

Foundations And Applications Of The Time Value Of Money

Progressing from the fundamentals of quantum mechanics (QM) to more complicated topics, Quantum Mechanics: Foundations and Applications provides advanced undergraduate and graduate students with a comprehensive examination of many applications that pertain to modern physics and engineering. Based on courses taught by the author, this textbook begins with an introductory chapter that reviews historical landmarks, discusses classical theory, and establishes a set of postulates. The next chapter demonstrates how to find the appropriate wave functions for a variety of physical systems in one dimension by solving the Schrödinger equation where for time-independent cases, the total energy is an eigenvalue. The following chapter extends this method to three dimensions, focusing on partial differential equations. In subsequent chapters, the author develops the appropriate operators, eigenvalues, and eigenfunctions for angular momentum as well as methods for examining time-dependent systems. The final chapters address special systems of interest, such as lasers, quarks, and hadrons. Appendices offer additional material, exploring matrices, functions, and physical constants. Relating theory with experiment, Quantum Mechanics: Foundations and Applications provides both basic and complex information for junior- and senior-level physics and engineering students.

These sparkling essays by a gifted thinker offer philosophical views on the roots of statistical interference. A pioneer in the early development of computing, Irving J. Good made fundamental contributions to the theory of Bayesian inference and was a key member of the team that broke the German Enigma code during World War II. Good maintains that a grasp of probability is essential to answering both practical and philosophical questions. This compilation of his most accessible works concentrates on philosophical rather than mathematical subjects, ranging from rational decisions, randomness, and the nature of probability to operational research, artificial intelligence, cognitive psychology, and chess. These twenty-three self-contained articles represent the author's work in a variety of fields but are unified by a consistently rational approach. Five closely related sections explore Bayesian rationality; probability; corroboration, hypothesis testing, and simplicity; information and surprise; and causality and explanation. A comprehensive index, abundant references, and a bibliography refer readers to classic and modern literature. Good's thought-provoking observations and memorable examples provide scientists, mathematicians, and historians of science with a coherent view of probability and its applications.

Watch a video clips and view sample chapters at www.wHireman.com/FriedlandPreview Created for non-major courses in environmental science, environmental studies, and environmental biology, Environmental Science: Foundations and Applications emphasizes critical thinking and quantitative reasoning skills. Students learn how to analyze graphs, measure environmental impact on various scales, and use simple calculations to understand key concepts. With a solid understanding of the scientific method as applied, students are able to evaluate information objectively and draw their own conclusions. The text equips students to interpret the wealth of data they will encounter as citizens, professionals, and consumers.

"Presents several advanced topics including fourth-order tensors, differentiation of tensors, exponential and logarithmic tensors, and their application to nonlinear elasticity"---

Foundations and Applications of MIS

Foundations and Applications of the Time Value of Money

Anomalous Transport

Foundations and Applications of Complexity Economics

The Mathematical Foundations of the Finite Element Method with Applications to Partial Differential Equations

Foundations to Applications

This textbook presents the basic concepts and methods of fluid mechanics, including Lagrangian and Eulerian descriptions, tensors of stresses and strains, continuity, momentum, energy, thermodynamics laws, and similarity theory. The models and their solutions are presented within a context of the mechanics of multiphase media. The treatment fully utilizes the computer algebra and software system Mathematica® to both develop concepts and help the reader to master modern methods of solving problems in fluid mechanics. Topics and features: Glossary of over thirty Mathematica® computer programs Extensive, self-contained appendix of Mathematica® functions and their use Chapter coverage of mechanics of multiphase heterogeneous media Detailed coverage of theory of shock waves in gas dynamics Thorough discussion of aerohydrodynamics of ideal and viscous fluids an d gases Complete worked examples with detailed solutions Problem-solving approach Foundations of Fluid Mechanics with Applications is a complete and accessible text or reference for graduates and professionals in mechanics, applied mathematics, physical sciences, materials science, and engineering. It is an essential resource for the study and use of modern solution methods for problems in fluid mechanics and the underlying mathematical models. The present, softcover reprint is designed to make this classic textbook available to a wider audience.

