addresses many topics not typically found in books at this level, including

Whether you are a professional game developer working in an established studio or a creative thinker interested in trying your hand at game design, "Video Game Design Revealed" will show you the steps and processes involved in bringing a video game from concept to completion. Beginning with an overview of the history of video games and an examination of the elements of successful games, the book breaks down the video game design process into its simplest elements and builds from there. You'll learn how to take an idea and tweak it into a viable game based on the genre, market, game style, and subject matter, moving on to creating and organizing a timeline for the production of the game. Once you've mapped out your game production plan and gathered all the information you need, you'll learn how to choose the development platform and other technologies that best suit the game you've designed, add sound and graphics, and apply game mechanics such as whether the game will be single-player or multiplayer and what levels and objects to add to your game to make it challenging and interesting. "Video Game Design Revealed" concludes with guidelines on how to compose a proposal to be used to present your idea to the game industry as well as tips and information on how to find and contact game studios, publishers, and investors to help you make your game design a reality..

This book is essential reading for the students of Mechanical Engineering. It is a rich blend of theoretical concepts and neat illustrations with footnotes and a list of formulae for ready reference Key Features: " Step-by-Step approach to help students

This self-contained treatment covers all aspects of nonlinear dynamics, from fundamentals to recent developments, in a unified and comprehensive way. Numerous examples and exercises will help the student to assimilate and apply the techniques presented.

The book is written in simple language and self explanatory, reflects the image of the author's long experience in field and teaching as well. The new edition of the book is a composite unit, complete in itself. The presentation of the matter is simple and excellent.

Designed for a one-semester course in Finite Element Method, this compact and well-organized text presents FEM as a tool to find approximate solutions to differential equations. This provides the student a better perspective on the technique and its wide range of applications. This approach reflects the current trend as the present-day applications range from structures to biomechanics to electromagnetics, unlike in conventional texts that view FEM primarily as an extension of matrix methods of structural analysis. After an introduction and a review of mathematical preliminaries, the book gives a detailed discussion on FEM as a technique for solving differential equations and variational formulation of FEM. This is followed by a lucid presentation of one-dimensional and two-dimensional finite elements and finite element formulation for dynamics. The book concludes with some case studies that focus on industrial problems and Appendices that include mini-project topics based on near-real-life problems. Postgraduate/Senior undergraduate students of civil, mechanical and aeronautical engineering will find this text extremely useful; it will also appeal to the practising engineers and the teaching community.

Though mathematical ideas underpin the study of neural networks, the author presents the fundamentals without the full mathematical apparatus. All aspects of the field are tackled, including artificial neurons as models of their real counterparts; the geometry of network action in pattern space; gradient descent methods, including back-propagation; associative memory and

Hopfield nets; and self-organization and feature maps. The traditionally difficult topic of adaptive resonance theory is clarified within a hierarchical description of its operation. The book also includes several real-world examples to provide a concrete focus. This should enhance its appeal to those involved in the design, construction and management of networks in commercial environments and who wish to improve their understanding of network simulator packages. As a comprehensive and highly accessible introduction to one of the most important topics in cognitive and computer science, this volume should interest a wide range of readers, both students and professionals, in cognitive science, psychology, computer science and electrical engineering.

A solid introduction to basic continuum mechanics, emphasizing variational formulations and numeric computation. The book offers a complete discussion of numerical method techniques used in the study of structural mechanics.

Engineering Mechanics is a textbook specifically designed for a one-semester interdisciplinary course offered at the university level for undergraduate engineering programmes in India. Designed to provide engineers with quick access to current and practical information on the dynamics of structure and foundation, this 2-volume reference work is intended for engineers involved with earthquake or dynamic analysis, or the design of machine foundations in the oil, gas, and energy sector. Whereas the first volume deals with the fundamentals, this volume is dedicated to applications in various civil engineering problems, related to dynamic soil-structure interaction, machine foundation and earthquake engineering. It presents innovative, easy-to-apply and practical solutions to various problems and difficulties a design engineer will encounter. It allows quick access to targeted information; it includes a wealth of case studies and also examines geotechnical considerations with regard to dynamic soil-structure interaction. This book is concentrated on three major application areas: dynamic soil-structure interaction (DSSI), the analysis and design of machine foundations, and on the analytical and design concepts for earthquake engineering. Vol. 1 (ISBN 9780415471459) focusses on the theory and fundamentals book.

The first edition won the award for Best 1990 Professional and Scholarly Book in Computer Science and Data Processing by the Association of American Publishers. There are books on algorithms that are rigorous but incomplete and others that cover masses of material but lack rigor. Introduction to Algorithms combines rigor and comprehensiveness. The book covers a broad range of algorithms in depth, yet makes their design and analysis accessible to all levels of readers. Each chapter is relatively self-contained and can be used as a unit of study. The algorithms are described in English and in a pseudocode designed to be readable by anyone who has done a little programming. The explanations have been kept elementary without sacrificing depth of coverage or mathematical rigor. The first edition became the standard reference for professionals and a widely used text in universities worldwide. The second edition features new chapters on the role of algorithms, probabilistic analysis and randomized algorithms, and linear programming, as well as extensive revisions to virtually every section of the book. In a subtle but important change, loop invariants are introduced early and used throughout the text to prove algorithm correctness. Without changing the mathematical and analytic focus, the authors have moved much of the mathematical foundations material from Part I to an appendix and have included additional motivational material at the beginning.

