Ordinary And Differential Equation By Nita H Shah

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Numerical Methods for Engineers - Steven C. Chapra 2006
The fifth edition of Numerical Methods for Engineers with Software and Programming Applications continues its tradition of excellence. The revision retains the successful pedagogy of the prior editions. Chapra and Canale's unique approach opens each part of the text with sections called Motivation, Mathematical Background, and Orientation, preparing the student for what is to come in a motivating and engaging manner. Each part closes with an Epilogue containing sections called Trade-Offs, Important Relationships and Formulas, and Advanced Methods and Additional References. Much more than a summary, the Epilogue deepens understanding of what has been learned and provides a peek into more advanced methods. Users will find use of software packages, specifically MATLAB and Excel with VBA. This includes material on developing MATLAB m-files and VBA macros. Also, many, many more challenging problems are included. The expanded breadth of engineering disciplines covered is especially evident in the problems, which now cover such areas as biotechnology and biomedical engineering
Integral Transforms and Applications - Nita H. Shah 2022-10-03
This work presents the guiding principles of Integral Transforms needed for many applications when solving engineering and science problems. As a modern approach to Laplace Transform, Fourier series and Z-Transforms it is a valuable reference for professionals and students alike.
Recent Advancements in Graph Theory - N. P. Shrimali 2020-11-09
Graph Theory is a branch of discrete mathematics. It has many applications to many different areas of Science and Engineering. This book provides the most up-to-date research findings and applications in Graph Theory. This book focuses on the latest research in Graph Theory. It provides recent findings that are occurring in the field, offers insights on an international and transnational levels, identifies the gaps in the results, and includes forthcoming international studies and research, along with its applications in Networking, Computer Science, Chemistry, and Biological Sciences, etc. The book is written with researchers and post graduate students in mind.
DIFFERENTIAL EQUATIONS AND THEIR APPLICATIONS - ZAFAR AHSAN 2016-07-01
Primarily intended for the undergraduate students of mathematics, physics and engineering, this text gives in-depth coverage of differential equations and the methods for solving them. The book begins with the definitions, the physical and geometric origins of differential equations, and the methods for solving the first order differential equations. Then it goes on to give the applications of these equations to such areas as biology, medical sciences, electrical engineering and economics. The text also discusses, systematically and logically, higher order differential equations and their applications to telecommunications, civil engineering, cardiology and detection of diabetes, as also the methods of solving simultaneous differential equations and their applications. Besides, the book provides a detailed discussion on Laplace transforms and their applications, partial differential equations and their applications to vibration of stretched string, heat flow, transmission lines, etc., and calculus of variations and its applications. The book, which is a happy fusion of theory and application, would also be useful to postgraduate students.NEW TO THIS EDITION • New sections on: (a) Equations reducible to linear partial differential equations (b) General method for solving the second order non-linear partial differential equations (Monge’s Method) (c) Lagrange’s equations of motion • Number of solved examples in Chapters 5, 7, 8, 9 and 10.
Differential and Difference Equations - Sotiris K Ntouyas 2020-09-11
This Special Issue deals with the theory and applications of differential and difference equations, and includes papers for different branches of differential equations, such as - Boundary Value Problems for Fractional Differential Equations and Inclusions - Spectral Theory for Fractional Differential Equations - Generalized Abel's Integral Equations - Oscillation Results for Higher Order Differential Equations - Stability of Equilibria under Stochastic Perturbations - Harmonic Functions - Coincidence Continuation Theory for Multivalued Maps - Generalized Briot-Bouquet Differential Equation - Nonlocal Inverse Problem - Lyapunov Type Theorems for Exponential Stability - Fuzzy Functions on Time Scales - Modified Helmholtz Equation on a Regular Hexagon
Linear Transformation - Nita H. Shah 2020-12-30
This book introduces linear transformation and its key results, which have applications in engineering, physics, and various branches of mathematics. Linear transformation is a difficult subject for students. This concise text provides an in-depth overview of linear trans-formation. It provides multiple-choice questions, covers enough examples for the reader to gain a clear understanding, and includes exact methods with specific shortcuts to reach solutions for particular problems. Research scholars and students working in the fields of engineering, physics, and different branches of mathematics need to learn the concepts of linear transformation to solve their problems. This book will serve their need instead of having to use the more complex texts that contain more concepts then needed. The chapters mainly discuss the definition of linear transformation, properties of linear transformation, linear operators, composition of two or more linear transformations, kernels and range of linear transformation, inverse transformation, one-to-one and onto transformation, isomorphism, matrix linear transformation, and similarity of two matrices.
Matrix and Determinant - Nita H. Shah 2020-12-20
This book provides a clear understanding regarding the fundamentals of matrix and determinant from introduction