Providing a unique approach to machine learning, this text contains fresh and intuitive, yet rigorous, descriptions of all fundamental concepts necessary to conduct research, build products, tinker, and play. By prioritizing geometric intuition, algorithmic thinking, and practical real world applications in disciplines including computer vision, natural language processing, economics, neuroscience, recommender systems, physics, and biology, this text provides readers with both a lucid understanding of foundational material as well as the practical tools needed to solve real-world problems. With in-depth Python and MATLAB/OCTAVE-based computational exercises and a complete treatment of cutting edge numerical optimization techniques, this is an essential resource for students and an ideal reference for researchers and practitioners working in machine learning, computer science, electrical engineering, signal processing, and numerical optimization.

Master the nurse's role in therapeutic nutrition and in teaching dietary health! Nutritional Foundations and Clinical Applications: A Nursing Approach, 8th Edition describes nutritional healing and wellness from the nurse's perspective. It covers dietary guidelines with a humanistic, personal touch, using first-hand accounts to show how nutrition principles apply to patients in real-world practice. This edition is updated with the most current guidelines and the latest research on nutrition. Written by noted educators Michele Grodner, Sylvia Escott-Stump, and Suzie Dornier, this leading nutrition text promotes healthy diets and shows how nutrition may be used in treating and controlling diseases and disorders. Applying Content Knowledge and Critical Thinking: Clinical Applications case studies help you apply nutrition principles to real-world practice situations. Personal Perspective box in each chapter offers a firsthand account of the ways in which nutrition affects patients' lives, demonstrating the personal touch for which this book is known. Teaching Tool boxes include strategies for providing nutrition counseling to patients. The Nursing Approach boxes analyze a realistic nutritional case study according to the nursing process. Social Issue boxes show how ethical, social, and community concerns can influence health and wellness. Health Debate boxes address the nurse's response to differing opinions or controversies about food, nutrition, and health concerns. Cultural Considerations boxes show how to understand and respect the food and health customs of specific ethnic groups. Key terms and a glossary make it easy to learn key vocabulary and concepts. NEW! Nursing Approach sections include Next Generation NCLEX® terminology as well as single-episode cases and questions, with answers on the Evolve website.

Provides the foundations and principles needed for addressing the various challenges of developing smart cities Smart cities are emerging as a priority for research and development across the world. They open up significant opportunities in several areas, such as economic growth, health, wellness, energy efficiency, and transportation, to promote the sustainable development of cities. This book provides the basics of smart cities, and it examines the possible future trends of this technology. Smart Cities: Foundations, Principles, and Applications provides a systems science perspective in presenting the foundations and principles that span multiple disciplines for the development of smart cities. Divided into three parts—foundations, principles, and applications—Smart Cities addresses the various challenges and opportunities of creating smart cities and all that they have to offer. It also covers smart city theory modeling and simulation, and examines case studies of existing smart cities from all around the world. In addition, the book Addresses how to develop a smart city and how to present the state of the art and practice of them all over the world Focuses on the foundations and principles needed for advancing the science, engineering, and technology of smart cities—including system design, system verification, real-time control and adaptation, Internet of Things, and test beds Covers applications of smart cities as they relate to smart transportation/connected vehicle (CV) and Intelligent Transportation Systems (ITS) for improved mobility, safety, and environmental protection Smart Cities: Foundations, Principles, and Applications is a welcome reference for the many researchers and professionals working on the development of smart cities and smart city-related industries.

Feature Extraction

Dental Materials

Foundations, Algorithms, and Applications

Foundations and Applications of Statistics

Physics, Foundations and Applications

Foundations and Applications of Sensor Management

The first textbook on this important topic, for graduate students and researchers in particle and condensed matter physics.

