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KEY=PROGRAMMING - OSCAR AUBREY

Performance Analysis of Manufacturing Systems

Springer Science & Business Media *Manufacturing industries are devoted to producing high-quality products in the most economical and timely manner. Quality, economics, and time not only indicate the customer-satisfaction level, but also measure the manufacturing performance of a company. Today's manufacturing environments are becoming more and more complex, flexible, and information-intensive. Companies invest into the information technologies such as computers, communication networks, sensors, actuators, and other equipment that give them an abundance of information about their materials and resources. In the face of global competition, a manufacturing company's survival is becoming more dependent on how best this influx of information is utilized. Consequently, there evolves a great need for sophisticated tools of performance analysis that use this information to help decision makers in choosing the right course of action. These tools will have the capability of data analysis, modeling, computer simulation, and optimization for use in designing products and processes. International competition also has had its impact on manufacturing education and the government's support of it in the US. We see more courses offered in this area in industrial engineering and manufacturing systems engineering departments, operations research programs, and business schools. In fact, we see an increasing number of manufacturing systems engineering departments and manufacturing research centers in universities not only in the US but also in Europe, Japan, and many developing countries.*

Analysis and Algorithms for Service Parts Supply Chains

Springer Science & Business Media * *Provides a broad overview of modeling approaches and solution methodologies for addressing inventory problems, particularly the management of high cost, low demand rate service parts found in multi-echelon settings* * *The text may be used in a variety of courses for first-year graduate students or senior undergraduates, or as a reference for researchers and practitioners* * *A background in stochastic processes and optimization is assumed*

Introduction to Stochastic Programming

Springer Science & Business Media *This rapidly developing field encompasses many disciplines including operations research, mathematics, and probability. Conversely, it is being applied in a wide variety of subjects ranging from agriculture to financial planning and from industrial engineering to computer networks. This textbook provides a first course in stochastic programming suitable for students with a basic knowledge of linear programming, elementary analysis, and probability. The authors present a broad overview of the main themes and methods of the subject, thus helping students develop an intuition for how to model uncertainty into mathematical problems, what uncertainty changes bring to the decision process, and what techniques help to manage uncertainty in solving the problems. The early chapters introduce some worked examples of stochastic programming, demonstrate how a stochastic model is formally built, develop the properties of stochastic programs and the basic solution techniques used to solve them. The book then goes on to cover approximation and sampling techniques and is rounded off by an in-depth case study. A well-paced and wide-ranging introduction to this subject.*

Risk and Portfolio Analysis

Principles and Methods

Springer Science & Business Media *Investment and risk management problems are fundamental problems for financial institutions and involve both speculative and hedging decisions. A structured approach to these problems naturally leads one to the field of applied mathematics in order to translate subjective probability beliefs and attitudes towards risk and reward into actual decisions. In Risk and Portfolio Analysis the authors present sound principles and useful methods for making investment and risk management decisions in the presence of hedgeable and non-hedgeable risks using the simplest possible principles, methods, and models that still capture the essential features of the real-world problems. They use rigorous, yet elementary mathematics, avoiding technically advanced approaches which have no clear methodological purpose and are practically irrelevant. The material progresses systematically and topics such as the pricing and hedging of derivative contracts, investment and hedging principles from portfolio theory, and risk measurement and multivariate models from risk management are covered appropriately. The theory is combined with numerous real-world examples that illustrate how the principles, methods, and models can be combined to approach concrete problems and to draw useful conclusions. Exercises are included at the end of the chapters to help reinforce the text and provide insight. This book will serve advanced undergraduate and graduate students, and practitioners in insurance, finance as well as regulators. Prerequisites include undergraduate level courses in linear algebra, analysis, statistics and probability.*