to its real-life applications. The topic is considered one of the most important mathematical tools used in mathematical modelling. Matrix and Determinant: Fundamentals and Applications is a small self-explanatory and well synchronized book that provides an introduction to the basics along with well explained applications. The theories in the book are covered along with their definitions, notations, and examples. Illustrative examples are listed at the end of each covered topic along with unsolved comprehension questions, and real-life applications. This book provides a concise understanding of matrix and determinate which will be useful to students as well as researchers.

Mathematical Modeling and Computation of Real-Time Problems - Rakhee Kulshrestha 2021-01-03

This book covers an interdisciplinary approach for understanding mathematical modeling by offering a collection of models, solved problems related to the models, the methodologies employed, and the results using projects and case studies with insight into the operation of substantial real-time systems. The book covers a broad scope in the areas of statistical science, probability, stochastic processes, fluid dynamics, supply chain, optimization, and applications. It discusses advanced topics and the latest research findings, uses an interdisciplinary approach for real-time systems, offers a platform for integrated research, and identifies the gaps in the field for further research. The book is for researchers, students, and teachers that share a goal of learning advanced topics and the latest research in mathematical modeling.

Differential Equations in Engineering - Nupur Goyal 2021-09-07

Differential Equations in Engineering: Research and Applications describes advanced research in the field of the applications of differential equations in engineering and the sciences, and offers a sound theoretical background, along with case studies. It describes the advances in differential equations in real life for engineers. Along with covering many advanced differential equations and explaining the utility of these equations, the book provides a broad understanding of the use of differential equations to solve and analyze many real-world problems, such as calculating the movement or flow of electricity, the motion of an object to and from, like a pendulum, or explaining thermodynamics concepts by making use of various mathematical tools, techniques, strategies, and methods in applied engineering. This book is written for researchers and academicians, as well as for undergraduate and postgraduate students of engineering.

Ordinary and Partial Differential Equations - Victor Henner 2013-01-29

Covers ODEs and PDEs—in One Textbook Until now, a comprehensive textbook covering both ordinary differential equations (ODEs) and partial differential equations (PDEs) didn’t exist. Fulfilling this need, Ordinary and Partial Differential Equations provides a complete and accessible course on ODEs and PDEs using many examples and exercises as well as intuitive, easy-to-use software. Teaches the Key Topics in Differential Equations The text includes all the topics that form the core of a modern undergraduate or beginning graduate course in differential equations. It also discusses other optional but important topics such as integral equations, Fourier series, and special functions. Numerous carefully chosen examples offer practical guidance on the concepts and techniques. Guides Students through the Problem-Solving Process Requiring no user programming, the accompanying computer software allows students to fully investigate problems, thus enabling a deeper study into the role of boundary and initial conditions, the dependence of the solution on the parameters, the accuracy of the solution, the speed of a series convergence, and related questions. The ODE module compares students’ analytical solutions to the results of computations while the PDE module demonstrates the sequence of all necessary analytical solution steps.

Non-Linear Programming - Nita H. Shah 2020-12-16

This book is for beginners who are struggling to understand and optimize non-linear problems. The content will help readers gain an understanding and learn how to formulate real-world problems and will also give insight to many researchers for their future prospects. It proposes a mind map for conceptual understanding and includes sufficient solved examples for reader comprehension. The theory is explained in a lucid way. The variety of examples are framed to raise the thinking level of the reader and the formulation of real-world problems are included in the last chapter along with applications. The book is self-explanatory, well synchronized and written for undergraduate, post graduate and research scholars.