Foundations and Applications of Statistics simultaneously emphasizes both the foundational and the computational aspects of modern statistics. Engaging and accessible, this book is useful to undergraduate students with a wide range of backgrounds and career goals. The exposition immediately begins with statistics, presenting concepts and results from probability along the way. Hypothesis testing is introduced very early, and the motivation for several probability distributions comes from p-value computations. Prain develops the students' practical statistical reasoning through explicit examples and through numerical and graphical summaries of data that allow intuitive inferences before introducing the formal machinery. The topics have been selected to reflect the current practice in statistics, where computation is an indispensable tool. In this vein, the statistical computing environment R is used throughout the text and is integral to the exposition. Attention is paid to developing students' mathematical and computational skills as well as their statistical reasoning. Linear models, such as regression and ANOVA, are treated with explicit reference to the underlying linear algebra, which is motivated geometrically. Comprehensive coverage of Statistics discusses both the mathematical theory and practical applications that make it a powerful tool across disciplines. The book contains ample material for a two-semester course in undergraduate probability and statistics. A one-semester course based on the book will cover hypothesis testing and confidence intervals for the most common situations. In the second edition, the R code has been updated throughout to take advantage of new R packages and to illustrate better coding style. New sections have been added covering bootstrap methods, multinomial and multivariate normal distributions, the delta method, numerical methods for Bayesian inference, and nonlinear least squares. Also, the use of matrix algebra has been expanded, but remains optional, providing instructors with more options regarding the amount of linear algebra required.

This edition differs from the second chiefly in the addition of about 100 pages devoted to the quantum (or geometric, or Berry) phase, a subject that did not exist when this book was written. The changes in the remainder of the book consist of corrections of a small number of misprints. While it may seem that adding two chapters on the quantum phase is overemphasizing a currently fashionable subject, they actually complete the development of quantum theory as given in this book. We start with simple models, synthesizing them into complicated "molecules." With the new chap ters, we end with complicated "molecules," dividing them into simpler parts. This process of dividing a complex system into parts quite naturally gives rise to a gauge theory, of which the geometric phase is a manifestation - with consequences not only in theory, but observable in experiments. For this rea son, the geometric phase is not a mere fashion, but a discovery that will retain its importance forever and must be discussed in textbooks on quantum mechanics, to acknowledge help and advice from Mark Loewe in the I would like writing and also of the new part of the book. In addition, I would like to express my gratitude to J. Anandan, M. Berry, and A. Mead, who have read parts or all of the new material and have provided valuable advice.

"This book addresses research issues by investigating into foundations, technologies, and applications of intelligent business analytics, offering theoretical foundations, technologies, methodologies, and applications of intelligent business analytics in an integrated way"---

Foundations of Combinatorics with Applications

Quantum Mechanics: Foundations and Applications

Environmental Science: Foundations and Applications

Continuum Mechanics

Machine Learning Refined

Stochastic Local Search

For a long time, human beings have dreamed of a virtual world where it is possible to interact with synthetic entities as if they were real. It has been shown that the ability to touch virtual objects increases the sense of presence in virtual environments. This book provides an authoritative overview of state-of-the-art haptic rendering algorithms

Suitable for upper-level undergraduates and graduate students in engineering, science, and mathematics, this introductory text explores counting and listing, graphs, induction and recursion, and generating functions. Includes numerous exercises (some with solutions), notes, and references.