Global Optimization

A Stochastic Approach

Springer Science & Business Media *This self-contained monograph presents a new stochastic approach to global optimization problems arising in a variety of disciplines including mathematics, operations research, engineering, and economics. The volume deals with constrained and unconstrained problems and puts a special emphasis on large scale problems. It also introduces a new unified concept for unconstrained, constrained, vector, and stochastic global optimization problems. All methods presented are illustrated by various examples. Practical numerical algorithms are given and analyzed in detail. The topics presented include the randomized curve of steepest descent, the randomized curve of dominated points, the semi-implicit Euler method, the penalty approach, and active set strategies. The optimal decoding of block codes in digital communications is worked out as a case study and shows the potential and high practical relevance of this new approach. Global Optimization: A Stochastic Approach is an elegant account of a refined theory, suitable for researchers and graduate students interested in global optimization and its applications.*

Handbooks in Operations Research and Management Science: Financial Engineering

Elsevier *The remarkable growth of financial markets over the past decades has been accompanied by an equally remarkable explosion in financial engineering, the interdisciplinary field focusing on applications of mathematical and statistical modeling and computational technology to problems in the financial services industry. The goals of financial engineering research are to develop empirically realistic stochastic models describing dynamics of financial risk variables, such as asset prices, foreign exchange rates, and interest rates, and to develop analytical, computational and statistical methods and tools to implement the models and employ them to design and evaluate financial products and processes to manage risk and to meet financial goals. This handbook describes the latest developments in this rapidly evolving field in the areas of modeling and pricing financial derivatives, building models of interest rates and credit risk, pricing and hedging in incomplete markets, risk management, and portfolio optimization. Leading researchers in each of these areas provide their perspective on the state of the art in terms of analysis, computation, and practical relevance. The authors describe essential results to date, fundamental methods and tools, as well as new views of the existing literature, opportunities, and challenges for future research.*

Single-Facility Location Problems with Barriers

Springer Science & Business Media *This text develops the mathematical implications of barriers to the geometrical and analytical characteristics of continuous location problems. The book will appeal to those working in operations research and management science, and mathematicians interested in optimization theory and its applications.*

Engineering Risk and Finance

Springer Science & Business Media *Risk models are models of uncertainty, engineered for some purposes. They are "educated guesses and hypotheses" assessed and valued in terms of well-defined future states and their consequences. They are engineered to predict, to manage countable and accountable futures and to provide a frame of reference within which we may believe that "uncertainty is tamed". Quantitative-statistical tools are used to reconcile our information, experience and other knowledge with hypotheses that both serve as the foundation of risk models and also value and price risk. Risk models are therefore common to most professions, each with its own methods and techniques based on their needs, experience and a wisdom accrued over long periods of time. This book provides a broad and interdisciplinary foundation to engineering risks and to their financial valuation and pricing. Risk models applied in industry and business, health care, safety, the environment and regulation are*

used to highlight their variety while financial valuation techniques are used to assess their financial consequences. This book is technically accessible to all readers and students with a basic background in probability and statistics (with 3 chapters devoted to introduce their elements). Principles of risk measurement, valuation and financial pricing as well as the economics of uncertainty are outlined in 5 chapters with numerous examples and applications. New results, extending classical models such as the CCAPM are presented providing insights to assess the risks and their price in an interconnected, dependent and strategic economic environment. In an environment departing from the fundamental assumptions we make regarding financial markets, the book provides a strategic/game-like approach to assess the risk and the opportunities that such an environment implies. To control these risks, a strategic-control approach is developed that recognizes that many risks resulting by "what we do" as well as "what others do". In particular we address the strategic and statistical control of compliance in large financial institutions confronted increasingly with a complex and far more extensive regulation.

Perturbation Analysis of Optimization Problems

Springer Science & Business Media A presentation of general results for discussing local optimality and computation of the expansion of value function and approximate solution of optimization problems, followed by their application to various fields, from physics to economics. The book is thus an opportunity for popularizing these techniques among researchers involved in other sciences, including users of optimization in a wide sense, in mechanics, physics, statistics, finance and economics. Of use to research professionals, including graduate students at an advanced level.