The Case for Marriage - Linda Waite 2002-03-05

A groundbreaking look at marriage, one of the most basic and universal of all human institutions, which reveals the emotional, physical, economic, and sexual benefits that marriage brings to individuals and society as a whole. The Case for Marriage is a critically important intervention in the national debate about the future of family. Based on the authoritative research of family sociologist Linda J. Waite, journalist Maggie Gallagher, and a number of other scholars, this book’s findings dramatically contradict the anti-marriage myths that have become the common sense of most Americans. Today a broad consensus holds that marriage is a bad deal for women, that divorce is better for children when parents are unhappy, and that marriage is essentially a private choice, not a public institution. Waite and Gallagher flatly contradict these assumptions, arguing instead that by a broad range of indices, marriage is actually better for you than being single or divorced—physically, materially, and spiritually. They contend that married people live longer, have better health, earn more money, accumulate more wealth, feel more fulfillment in their lives, enjoy more satisfying sexual relationships, and have happier and more successful children than those who remain single, cohabit, or get divorced. The Case for Marriage combines clearheaded analysis, penetrating cultural criticism, and practical advice for strengthening the institution of marriage, and provides clear, essential guidelines for reestablishing marriage as the foundation for a healthy and happy society. “A compelling defense of a sacred union. The Case for Marriage is well written and well argued, empirically rigorous and learned, practical and commonsensical.” -- William J. Bennett, author of The Book of Virtues “Makes the absolutely critical point that marriage has been misrepresented and misunderstood.” -- The Wall Street Journal www.broadwaybooks.com

Elements of Ordinary Differential Equations and Special Functions - Aloknath Chakrabarti 1990

Ordinary differential equations and special functions form a central part in many branches of Physics and Engineering. This book brings out some of the most important concepts associated with linear ordinary differential equations and the special functions of frequent occurrence. Each chapter is supplemented with a number of worked examples and problems to give the student a greater understanding of the subject.

Mathematical Reviews - 2004

Mathematical Models of Infectious Diseases and Social Issues - Nita H. Shah 2020

"This book explores the transmission dynamics of infectious diseases and social issues"--

Sustainability in Industry 4.0 - Shwetank Avikal

2021-10-01
A large and growing number of manufacturers are realizing the substantial financial and environmental benefits of sustainable business practices. To develop more sustainable societies, industries need to better understand how to respond to environmental, economic, and social challenges and transform industrial behavior. The objective of this book is to provide the required knowledge and accelerate the transition towards a sustainable industrial system. The book will help industries to enhance operational efficiency by reducing costs and waste. It will help them increase customer response, reach new customers, and gain competitive advantage. It offers innovation, scenario planning, and strategic analysis that goes beyond compliance, as well as case studies and remedies to the industry 4.0 challenges. Professionals, as well as students, can refer to this book to add to their knowledge on Industry 4.0 and develop new ideas and solutions to the existing and future problems.

Optimal Inventory Control and Management Techniques - Mittal, Mandeep 2016-03-29
Stock management and control is a critical element to the success and overall financial well-being of an organization. Through the application of innovative practices and technology, businesses are now able to effectively monitor their operations and manage their inventory by evaluating sales patterns and customer preferences. Optimal Inventory Control and Management Techniques explores emergent research in stock management and product control within organizations. Featuring diverse perspectives on the implementation of various optimization techniques, genetic algorithms, and datamining concepts, as well as research on big data applications for inventory management, this publication is a comprehensive reference source for practitioners, educators, and researchers in the fields of logistics, operations management, and retail management.

Integral Calculus - P K Mittal 2005-03
This classic book is a part of bestseller series in mathematics by eminent mathematician, Shanti Narayan. It is an exhaustive foundation text on Integral Calculus and primarily caters to the undergraduate courses of B.Sc and BA.

Lung Mechanics - Jason H. T. Bates 2009-07-30
A modern quantitative study of lung mechanics, relating mathematical modeling and engineering principles to lung function, structure, mechanics, and disease.