Get an in-depth understanding of the dental materials and tasks that dental professionals encounter every day with Dental Materials: Foundations and Applications, 11th Edition. Trusted for nearly 40 years, Powers and Wataha's text walks readers through the nature, categories, and uses of clinical and laboratory dental materials in use today. Increased coverage of foundational basics and clinical applications and an expanded art program help make complex content easier to grasp. If you're looking to effectively stay on top of the rapidly developing field of dental materials, look no further than this proven text. Comprehensive and cutting-edge content describes the latest materials commonly used in dental practice, including those in esthetics, ceramics, dental implants, and impressions. Approximately 500 illustrations and photographs make it easier to understand properties and differences in both materials and specific types of products. Review questions provide an excellent study tool with 20 to 30 self-test questions in each chapter. Quick Review boxes summarize the material in each chapter. Note boxes highlight key points and important terminology throughout the text. Key terms are bolded at their initial mention in the text and defined in the glossary. Expert authors are well recognized in the fields of dental materials, oral biomaterials, and restorative dentistry. A logical and consistent format sets up a solid foundation before progressing into discussions of specific materials, moving from the more common and simple applications such as composites to more specialized areas such as polymers and dental implants. Learning objectives in each chapter focus readers' attention on essential information. Supplemental readings in each chapter cite texts and journal articles for further research and study. Conversion Factors on the inside back cover provides a list of common metric conversions. NEW! Foundations and Applications subtitle emphasizes material basics and clinical applications to mirror the educational emphasis. NEW! More clinical photos and conceptual illustrations help bring often-complex material into context and facilitate comprehension.

This book presents a survey of the aspects of economic complexity, with a focus on foundational, interdisciplinary ideas. The long-awaited follow up to his 2011 volume Complex Evolutionary Dynamics in Urban-Regional and Ecologic-Economic Systems: From Catastrophe to Chaos and Beyond, this volume draws together the threads of Rosser's earlier work on complexity theory and its wide applications in economics and an expanded list of related disciplines. The book begins with a full account of the broader categories of complexity in economics--dynamic, computational, hierarchical, and structural--before shifting to more detailed analysis. The next two chapters address problems associated with computational complexity, especially those of computability, and discuss the Godel Incompleteness Theorem with a focus on reflexivity. The middle chapters discuss the relationship between entropy, econophysics, evolution, and economic complexity, respectively, with applications in urban and regional dynamics, ecological economics, general equilibrium theory, as well as financial market dynamics. The final chapter works to bring together these themes into a broader framework and expose some of the limits concerning analysis of deeper foundational issues. With applications in all disciplines characterized by interconnected nonlinear adaptive systems, this book is appropriate for graduate students, professors and practitioners in economics and related disciplines such as regional science, mathematics, physics, biology, environmental sciences, philosophy, and psychology.

Quantum Mechanics

The Will to Meaning

Handbook of Research on Foundations and Applications of Intelligent Business Analytics

Smart Cities

Foundations, Principles, and Applications

Good Thinking

This book addresses the challenges in the software engineering of variability-intensive systems. Variability-intensive systems can support different usage scenarios by accommodating different and unforeseen features and qualities. The book features academic and industrial contributions that discuss the challenges in developing, maintaining and evolving systems, cloud and mobile services for variability-intensive software systems and the scalability requirements they imply. The book explores software engineering approaches that can efficiently deal with variability-intensive systems as well as applications and use cases benefiting from variability-intensive systems.

Comprehensive coverage of the time value of money In this book, authors Pamela Peterson Drake and Frank Fabozzi fully expand upon the type of time value of money (TVM) concepts usually presented as part of overviews given in other general finance books. Various TVM concepts and theories are discussed, with the authors offering many examples throughout each chapter that serve to reinforce the tools and techniques covered. Problems and detailed solutions--demonstrated using two different financial calculators, as well as Excel--are also provided at the end of each chapter, while glossary terms are provided in an appendix to familiarize you with basic terms. Provides the basic foundations of the time value of money Covers issues ranging from an introduction of financial mathematics to calculating present/future values and understanding loan amortization Contains problem/solution sets throughout, so you can test your knowledge of the topics discussed