Heavy-Tail Phenomena

Probabilistic and Statistical Modeling

Springer Science & Business Media Introduction -- [Part I. Crash Courses.] Crash course I: Regular variation -- Crash course II: Weak convergence; implications for heavy-tail analysis -- [Part II. Statistics.] Dipping a toe in the statistical water -- [Part III. Probability.] The Poisson process -- Multivariate regular variation and the Poisson transform -- Weak convergence and the Poisson process -- Applied probability models and heavy tails -- [Part IV. More statistics.] Additional statistics topics -- [Part V. Appendices.] Notation and conventions -- Software.

Stochastic Petri Nets

Modelling, Stability, Simulation

Springer Science & Business Media Written by a leading researcher this book presents an introduction to Stochastic Petri Nets covering the modeling power of the proposed SPN model, the stability conditions and the simulation methods. Its unique and well-written approach provides a timely and important addition to the literature. Appeals to a wide range of researchers in engineering, computer science, mathematics and OR.

Stopped Random Walks

Limit Theorems and Applications

Springer Science & Business Media My first encounter with renewal theory and its extensions was in 1967/68 when I took a course in probability theory and stochastic processes, where the then recent book *Stochastic Processes* by Professor N.D. Prabhu was one of the requirements. Later, my teacher, Professor Carl-Gustav Esseen, gave me some problems in this area for a possible thesis, the result of which was *Gut* (1974a). Over the years I have, on and off, continued research in this field. During this time it has become clear that many limit theorems can be obtained with the aid of limit theorems for random walks indexed by families of positive, integer valued random variables, typically by families of stopping times. During the spring semester of 1984 Professor Prabhu visited Uppsala and very soon got me started on a book focusing on this aspect. I wish to thank him for getting me into this project, for his advice and suggestions, as well as his kindness and hospitality during my stay at Cornell in the spring of 1985. Throughout the writing of this book I have had immense help and support from Svante Janson. He has not only read, but scrutinized, every word and every formula of this and earlier versions of the manuscript. My gratitude to him for all the errors he found, for his perspicacious suggestions and remarks and, above all, for what his unusual personal as well as scientific generosity has meant to me cannot be expressed in words.

Numerical Optimization

Springer Science & Business Media The new edition of this book presents a comprehensive and up-to-date description of the most effective methods in continuous optimization. It responds to the growing interest in optimization in engineering, science, and business by focusing on methods best suited to practical problems. This edition has been thoroughly updated throughout. There are new chapters on nonlinear interior methods and derivative-free methods for optimization, both of which are widely used in practice and are the focus of much current research. Because of the emphasis on practical methods, as well as the extensive illustrations and exercises, the book is accessible to a wide audience.

Modeling with Stochastic Programming

Springer Science & Business Media While there are several texts on how to solve and analyze stochastic programs, this is the first text to address basic questions about how to model uncertainty, and how to reformulate a deterministic model so that it can be analyzed in a stochastic setting. This text would be suitable as a stand-alone or supplement for a second course in OR/MS or in optimization-oriented engineering disciplines where the instructor wants to explain where models come from and what the fundamental issues are. The book is easy-to-read, highly illustrated with lots of examples and discussions. It will be suitable for graduate students and researchers working in operations research, mathematics, engineering and related departments where there is interest in learning how to model uncertainty. Alan King is a Research Staff Member at IBM's Thomas J. Watson Research Center in New York. Stein W. Wallace is a Professor of Operational Research at Lancaster University Management School in England.