ORDINARY AND PARTIAL DIFFERENTIAL EQUATIONS - NITA H. SHAH 2015-01-17
This revised and updated text, now in its second edition, continues to present the theoretical concepts of methods of solutions of ordinary and partial differential equations. It equips students with the various tools and techniques to model different physical problems using such equations. The book discusses the basic concepts of ordinary and partial differential equations. It contains different methods of solving ordinary differential equations of first order and higher degree. It gives the solution methodology for linear differential equations with constant and variable coefficients and linear differential equations of second order. The text elaborates simultaneous linear differential equations, total differential equations, and partial differential equations along with the series solution of second order linear differential equations. It also covers Bessel's and Legendre's equations and functions, and the Laplace transform. Finally, the book revisits partial differential equations to solve the Laplace equation, wave equation and diffusion equation, and discusses the methods to solve partial differential equations using the Fourier transform. A large number of solved examples as well as exercises at the end of chapters help the students comprehend and strengthen the underlying concepts. The book is intended for undergraduate and postgraduate students of Mathematics (B.A./B.Sc., M.A./M.Sc.), and undergraduate students of all branches of engineering (B.E./B.Tech.), as part of their course in Engineering Mathematics. New to the SECOND Edition • Includes new sections and subsections such as applications of differential equations, special substitution (Lagrange and Riccati), solutions of non-linear equations which are exact, method of variation of parameters for linear equations of order higher than two, and method of undetermined coefficients • Incorporates several worked-out examples and exercises with their answers • Contains a new Chapter 19 on 'Z-Transforms and its Applications'.

Swarm Intelligence - Abhishek Sharma 2022-02-02
Swarm intelligence is one of the fastest growing subfields of artificial intelligence and soft computing. This field includes multiple optimization algorithms to solve NP-hard problems for which conventional methods are not effective. It inspires researchers in engineering sciences to learn theories from nature and incorporate them. Swarm Intelligence: Foundation, Principles, and Engineering Applications provides a comprehensive review of new swarm intelligence techniques and offers practical implementation of Particle Swarm Optimization (PSO) with MATLAB code. The book discusses the statistical analysis of swarm optimization techniques so that researchers can analyse their experiment design. It also includes algorithms in social sectors, oil and gas industries, and recent research findings of new optimization algorithms in the field of engineering describing the implementation in machine learning. This book is written for students of engineering, research scientists, and academicians involved in the engineering sciences.

The Bureaucracy of Beauty - Arindam Dutta 2007
Publisher description

Advanced Differential Equations - M.D.Raisinghania 1995-03-01
This book is especially prepared for B.A., B.Sc. and honours (Mathematics and Physics), M.A/M.Sc. (Mathematics and Physics), B.E. Students of Various Universities and for I.A.S., P.C.S., AMIE, GATE, and other competitve exams.Almost all the chapters have been rewritten so that in the present form, the reader will not find any difficulty in understanding the subject matter.The matter of the previous edition has been re-organised so that now each topic gets its proper place in the book.More solved examples have been added so that now each topic gets its proper place in the book. References to the latest papers of various universities and I.A.S. examination have been made at proper places.

Global Burden of Disease and Risk Factors - Alan D. Lopez 2006-04-02
Strategic health planning, the cornerstone of initiatives designed to achieve health improvement goals around the world, requires an understanding of the comparative burden of diseases and injuries, their corresponding risk factors and the likely effects of invervention options. The Global Burden of Disease framework, originally published in 1990, has been widely adopted as the preferred method for health accounting and has become the standard to guide the setting of health research priorities. This publication sets out an updated assessment of the situation, with an analysis of trends observed since 1990 and a chapter on the sensitivity of GBD estimates to various sources of uncertainty in methods and data.

Handbook of Research on Promoting Business Process Improvement Through Inventory Control Techniques - Shah, Nita H. 2017-12-22
Stock management and control is a critical element to the success and overall financial well-being of an organization. Through the application of innovative practices and technology, businesses are now able to effectively monitor their operations and manage their

inventory by evaluating sales patterns and customer preferences. The Handbook of Research on Promoting Business Process Improvement Through Inventory Control Techniques is a critical scholarly resource that examines optimization techniques, data mining concepts, and genetic algorithms to manage inventory control. Featuring coverage on a broad range of topics such as logistics and supply chain management, stochastic inventory modelling, and inventory management in healthcare, this book is geared towards academicians, practitioners, and researchers seeking various research methods to get optimal ordering policy.