Understanding the time value of money is essential, and this reliable resource will help you gain a firm grasp of its many aspects and its real-world applications. The first book of its kind to review the current status and future direction of the exciting new branch of machinelearning/data mining called imbalanced learning focuses on how an intelligent system canlearn when it is provided with imbalanced data. Solving imbalancedlearning problems is critical in numerous data-intensive networkedsystems, including surveillance, security, Internet, finance,biomedical, defense, and more. Due to the inherent complexcharacteristics of imbalanced data sets, learning from such datarequires new understandings, principles, algorithms, and tools totransform vast amounts of raw data efficiently into information andknowledge representation. The first comprehensive look at this new branch of machinelearning, this book offers a critical review of the problem ofimbalanced learning, covering the state of the art in techniques,principles, and real-world applications. Featuring contributionsfrom experts in both academia and industry, Imbalanced Learning:Foundations, Algorithms, and Applications provides chaptercoverage on: Foundations of Imbalanced Learning Imbalanced Datasets: From Sampling to Classifiers Ensemble Methods for Class Imbalance Learning Class Imbalance Learning Methods for Support VectorMachines Class Imbalance and Active Learning Nonstationary Stream Data Learning with Imbalanced ClassDistribution Assessment Metrics for Imbalanced Learning Imbalanced Learning: Foundations, Algorithms, andApplications will help scientists and engineers learn how totackle the problem of learning from imbalanced datasets, and gainsights into current developments in the field as well as futureresearch directions.

This book conveys the fundamentals of Linked Lexical Knowledge Bases (LLKB) and sheds light on their different aspects from various perspectives, focusing on their construction and use in natural language processing (NLP). It characterizes a wide range of both expert-based and collaboratively constructed lexical knowledge bases. Only basic familiarity with NLP is required and this book has been written for both students and researchers in NLP and related fields who are interested in knowledge-based approaches to language analysis and their applications. Lexical Knowledge Bases (LKBs) are indispensable in many areas of natural language processing, as they encode human knowledge of language in machine readable form, and as such, they are required as a reference when machines attempt to interpret natural language in accordance with human perception. In recent years, numerous research efforts have led to the insight that to make the best use of available knowledge, the orchestrated exploitation of different LKBs is necessary. This allows us to not only extend the range of covered words and senses, but also gives us the opportunity to obtain a richer knowledge representation when a particular meaning of a word is covered in more than one resource. Examples where such an orchestrated usage of LKBs proved beneficial include word sense disambiguation, semantic role labeling, semantic parsing, and text classification. This book presents different kinds of automatic, manual, and collaborative linkings between LKBs. A special chapter is devoted to the linking algorithms employing text-based, graph-based, and joint modeling methods. Following this, it presents a set of higher-level NLP tasks and algorithms, effectively utilizing the knowledge in LLKBs. Among them, you will find advanced methods, e.g., distant supervision, or continuous vector space models of knowledge bases (KB), that have become widely used at the time of this book's writing. Finally, multilingual applications of LLKB's, such as cross-lingual semantic relatedness and computer-aided translation are discussed, as well as tools and interfaces for exploring LLKBs, followed by conclusions and future research directions.

Theory and Applications

Foundations and Applications of Inductive Probability

Software Engineering for Variability Intensive Systems

What is Psychology?: Foundations, Applications, and Integration

Foundations of Blockchain

Memory

This latest addition to the successful Network Biology series presents current methods for determining the entropy of networks, making it the first to cover the recently established Quantitative Graph Theory. An excellent international team of editors and contributors provides an up-to-date outlook for the field, covering a broad range of graph entropy-related concepts and methods. The topics range from analyzing mathematical properties of methods right up to applying them in real-life areas. Filling a gap in the contemporary literature this is an invaluable reference for a number of disciplines.

Including mathematicians, computer scientists, computational biologists, and structural chemists.