Discrete-Event Simulation

Modeling, Programming, and Analysis

Springer Science & Business Media "This is an excellent and well-written text on discrete event simulation with a focus on applications in Operations Research. There is substantial attention to programming, output analysis, pseudo-random number generation and modelling and these sections are quite thorough. Methods are provided for generating pseudo-random numbers (including combining such streams) and for generating random numbers from most standard statistical distributions." --ISI Short Book Reviews, 22:2, August 2002

Extreme Values, Regular Variation and Point Processes

Springer This book examines the fundamental mathematical and stochastic process techniques needed to study the behavior of extreme values of phenomena based on independent and identically distributed random variables and vectors. It emphasizes the core primacy of three topics necessary for understanding extremes: the analytical theory of regularly varying functions; the probabilistic theory of point processes and random measures; and the link to asymptotic distribution approximations provided by the theory of weak convergence of probability measures in metric spaces.

Finite-Dimensional Variational Inequalities and Complementarity Problems

Springer Science & Business Media This is part one of a two-volume work presenting a comprehensive treatment of the finite-dimensional variational inequality and complementarity problem. It covers the basic theory of finite dimensional variational inequalities and complementarity problems. Coverage includes abundant exercises as well as an extensive bibliography. The book will be an enduring reference on the subject and provide the foundation for its sustained growth.

Principles of Inventory Management

When You Are Down to Four, Order More

Springer Science & Business Media Inventories are prevalent everywhere in the commercial world, whether it be in retail stores, manufacturing facilities, government stockpile material, Federal Reserve banks, or even your own household. This textbook examines basic mathematical techniques used to sufficiently manage inventories by using various computational methods and mathematical models. The text is presented in a way such that each section can be read independently, and so the order in which the reader approaches the book can be inconsequential. It contains both deterministic and stochastic models along with algorithms that can be employed to find solutions to a variety of inventory control problems. With exercises at the end of each chapter and a clear, systematic exposition, this textbook will appeal to advanced undergraduate and first-year graduate students in operations research, industrial engineering, and quantitative MBA programs. It also serves as a reference for professionals in both industry and government worlds. The prerequisite courses include introductory optimization methods, probability theory (non-measure theoretic), and stochastic processes.

Numerical Optimization

Springer Optimization is an important tool used in decision science and for the analysis of physical systems used in engineering. One can trace its roots to the Calculus of Variations and the work of Euler and Lagrange. This natural and reasonable approach to mathematical programming covers numerical methods for finite-dimensional optimization problems. It begins with very simple ideas progressing through more complicated concepts, concentrating on methods for both unconstrained and constrained optimization.

The Logic of Logistics

Theory, Algorithms, and Applications for Logistics and Supply Chain Management

Springer Science & Business Media Fierce competition in today's global market provides a powerful motivation for developing ever more sophisticated logistics systems. This book, written for the logistics manager and researcher, presents a survey of the modern theory and application of logistics. The goal of the book is to present the state-of-the-art in the science of logistics management. As a result, the authors have written a timely and authoritative survey of this field that many practitioners and researchers will find makes an invaluable companion to their work.

Univariate Stable Distributions

Models for Heavy Tailed Data

Springer Nature This textbook highlights the many practical uses of stable distributions, exploring the theory, numerical algorithms, and statistical methods used to work with stable laws. Because of the author's accessible and comprehensive approach, readers will be able to understand and use these methods. Both mathematicians and non-mathematicians will find this a valuable resource for more accurately modelling and predicting large values in a number of real-world scenarios. Beginning with an introductory chapter that explains key ideas about stable laws, readers will be prepared for the more advanced topics that appear later. The following chapters present the theory of stable distributions, a wide range of applications, and statistical methods, with the final chapters focusing on regression, signal processing, and related distributions. Each chapter ends with a number of carefully chosen exercises. Links to free software are included as well, where readers can put these methods into practice. Univariate Stable Distributions is ideal for advanced undergraduate or graduate students in mathematics, as well as many other fields, such as statistics, economics, engineering, physics, and more. It will also appeal to researchers in probability theory who seek an authoritative reference on stable distributions.