FUNDAMENTALS OF DISCRETE MATHEMATICAL STRUCTURES - K. R. CHOWDHARY 2015-01-02

This updated text, now in its Third Edition, continues to provide the basic concepts of discrete mathematics and its applications at an appropriate level of rigour. The text teaches mathematical logic, discusses how to work with discrete structures, analyzes combinatorial approach to problem-solving and develops an ability to create and understand mathematical models and algorithms essentials for writing computer programs. Every concept introduced in the text is first explained from the point of view of mathematics, followed by its relation to Computer Science. In addition, it offers excellent coverage of graph theory, mathematical reasoning, foundational material on set theory, relations and their computer representation, supported by a number of worked-out examples and exercises to reinforce the students' skill. Primarily intended for undergraduate students of Computer Science and Engineering, and Information Technology, this text will also be useful for undergraduate and postgraduate students of Computer Applications. New to this Edition Incorporates many new sections and subsections such as recurrence relations with constant coefficients, linear recurrence relations with and without constant coefficients, rules for counting and shorting, Peano axioms, graph connecting, graph scanning algorithm, lexicographic shorting, chains, antichains and order-isomorphism, complemented lattices, isomorphic order sets, cyclic groups, automorphism groups, Abelian groups, group homomorphism, subgroups, permutation groups, cosets, and quotient subgroups. Includes many new worked-out examples, definitions, theorems, exercises, and GATE level MCQs with answers.

INTRODUCTION TO THEORY OF ORDINARY DIFFERENTIAL EQUATION - V. DHARMAIAH 2012-09-19

This systematically-organized text on the theory of differential equations deals with the basic concepts and the methods of solving ordinary differential equations. Various existence theorems, properties of uniqueness, oscillation and stability theories, have all been explained with suitable examples to enhance students' understanding of the subject. The book also discusses in sufficient detail the qualitative, the quantitative, and the approximation techniques, linear equations with variable and constants coefficients, regular singular points, and homogeneous equations with analytic coefficients. Finally, it explains Riccati equation, boundary value problems, the Sturm–Liouville problem, Green's function, the Picard's theorem, and the Sturm–Picone theorem. The text is supported by a number of worked-out examples to make the concepts clear, and it also provides a number of exercises help students test their knowledge and improve their skills in solving differential equations. The book is intended to serve as a text for the postgraduate students of mathematics and applied mathematics. It will also be useful to the candidates preparing to sit for the competitive examinations such as NET and GATE.

Research Anthology on Advancements in Women's Health and Reproductive Rights - Management Association, Information Resources 2022-05-06

Reproductive health and rights are critical topics in today's society as laws and policies are continuously debated and adjusted across the world. There are many different outlooks on these issues, and different countries have widely varying laws in place at present. In order to better understand where the world currently is regarding these pressing discussions, further study is needed on the status of women's reproductive rights. The Research Anthology on Advancements in Women's Health and Reproductive Rights provides a thorough review of the current research available regarding reproductive health. The book discusses how various countries and regions are handling reproductive rights as well as current issues women face within their reproductive health journeys. Covering topics such as sexual health, gender, and pregnancy, this major reference work is ideal for nurses, government officials, policymakers, healthcare professionals, researchers, scholars, academicians, practitioners, instructors, and students.

Engineering Mathematics Vol. One 4Th Ed. - S. S. Sastry 2008

Advances in Image and Data Processing Using VLSI Design - Kusum Lata 2022-01-30

NUMERICAL METHODS WITH C++ PROGRAMMING - RM SOMASUNDRAM 2005-01-01

Primarily intended for the B.E./B.Tech., MCA courses as also for undergraduate courses in Physics and Mathematics, this comprehensive and well-written text covers all the important topics in numerical methods. In the process, it enhances the skill of students in applying numerical methods for solving various problems in Engineering and Science. In this easy-to-read and student-friendly text, the authors present the material in such a way that students can understand and assimilate the basic concepts quickly. Each method is well explained with worked-out examples and self-learning Exercises at the end of each section. While the emphasis of the text is mainly on the working rules, at the same time, it explains the mathematical concepts and applications, wherever necessary. The programs are written in C++ to help the students understand the procedures in an effective manner and to solve more difficult problems. Self-documented programs are given for most of the methods discussed.