With The Authors Experience Of Teaching The Courses On Finite Element Analysis To Undergraduate And Postgraduate Students For Several Years, The Author Felt Need For Writing This Book. The Concept Of Finite Element Analysis, Finding Properties Of Various Elements And Assembling Stiffness Equation Is Developed Systematically By Splitting The Subject Into Various Chapters. The Method Is Made Clear By Solving Many Problems By Hand Calculations. The Application Of Finite Element Method To Plates, Shells And Nonlinear Analysis Is Presented. After Listing Some Of The Commercially Available Finite Element Analysis Packages, The Structure Of A Finite Element Program And The Desired Features Of Commercial Packages Are Discussed.

This proceedings book presents state-of-the-art research innovations in computational vision and bio-inspired techniques. Due to the rapid advances in the emerging information, communication and computing technologies, the Internet of Things, cloud and edge computing, and artificial intelligence play a significant role in the computational vision context. In recent years, computational vision has contributed to enhancing the methods of controlling the operations in biological systems, like ant colony optimization, neural networks, and immune systems. Moreover, the ability of computational vision to process a large number of data streams by implementing new computing paradigms has been demonstrated in numerous studies incorporating computational techniques in the emerging bio-inspired models. The book reveals the theoretical and practical aspects of bio-inspired computing techniques, like machine learning, sensor-based models, evolutionary optimization, and big data modeling and management, that make use of effectual computing processes in the bio-inspired systems. As such it contributes to the novel research that focuses on developing bio-inspired computing solutions for various domains, such as human-computer interaction, image processing, sensor-based single processing, recommender systems, and facial recognition, which play an indispensable part in smart agriculture, smart city, biomedical and business intelligence applications.

This book explores numerical implementation of Finite Element Analysis using MATLAB. Stressing interactive use of MATLAB, it provides examples and exercises from mechanical, civil and aerospace engineering as well as materials science. The text includes a short MATLAB tutorial. An extensive solutions manual offers detailed solutions to all problems in the book for classroom use. The second edition includes a new brick (solid) element with eight nodes and a one-dimensional fluid flow element. Also added is a review of applications of finite elements in fluid flow, heat transfer, structural dynamics and electro-magnetics. The accompanying CD-ROM presents more than fifty MATLAB functions.

This book provides comprehensive introduction to a consortium of technologies underlying soft computing, an evolving branch of computational intelligence. The constituent technologies discussed comprise neural networks, fuzzy logic, genetic algorithms, and a number of hybrid systems which include classes such as neuro-fuzzy, fuzzy-genetic, and neuro-genetic systems. The hybridization of the technologies is demonstrated on architectures such as Fuzzy-Back-propagation Networks (NN-FL), Simplified Fuzzy ARTMAP (NN-FL), and Fuzzy Associative Memories. The book also gives an exhaustive discussion of FL-GA hybridization. Every architecture has been discussed in detail through illustrative examples and applications. The algorithms have been presented in pseudo-code with a step-by-step illustration of the same in problems. The applications, demonstrative of the potential of the architectures, have been chosen from diverse disciplines of science and engineering. This book with a wealth of information that is clearly presented and illustrated by many examples and applications is designed for use as a text

for courses in soft computing at both the senior undergraduate and first-year post-graduate engineering levels. It should also be of interest to researchers and technologists desirous of applying soft computing technologies to their respective fields of work.

The word "elements" in the title of this book does not convey the implication that its contents are "elementary" in the sense of "easy": it mainly means that no prerequisites are required, with the exception of some basic background in classical physics and calculus. It also signifies "devoted to the foundations". In fact, the arguments chosen are all very classical, and the formal or technical developments of this century are absent, as well as a detailed treatment of such problems as the theory of the planetary motions and other very concrete mechanical problems. This second meaning, however, is the result of the necessity of finishing this work in a reasonable amount of time rather than an a priori choice. Therefore a detailed review of the "few" results of ergodic theory, of the "many" results of statistical mechanics, of the classical theory of fields (elasticity and waves), and of quantum mechanics are also totally absent; they could constitute the subject of two additional volumes on mechanics. This book grew out of several courses on meccanica razionale, i.e., essentially, theoretical mechanics, which I gave at the University of Rome during the years 1975-1978.

Explains the fundamental concepts and principles underlying the subject, illustrates the application of numerical methods to solve engineering problems with mathematical models, and introduces students to the use of computer applications to solve problems. A continuous step-by-step build up of the subject makes the book very student-friendly. All topics and sequentially coherent subtopics are carefully organized and explained distinctly within each chapter. An abundance of solved examples is provided to illustrate all phases of the topic under consideration. All chapters include several spreadsheet problems for modeling of physical phenomena, which enable the student to obtain graphical representations of physical quantities and perform numerical analysis of problems without recourse to a high-level computer language. Adequately equipped with numerous solved problems and exercises, this book provides sufficient material for a two-semester course. The book is essentially designed for all engineering students. It would also serve as a ready reference for practicing engineers and for those preparing for competitive examinations. It includes previous years' question papers and their solutions.

Mechanics is the fundamental branch of physics whose two offshoots, static and dynamics, find varied application in thermodynamics, electricity and electromagnetism. Engineering Mechanics is a simple yet insightful textbook on the concepts and principles of mechanics in the field of engineering. Written in a comprehensive manner, Engineering Mechanics greatly elaborates on the tricky aspects of the motion of particle and its cause, forces and vectors, lifting machines and pulleys, inertia and projectiles, juxtaposition them with relevant, neat illustrations, which make the science of engineering mechanics an interesting study for aspiring engineers. The authors have packaged the book, Engineering Mechanics, with a huge number of theoretical questions, numerical problems and a highly informative objective-type question bank. The book aspires to cater to the learning needs of BE/BTech students and also those preparing for competitive exams.

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