Service Systems Engineering and Management

CRC Press Recipient of the 2019 IISE Institute of Industrial and Systems Engineers Joint Publishers Book-of-the-Year Award This is a comprehensive textbook on service systems engineering and management. It emphasizes the use of engineering principles to the design and operation of service enterprises. Service systems engineering relies on mathematical models and methods to solve problems in the service industries. This textbook covers state-of-the-art concepts, models and solution methods important in the design, control, operations and management of service enterprises. Service Systems Engineering and Management begins with a basic overview of service industries and their importance in today's economy. Special challenges in managing services, namely, perishability, intangibility, proximity and simultaneity are discussed. Quality of service metrics and methods for measuring them are then discussed. Evaluating the design and operation of service systems frequently involves the conflicting criteria of cost and customer service. This textbook presents two approaches to evaluate the performance of service systems - Multiple Criteria Decision Making and Data Envelopment Analysis. The textbook then discusses several topics in service systems engineering and management - supply chain optimization, warehousing and distribution, modern portfolio theory, revenue management, retail engineering, health systems engineering and financial services. Features: Stresses quantitative models and methods in service systems engineering and management Includes chapters on design and evaluation of service systems, supply chain engineering, warehousing and distribution, financial engineering, healthcare systems, retail engineering and revenue management Bridges theory and practice Contains end-of-chapter problems, case studies, illustrative examples, and real-world applications Service Systems Engineering and Management is primarily addressed to those who are interested in learning how to apply operations research models and methods for managing service enterprises. This textbook is well suited for industrial engineering students interested in service systems applications and MBA students in elective courses in operations management, logistics and supply chain management that emphasize quantitative analysis.

Handbook of Research on Decision Sciences and Applications in the Transportation Sector

IGI Global The advancements in decision sciences theory and applications can be regarded as a continuously emerging field in all areas of interest including technology, industry, energy, healthcare, education, agriculture, social sciences, and more. Managers in all disciplines face an endless list of complex issues every day. One of the essential managerial skills is the ability to allocate and utilize limited resources appropriately in the efforts of achieving optimal performance efficiently. This is no less important for those who work in the transportation sector. The Handbook of Research on Decision Sciences and Applications in the Transportation Sector explores the importance of decision sciences and the ways in which they apply to the transportation sector. This book covers technologies and tools including machine learning, mathematical modeling, and simulation and their applications in such tasks as reducing fuel costs, improving passenger flow, and ensuring vehicle safety. It is an essential reference source for managers, professionals in the transport industry, supply chain specialists, safety officers, IT consultants, executives, practitioners, scientists, students, researchers, and academicians.

Extreme Value Theory

An Introduction

Springer Science & Business Media Focuses on theoretical results along with applications All the main topics covering the heart of the subject are introduced to the reader in a systematic fashion Concentration is on the probabilistic and statistical aspects of extreme values Excellent introduction to extreme value theory at the graduate level, requiring only some mathematical maturity

Data Envelopment Analysis in the Financial Services Industry

A Guide for Practitioners and Analysts Working in Operations Research Using DEA

Springer This book presents the methodology and applications of Data Envelopment Analysis (DEA) in measuring productivity, efficiency and effectiveness in Financial Services firms such as banks, bank branches, stock markets, pension funds, mutual funds, insurance firms, credit unions, risk tolerance, and corporate failure prediction. Financial service DEA research includes banking; insurance businesses; hedge, pension and mutual funds; and credit unions. Significant business transactions among financial service organizations such as bank mergers and acquisitions and valuation of IPOs have also been the focus of DEA research. The book looks at the range of DEA uses for financial services by presenting prior studies, examining the current capabilities reflected in the most recent research, and projecting future new uses of DEA in finance related applications.