WHAT IS PSYCHOLOGY? FOUNDATIONS, APPLICATIONS, AND INTEGRATION includes some of the most effective features from Pastorino and Doyle-Portillo's other texts, as well as new and innovative features to excite students about the field of psychology. The text is organized around the foundational areas of psychology emphasized in the latest version of the APA guidelines. It incorporates the authors' successful and engaging teaching approach, which motivates students to read and captures their curiosity from the very beginning. The parts open with attention-grabbing case studies that have drawn rave reviews from students. Each case study is threaded throughout all of the chapters of the section, providing students with a view of the content that is both integrated and applied to real life. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

The science and practice of memory come to life with Bennett Schwartz' Memory, Second Edition. Integrated coverage of cognitive psychology and neuroscience throughout the text connect theory and research to the areas in the brain where memory processes occur, while unique applications of memory concepts to such areas as education, investigations, and courtrooms engage students in an exploration of how memory works in everyday life. Four themes create a framework for the text: the active nature of learning and remembering; memory's status as a biological process; the multiple components of memory systems; and how memory principles can improve our individual ability to learn and remember. Substantive changes in each chapter and 156 new references bring this new edition completely up to date and offer students an array of high-interest examples for augmenting their own memory abilities and appreciation of memory science.

This book provides a comprehensive analysis of fundamental topics related to blockchain. Throughout, the authors explore different vital issues and specific areas of blockchain. For convenience, the authors present the elementary description, visualize the workings procedure of blockchain paradigm, and highlight the areas it can be applied in real life. They explain the blockchain process from a diverse perspective i.e. distributed Internet of Things (IoT), interdependent networks, intelligent mining, etc. They also analyze the interconnection of a blockchain network and such novel research areas to show a pathway towards a new research direction. This book also holds the core challenges and open research issues of blockchain technology, considering existing applications. Chapters include consensus mechanisms of blockchain, blockchain applicability in centralized and decentralized internet of things, blockchain interoperability from the perspective of interdependent networks, and blockchain for resource-constrained devices. Specifies the importance of theoretical methods in dealing with problems in the context of blockchain for interdependent decision making; Provides a comprehensive

Investigation of blockchain algorithms and the recently developed methods based on this algorithm; Provides basics and mathematical foundations needed to learn and deploy blockchain.

Involved Learning

Organic Electronics

Foundations and Applications of Logotherapy

Sport for Development and Peace

Haptic Rendering

GaugeGravity Duality

Stochastic local search (SLS) algorithms are among the most prominent and successful techniques for solving computationally difficult problems. Offering a systematic treatment of SLS algorithms, this book examines the general concepts and specific instances of SLS algorithms and considers their development, analysis and application.

This book presents a unique systems theory approach to management information system (MIS) development. It covers an outline of the approach, providing a theoretical foundation for MIS from the systems theoretic viewpoint before presenting practical applications ranging from a transaction processing system to a solver system. The author also describes his newly developed extended Prolog programming language, which helps take full advantage of the mathematical framework employed.

This modern introduction to the foundations of logic and mathematics not only takes theory into account, but also treats in some detail applications that have a substantial impact on everyday life (loans and mortgages, bar codes, public-key cryptography). A first college-level introduction to logic, proofs, sets, number theory, and graph theory, and an excellent self-study reference and resource for instructors.

This book covers control theory signal processing and relevant applications in a unified manner. It introduces the area, takes stock of advances, and describes open problems and challenges in order to advance the field. The editors and contributors to this book are pioneers in the area of active sensing and sensor management, and represent the diverse communities that are targeted.