Mathematical Analysis for Transmission of COVID-19 - Nita H. Shah 2021-04-01

This book describes various mathematical models that can be used to better understand the spread of novel Coronavirus Disease 2019 (COVID-19) and help to fight against various challenges that have been developed due to COVID-19. The book presents a statistical analysis of the data related to the COVID-19 outbreak, especially the infection speed, death and fatality rates in major countries and some states of India like Gujarat, Maharashtra, Madhya Pradesh and Delhi. Each chapter with distinctive mathematical model also has numerical results to support the efficacy of these models. Each model described in this book provides its unique prediction policy to reduce the spread of COVID-19. This book is beneficial for practitioners, educators, researchers and policymakers handling the crisis of COVID-19 pandemic.

Mathematical Models of Infectious Diseases and Social Issues - Shah, Nita H. 2020-06-26

When deadly illness spreads through a population at a rapid pace, time may be of the essence in order to save lives. Using mathematics as a language to interpret assumptions concerning the biological and population mechanics, one can make predictions by analyzing actual epidemiological data using mathematical tests and results. Mathematical models can help us understand the right disease status and predict the effects of the disease on populations, which can help limit the spread and devastation of the illness. Mathematical Models of

Infectious Diseases and Social Issues is a collection of innovative research that examines the dynamics of diseases and their effect on populations. Featuring coverage of a broad range of topics including deterministic models, environmental pollution, and social issues, this book is ideally designed for diagnosticians, clinicians, healthcare providers, pharmacists, government health officials, policymakers, academicians, researchers, and students.

COMPUTER ORIENTED NUMERICAL METHODS - RAJARAMAN, V. 2018-11-01

This book is a concise and lucid introduction to computer oriented numerical methods with well-chosen graphical illustrations that give an insight into the mechanism of various methods. The book develops computational algorithms for solving non-linear algebraic equation, sets of linear equations, curve-fitting, integration, differentiation, and solving ordinary differential equations. OUTSTANDING FEATURES • Elementary presentation of numerical methods using computers for solving a variety of problems for students who have only basic level knowledge of mathematics. • Geometrical illustrations used to explain how numerical algorithms are evolved. • Emphasis on implementation of numerical algorithm on computers. • Detailed discussion of IEEE standard for representing floating point numbers. • Algorithms derived and presented using a simple English based structured language. • Truncation and rounding errors in numerical calculations explained. • Each chapter starts with learning goals and all methods illustrated with numerical examples. • Appendix gives pointers to open source libraries for numerical computation.

Partial Differential Equations - Nita H. Shah 2020-12-29

Differential equations play a noticeable role in engineering, physics, economics, and other disciplines. They permit us to model changing forms in both mathematical and physical problems. These equations are precisely used when a deterministic relation containing some continuously varying quantities and their rates of change in space and/or time is recognized or postulated. This book is intended to provide a straightforward introduction to the concept of partial differential equations. It provides a diversity of numerical examples framed to nurture the intellectual level of scholars. It includes enough examples to provide students with a clear concept and also offers short questions for comprehension. Construction of real-life problems is considered in the last chapter along with applications. Research scholars and students working in the fields of engineering, physics, and different branches of mathematics need to learn the concepts of partial differential equations to solve their problems. This book will serve their needs instead of having to use more complex books that contain more concepts than needed.

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Circular Economy for the Management of Operations - Anil Kumar 2020-12-15

Circular-Economy is a new concept in operations management. Its goal is to redefine growth, focusing on positive benefits arising for society as a whole out of efficiencies such as designing waste out the operations process. This book will help practitioners use the proper strategy for effective adoption of Circular practices to use in their organization. Features: Provides a complete understanding of Circular-Economy practices Offers advanced mathematical models to help industry management adopt the correct practices Presents a deep understanding of cross-functional and customer-focused design thinking Covers how to develop sustainable practices in all types of activities within operations management. Circular Economy for the Management of Operations will be of interest to practitioners and researchers in engineering as well as business management

Quantile Regression - Roger Koenker 2005-05-05

Quantile regression is gradually emerging as a unified statistical methodology for estimating models of conditional quantile functions. By complementing the exclusive focus of classical least squares regression on the conditional mean, quantile regression offers a systematic strategy for examining how covariates influence the location, scale and shape of the entire response distribution. This monograph is the first comprehensive treatment of the subject, encompassing models that are linear and nonlinear, parametric and nonparametric. The author has devoted more than 25 years of research to this topic. The methods in the analysis are illustrated with a variety of applications from economics, biology, ecology and finance. The treatment will find its core audiences in econometrics, statistics, and applied mathematics in addition to the disciplines cited above.