Energy Research Abstracts

Production Planning by Mixed Integer Programming

Springer Science & Business Media This textbook provides a comprehensive modeling, reformulation and optimization approach for solving production planning and supply chain planning problems, covering topics from a basic introduction to planning systems, mixed integer programming (MIP) models and algorithms through the advanced description of mathematical results in polyhedral combinatorics required to solve these problems. Based on twenty years worth of research in which the authors have played a significant role, the book addresses real life industrial production planning problems (involving complex production structures with multiple production stages) using MIP modeling and reformulation approach. The book provides an introduction to MIP modeling and to planning systems, a unique collection of reformulation results, and an easy to use problem-solving library. This approach is demonstrated through a series of real life case studies, exercises and detailed illustrations. Review by Jakub Marecek (Computer Journal) The emphasis put on mixed integer rounding and mixing sets, heuristics in-built in general purpose integer programming solvers, as well as on decompositions and heuristics using integer programming should be praised... There is no doubt that this volume offers the present best introduction to integer programming formulations of lotsizing problems, encountered in production planning. (2007)

An Optimization Primer

Springer Nature This richly illustrated book introduces the subject of optimization to a broad audience with a balanced treatment of theory, models and algorithms. Through numerous examples from statistical learning, operations research, engineering, finance and economics, the text explains how to formulate and justify models while accounting for real-world considerations such as data uncertainty. It goes beyond the classical topics of linear, nonlinear and convex programming and deals with nonconvex and nonsmooth problems as well as games, generalized equations and stochastic optimization. The book teaches theoretical aspects in the context of concrete problems, which makes it an accessible onramp to variational analysis, integral functions and approximation theory. More than 100 exercises and 200 fully developed examples illustrate the application of the concepts. Readers should have some foundation in differential calculus and linear algebra. Exposure to real analysis would be

helpful but is not prerequisite.

Derivative-Free and Blackbox Optimization

Springer This book is designed as a textbook, suitable for self-learning or for teaching an upper-year university course on derivative-free and blackbox optimization. The book is split into 5 parts and is designed to be modular; any individual part depends only on the material in Part I. Part I of the book discusses what is meant by Derivative-Free and Blackbox Optimization, provides background material, and early basics while Part II focuses on heuristic methods (Genetic Algorithms and Nelder-Mead). Part III presents direct search methods (Generalized Pattern Search and Mesh Adaptive Direct Search) and Part IV focuses on model-based methods (Simplex Gradient and Trust Region). Part V discusses dealing with constraints, using surrogates, and bi-objective optimization. End of chapter exercises are included throughout as well as 15 end of chapter projects and over 40 figures. Benchmarking techniques are also presented in the appendix.

Globalization, Gating, and Risk Finance

John Wiley & Sons An in-depth guide to global and risk finance based on financial models and data-based issues that confront global financial managers. Globalization, Gating, and Risk Finance offers perspectives on global risk finance in a world with economies in transition. Developed from lectures and research projects investigating the consequences of globalization and strategic approaches to fundamental economics and finance, it provides an approach based on financial models and data; it includes many case-study problems. The book departs from the traditional macroeconomic and financial approaches to global and strategic risk finance, where economic power and geopolitical issues are intermingled to create complex and forward-looking financial systems. Chapter coverage includes: Globalization: Economies in Collision; Data, Measurements, and Global Finance; Global Finance: Utility, Financial Consumption, and Asset Pricing; Macroeconomics, Foreign Exchange, and Global Finance; Foreign Exchange Models and Prices; Asia: Financial Environment and Risks; Financial Currency Pricing, Swaps, Derivatives, and Complete Markets; Credit Risk and International Debt; Globalization and Trade: A Changing World; and Compliance and Financial Regulation. Provides a framework for global financial and inclusive models, some of which are not commonly covered in other books. Considers risk management, utility, and utility-based multi-agent financial theories. Presents a theoretical framework to assist with a variety of problems ranging from derivatives and FX pricing to bond default to trade and strategic regulation. Provides detailed explanations and mathematical proofs to aid the readers' understanding. Globalization, Gating, and Risk Finance is appropriate as a text for graduate students of global finance, general finance, financial engineering, and international economics, and for practitioners.