The Foundations of Probability and Its Applications

Foundations of Data Science

Nutritional Foundations and Clinical Applications – E-Book

Foundations of Fluid Mechanics with Applications

Air Dispersion Modeling

Linked Lexical Knowledge Bases

This textbook provides a basic understanding of the principles of the field of organic electronics, through to their applications in organic devices. Useful for both students and practitioners, it is a teaching text as well as an invaluable resource that serves as a jumping-off point for those interested in learning, working and innovating in this rapidly growing field. Organics serve as a platform for very low cost and high performance optoelectronic and electronic devices that cover large areas, are lightweight, and can be both flexible and conformable to fit onto irregularly shaped surfaces such as foldable smart phones. Organic electronics is at the core of the global organic light emitting device (OLED) display industry. OLEDs also have potential uses as lighting sources. Other emerging organic electronic applications include organic solar cells, and organic thin film transistors useful in medical and a range of other sensing, memory and logic applications. This book is a product of both one and two semester courses that have been taught over a period of more than two decades. It is divided into two sections. Part I, Foundations, lays down the fundamental principles of the field of organic electronics. It is assumed that the reader has an elementary knowledge of quantum mechanics, and electricity and magnetism. A background knowledge of organic chemistry is not required. Part II, Applications, focuses on organic electronic devices. It begins with a discussion of organic thin film deposition and patterning, followed by chapters on organic light emitters, detectors, and thin film transistors. The last chapter describes several devices and phenomena that are not covered in the previous chapters, since they lie somewhat outside of the current mainstream of the field, but are nevertheless important.

From the author of Man's Search for Meaning, one of the most influential works of psychiatric literature since Freud. Holocaust survivor Viktor E. Frankl is known as the founder of logotherapy, a mode of psychotherapy based on man's motivation to search for meaning in his life. The author discusses his ideas in the context of other prominent psychotherapies and describes the techniques he uses with his patients to combat the "existential vacuum." Originally published in 1969 and compiling Frankl's speeches on logotherapy, The Will to Meaning is regarded as a seminal work of meaning-centered therapy. This new and carefully re-edited version is the first since 1988.

This comprehensive, practical text examines both the overarching foundations and functional applications of Sport for Development and Peace, using managerial, sociological, historical, political, and other multidisciplinary frameworks.

The Mathematical Foundations of the Finite Element Method with Applications to Partial Differential Equations is a collection of papers presented at the 1972 Symposium by the same title, held at the University of Maryland, Baltimore County Campus. This symposium relates considerable numerical analysis involved in research in both theoretical and practical aspects of the finite element method. This text is organized into three parts encompassing 34 chapters. Part I focuses on the mathematical foundations of the finite element method, including papers on theory of approximation, variational principles, the problems of perturbations, and the eigenvalue problem. Part II covers a large number of important results of both a theoretical and a practical nature. This part discusses the piecewise interpolation and approximation of triangulated polygons; the Patch test for convergence of finite elements; solutions for Dirichlet problems; variational crimes in the field; and superconvergence result for the approximate solution of the heat equation by a collocation method. Part III explores the many practical aspects of finite element method. This book will be of great value to mathematicians, engineers, and physicists.

A Model Theory Approach

Optimization

Applications to Computer Science and Cryptography

A Nursing Approach

Problem Solving Using Mathematica®

Mathematical Foundations and Applications of Graph Entropy

This book is both a reference for engineers and scientists and a teaching resource, featuring tutorial chapters and research papers on feature extraction. Until now there has been insufficient consideration of feature selection algorithms, no unified presentation of leading methods, and no systematic comparisons.

This book provides an introduction to the mathematical and algorithmic foundations of data science, including machine learning, high-dimensional geometry, and analysis of large networks. Topics include the counterintuitive nature of data in high dimensions, important linear algebraic techniques such as singular value decomposition, the theory of random walks and Markov chains, the

fundamentals of and important algorithms for machine learning, algorithms and analysis for clustering, probabilistic models for large networks, representation learning including topic modelling and non-negative matrix factorization, wavelets and compressed sensing. Important probabilistic techniques are developed including the law of large numbers, tail inequalities, analysis of random projections, generalization guarantees in machine learning, and moment methods for analysis of phase transitions in large random graphs. Additionally, important structural and complexity measures are discussed such as matrix norms and VC-dimension. This book is suitable for both undergraduate and graduate courses in the design and analysis of algorithms for data.