Applied Soft Computing and Embedded System Applications in Solar Energy - Rupendra Kumar Pachauri 2021-05-27

Applied Soft Computing and Embedded System Applications in Solar Energy deals with energy systems and soft computing methods from a wide range of approaches and application perspectives. The authors examine how embedded system applications can deal with the smart monitoring and controlling of stand-alone and grid-connected solar photovoltaic (PV) systems for increased efficiency. Growth in the area of artificial intelligence with embedded system applications has led to a new era in computing, impacting almost all fields of science and engineering. Soft computing methods implemented to energy-related problems regularly face data-driven issues such as problems of optimization, classification, clustering, or prediction. The authors offer real-time implementation of soft computing and embedded system in the area of solar energy to address the issues with microgrid and smart grid projects (both renewable and non-renewable generations), energy management, and power regulation. They also discuss and examine alternative solutions for energy capacity assessment, energy efficiency systems design, as well as other specific smart grid energy system applications. The book is intended for students, professionals, and researchers in electrical and computer engineering fields, working on renewable energy resources, microgrids, and smart grid projects. Examines the integration of hardware with stand-alone PV panels and real-time monitoring of factors affecting the efficiency of the PV panels Offers real-time implementation of soft computing and embedded system in the area of solar energy Discusses how soft computing plays a huge role in the prediction of efficiency of stand-alone and grid-

connected solar PV systems Discusses how embedded system applications with smart monitoring can control and enhance the efficiency of stand-alone and grid-connected solar PV systems Explores swarm intelligence techniques for solar PV parameter estimation Dr. Rupendra Kumar Pachauri is Assistant Professor – Selection Grade in the Department of Electrical and Electronics Engineering, University of Petroleum and Energy Studies (UPES), Dehradun, India. Dr. Jitendra Kumar Pandey is Professor & Head of R&D in the University of Petroleum and Energy Studies (UPES), Dehradun, India. Mr. Abhishek Sharma is working as a research scientist in the research and development department (UPES, India). Dr. Om Prakash Nautiyal is working as a scientist in Uttarakhand Science Education & Research Centre (USERC), Department of Information and Science Technology, Govt. of Uttarakhand, Dehradun, India. Prof. Mangey Ram is working as a Research Professor at Graphic Era Deemed to be University, Dehradun, India.

Numerical Methods with C++ Programming - NITA H. SHAH 2008-12-15

The rapid development of high speed digital computers and the increasing desire for numerical answers to applied problems have led to increased demands in the courses dealing with the methods and techniques of numerical analysis. Numerical methods have always been useful but their role in the present-day scientific research has become prominent. For example, they enable one to find the roots of transcendental equations and in solving nonlinear differential equations. Indeed, they give the solution when ordinary analytical methods fail. This well-organized and comprehensive text aims at enhancing and strengthening numerical methods concepts among students using C++ programming, a fast emerging preferred programming language among software developers. The book provides an synthesis of both theory and practice. It focuses on the core areas of numerical analysis including algebraic equations, interpolation, boundary value problem, and matrix eigenvalue problems. The mathematical concepts are supported by a number of solved examples. Extensive self-review exercises and answers are provided at the end of each chapter to help students review and reinforce the key concepts. KEY FEATURES : C++ programs are provided for all numerical methods discussed. More than 400 unsolved problems and 200 solved problems are included to help students test their grasp of the subject. The book is intended for undergraduate and postgraduate students of Mathematics, Engineering and Statistics. Besides, students pursuing BCA and MCA and having Numerical Methods with C++ Programming as a subject in their course will benefit from this book.