Future Perspectives in Risk Models and Finance

Springer This book provides a perspective on a number of approaches to financial modelling and risk management. It examines both theoretical and practical issues. Theoretically, financial risks models are models of a real and a financial "uncertainty", based on both common and private information and economic theories defining the rules that financial markets comply to. Financial models are thus challenged by their definitions and by a changing financial system fueled by globalization, technology growth, complexity, regulation and the many factors that contribute to rendering financial processes to be continuously questioned and re-assessed. The underlying mathematical foundations of financial risks models provide future guidelines for risk modeling. The book's chapters provide selective insights and developments that can contribute to better understand the complexity of financial modelling and its ability to bridge financial theories and their practice. Future Perspectives in Risk Models and Finance begins with an extensive outline by Alain Bensoussan et al. of GLM estimation techniques combined with proofs of fundamental results. Applications to static and dynamic models provide a unified approach to the estimation of nonlinear risk models. A second section is concerned with the definition of risks and their management. In particular, Guegan and Hassani review a number of risk models definition emphasizing the importance of bi-modal distributions for financial regulation. An additional chapter provides a review of stress testing and their implications. Nassim Taleb and Sandis provide an anti-fragility approach based on "skin in the game". To conclude, Raphael Douady discusses the noncyclical CAR (Capital Adequacy Rule) and their effects of aversion of systemic risks. A third section emphasizes analytic financial modelling approaches and techniques. Tapiero and Vallois provide an overview of mathematical systems and their use in financial modeling. These systems span the fundamental Arrow-Debreu framework underlying financial models of complete markets and subsequently, mathematical systems departing from this framework but yet generalizing their approach to dynamic financial models. Explicitly, models based on fractional calculus, on persistence (short memory) and on entropy-based non-extensiveness. Applications of these models are used to define a modeling approach to incomplete financial models and their potential use as a "measure of incompleteness". Subsequently Bianchi and Pianese provide an extensive overview of multi-fractional models and their important applications to Asset price modeling. Finally, Tapiero and Jinquyi consider the binomial pricing model by discussing the effects of memory on the pricing of asset prices.

Introduction to Stochastic Programming

Springer The aim of stochastic programming is to find optimal decisions in problems which involve uncertain data. This field is currently developing rapidly with contributions from many disciplines including operations research, mathematics, and probability. At the same time, it is now being applied in a wide variety of subjects ranging from agriculture to financial planning and from industrial engineering to computer networks. This textbook provides a first course in stochastic programming suitable for students with a basic knowledge of linear programming, elementary analysis, and probability. The authors aim to present a broad overview of the main themes and methods of the subject. Its prime goal is to help students develop an intuition on how to model uncertainty into mathematical problems, what uncertainty changes bring to the decision process, and what techniques help to manage uncertainty in solving the problems. In this extensively updated new edition there is more material on methods and examples including several new approaches for discrete variables, new results on risk measures in modeling and Monte Carlo sampling methods, a new chapter on relationships to other methods including approximate dynamic programming, robust optimization and online methods. The book is highly illustrated with chapter summaries and many examples and exercises. Students, researchers and practitioners in operations research and the optimization area will find it particularly of interest. Review of First Edition: "The discussion on modeling issues, the large number of examples used to illustrate the material, and the breadth of the coverage make 'Introduction to Stochastic Programming' an ideal textbook for the area." (Interfaces, 1998)

Implicit Functions and Solution Mappings

A View from Variational Analysis

Springer The implicit function theorem is one of the most important theorems in analysis and its many variants are basic tools in partial differential equations and numerical analysis. This second edition of Implicit Functions and Solution Mappings presents an updated and more complete picture of the field by including solutions of problems that have been solved since the first edition was published, and places old and new results in a broader perspective. The purpose of this self-contained work is to provide a reference on the topic and to provide a unified collection of a number of results which are currently scattered throughout the literature. Updates to this edition include new sections in almost all chapters, new exercises and examples, updated commentaries to chapters and an enlarged index and references section.