A single reference to all aspects of contemporary air dispersion modeling The practice of air dispersion modeling has changed dramatically in recent years, in large part due to new EPA regulations. Current with the EPA's 40 CFR Part 51, this book serves as a complete reference to both the science and contemporary practice of air dispersion modeling. Throughout the book, author Alex De Visscher guides readers through complex calculations, equation by equation, helping them understand precisely how air dispersion models work, including such popular models as the EPA's AERMOD and CALPUFF. Air Dispersion Modeling begins with a primer that enables readers to quickly grasp basic principles by developing their own air dispersion model. Next, the book offers everything readers need to work with air dispersion models and accurately interpret their results, including: Full chapter dedicated to the meteorological basis of air dispersion Examples throughout the book illustrating how theory translates into practice Extensive discussions of Gaussian, Lagrangian, and Eulerian air dispersion modeling Detailed descriptions of the AERMOD and CALPUFF model formulations This book also includes access to a website with Microsoft Excel and MATLAB files that contain examples of air dispersion model calculations. Readers can work with these examples to perform their own calculations. With its comprehensive and up-to-date coverage, Air Dispersion Modeling is recommended for environmental engineers and meteorologists who need to perform and evaluate environmental impact assessments. The book's many examples and step-by-step instructions also make it ideal as a textbook for students in the fields of environmental engineering, meteorology, chemical engineering, and environmental sciences.

This multi-author reference work provides a unique introduction to the currently emerging, highly interdisciplinary field of those transport processes that cannot be described by using standard methods of statistical mechanics. It comprehensively summarizes topics ranging from mathematical foundations of anomalous dynamics to the most recent experiments in this field. In so doing, this monograph extracts and emphasizes common principles and methods from many different disciplines while providing up-to-date coverage of this new field of research, considering such diverse applications as plasma physics, glassy material, cell science, and socio-economic aspects. The book will be of interest to both theorists and experimentalists in nonlinear dynamics, statistical physics and stochastic processes. It also forms an ideal starting point for graduate students moving into this area. 18 chapters written by internationally recognized experts in this field provide in-depth introductions to fundamental aspects of anomalous transport.

Foundations and Applications

Foundations of Logic and Mathematics

Thermodynamics

Designed by two MIT professors, this authoritative text transcends the limitations and ambiguities of traditional treatments to develop a deep understanding of the fundamentals of thermodynamics and its energy-related applications. Basic concepts and applications are discussed in complete detail, with attention to generality, rigorous definitions, and logical consistency. More than 300 solved problems span a wide range of realistic energy systems and processes.

A thorough and highly accessible resource for analysts in a broad range of social sciences. Optimization: Foundations and Applications presents a series of approaches to the challenges faced by analysts who must find the best way to accomplish particular objectives, usually with the added complication of constraints on the available choices. Award-winning educator Ronald E. Miller provides detailed coverage of both classical, calculus-based approaches and newer, computer-based iterative methods. Dr. Miller lays a solid foundation for both linear and nonlinear models and quickly moves on to discuss applications, including iterative methods for root-finding and for unconstrained maximization, approaches to the inequality constrained linear programming problem, and the complexities of inequality constrained maximization and minimization in nonlinear problems. Other important features include: More than 200 geometric interpretations of algebraic results, emphasizing the intuitive appeal of mathematics Classic results mixed with modern numerical methods to aid users of computer programs Extensive appendices containing mathematical details important for a thorough understanding of the topic With special emphasis on questions most frequently asked by those encountering this material for the first time, Optimization: Foundations and Applications is an extremely useful resource for professionals in such areas as mathematics, engineering, economics and business, regional science, geography, sociology, political science, management and decision sciences, public policy analysis, and numerous other social sciences. An Instructor's Manual presenting detailed solutions to all the problems in the book is available upon request from the Wiley editorial department.