Operations Research

A Practical Introduction

CRC Press Operations Research: A Practical Introduction is just that: a hands-on approach to the field of operations research (OR) and a useful guide for using OR techniques in scientific decision making, design, analysis and management. The text accomplishes two goals. First, it provides readers with an introduction to standard mathematical models and algorithms. Second, it is a thorough examination of practical issues relevant to the development and use of computational methods for problem solving. Highlights: All chapters contain up-to-date topics and summaries A succinct presentation to fit a one-term course Each chapter has references, readings, and list of key terms Includes illustrative and current applications New exercises are added throughout the text Software tools have been updated with the newest and most popular software Many students of various disciplines such as mathematics, economics, industrial engineering and computer science often take one course in operations research. This book is written to provide a succinct and efficient introduction to the subject for these students, while offering a sound and fundamental preparation for more advanced courses in linear and nonlinear optimization, and many stochastic models and analyses. It provides relevant analytical tools for this varied audience and will also serve professionals, corporate managers, and technical consultants.

The Budget of the United States Government

Appendix

Operations Research

A Practical Introduction

CRC Press Students with diverse backgrounds will face a multitude of decisions in a variety of engineering, scientific, industrial, and financial settings. They will need to know how to identify problems that the methods of operations research (OR) can solve, how to structure the problems into standard mathematical models, and finally how to apply or develop computational tools to solve the problems. Perfect for any one-semester course in OR, Operations Research: A Practical Introduction answers all of these needs. In addition to providing a practical introduction and guide to using OR techniques, it includes a timely examination of innovative methods and practical issues related to the development and use of computer implementations. It provides a sound introduction to the mathematical models relevant to OR and illustrates the effective use of OR techniques with examples drawn from industrial, computing, engineering, and business applications Many students will take only one course in the techniques of Operations Research. Operations Research: A Practical Introduction offers them the greatest benefit from that course through a broad survey of the techniques and tools available for quantitative decision making. It will also encourage other students to pursue more advanced studies and provides you a concise, well-structured, vehicle for delivering the best possible overview of the

discipline.

Contemporary Challenges for Agile Project Management

IGI Global Given the pace at which projects must be completed in an era of global hypercompetition and turbulence, examining the project management profession within the contexts of international trade and globalization is essential to encourage the highest level of efficiency and agility. Agile project management provides a flexible approach to managing projects as it allows a team to break large projects down into more manageable tasks that can be tackled in short iterations or sprints, thus enabling a team to adapt to change quickly and deliver work fast. *Contemporary Challenges for Agile Project Management* highlights the modern struggles that face businesses and leaders as they work to implement agile project management within their processes and try to gain a competitive edge through cross-functional team collaboration. Covering many underrepresented topics related to areas such as critical success factors, data science, and project leadership, this book is an essential resource for project leaders, managers, supervisors, business leaders, consultants, researchers, academicians, and students and educators of higher education.

Innovative Technology at the Interface of Finance and Operations

Volume I

Springer Nature This book examines the challenges and opportunities arising from an assortment of technologies as they relate to Operations Management and Finance. The book contains primers on operations, finance, and their interface. After that, each section contains chapters in the categories of theory, applications, case studies, and teaching resources. These technologies and business models include Big Data and Analytics, Artificial Intelligence, Machine Learning, Blockchain, IoT, 3D printing, sharing platforms, crowdfunding, and crowdsourcing. The balance between theory, applications, and teaching materials make this book an interesting read for academics and practitioners in operations and finance who are curious about the role of new technologies. The book is an attractive choice for PhD-level courses and for self-study.

Systems Development and Management

Hearings Before a Subcommittee of the Committee on Government Operations, House of Representatives, Eighty-seventh Congress, Second Session...

The National Job Bank