Using Excel Solver In Optimization Problems

For anyone who wants to be operating at a high level with the Excel Solver quickly, this is the book for you. Step-By-Step Optimization With Excel Solver is more than 200+ pages of simple yet thorough explanations on how to use the Excel Solver to solve today's most widely known optimization problems. Loaded with screen shots that are coupled with easy-to-follow instructions, this book will simplify many difficult optimization problems and make you a master of the Excel Solver almost immediately. Here are just some of the Solver optimization problems that are solved completely with simple-to-understand instructions and screen shots in this book: The famous "Traveling Salesman" problem using Solver's Alldifferent constraint and the Solver's Evolutionary method to find the shortest path to reach all customers. This also provides an advanced use of the Excel INDEX function. The well-known "Knapsack Problem" which shows how optimize the use of limited space while satisfying numerous other criteria. How to perform nonlinear regression and curve-fitting on the Solver using the Solver's GRG Nonlinear solving method. How to solve the "Cutting Stock Problem" faced by many manufacturing companies who are trying to determine the optimal way to cut sheets of material to minimize waste while satisfying customer orders. Portfolio optimization to maximize return or minimize risk. Venture capital investment selection using the Solver's Binary constraint to maximize Net Present Value of selected cash flows at year 0. Clever use of the If-Then-Else statements makes this a simple problem. How use Solver to minimize the total cost of purchasing and shipping goods from multiple suppliers to multiple locations. How to optimize the selection of different production machine to minimize cost while fulfilling an order. How to optimally allocate a marketing budget to generate the greatest reach and frequency or number of inbound leads at the lowest cost. Step-By-Step Optimization With Excel Solver has complete instructions and numerous tips on every aspect of operating the Excel Solver. You'll fully understand the reports and know exactly how to tweek all of the Solver's settings for total custom use. The book also provides lots of inside advice and guidance on setting up the model in Excel so that it will be as simple and intuitive as possible to work with. All of the optimization problems in this book are solved step-by-step using a 6-step process that works every time. In addition to detailed screen shots and easy-to-follow explanations on how to solve every optimization problem in the book, a link is provided to download an Excel workbook that has all problems completed exactly as they are in this book. Step-By-Step Optimization With Excel Solver is exactly the book you need if you want to be optimizing at an advanced level with the Excel Solver quickly.

This book is a printed edition of the Special Issue "Optimization in Control Applications" that was published in MCA

An accessible introduction to optimization analysis using spreadsheets Updated and revised, Optimization Modeling with Spreadsheets, Third Edition emphasizes model building skills in optimization analysis. By emphasizing both spreadsheet modeling and optimization tools in the freely available Microsoft® Office Excel® Solver, the book illustrates how to find solutions to real-world optimization problems without needing additional specialized software. The Third Edition includes many practical applications of optimization models as well as a systematic framework that illuminates the common structures found in many successful models. With focused coverage on linear programming, nonlinear programming, integer programming, and heuristic programming, Optimization Modeling with Spreadsheets, Third Edition features: An emphasis on model building using Excel Solver as well as appendices with additional instructions on more advanced packages such as Analytic Solver Platform and OpenSolver Additional space devoted to formulation principles and model building as opposed to algorithms New end-of-chapter homework exercises specifically for novice model builders Presentation of the Sensitivity Toolkit for sensitivity analysis with Excel Solver Classification of problem types to help readers see the broader possibilities for application Specific chapters devoted to network models and data envelopment analysis A companion website with interactive spreadsheets and supplementary homework exercises for additional practice Optimization Modeling with Spreadsheets, Third Edition is an excellent textbook for upper-undergraduate and graduate-level courses that include deterministic models, optimization, spreadsheet modeling, quantitative methods, engineering management, engineering modeling, operations research, and management science. The book is an ideal reference for readers wishing to advance their knowledge of Excel and modeling and is also a useful guide for MBA students and modeling practitioners in business and non-profit sectors interested in spreadsheet optimization.

Book + Content Update Program Master core Excel 2016 tools for building powerful, reliable spreadsheets with Excel 2016 Formulas and Functions. Excel expert Paul McFedries shows how to use Excel 2016’s core features to solve problems and get the answers you need. Using real-world examples, McFedries helps you get the absolute most out of features and improvements ranging from AutoFill to Excel’s newest functions. Along the way, you discover the fastest, best ways to handle essential day-to-day tasks ranging from generating account numbers to projecting the impact of inflation. Becoming an Excel expert has never been easier! You’ll find crystal-clear instructions; insider insights; even complete step-by-step projects for building timesheets, projecting cash flow, aging receivables, analyzing defects, and more. • Quickly create powerful spreadsheets with range names and array formulas • Use conditional formatting to instantly reveal anomalies, problems, or opportunities • Analyze your data with standard tables and PivotTables • Use complex criteria to filter data in lists • Understand correlations between data • Perform sophisticated what-if analyses • Use regression to track trends and make forecasts • Build loan, investment, and discount formulas • Validate data, troubleshoot problems, and build more accurate, trustworthy spreadsheets In addition, this book is part of Que’s exciting Content Update Program. As Microsoft updates features of Excel 2016, sections of this book will be updated or new sections will be added to match the updates to the software. The updates will be delivered to you via a FREE Web Edition of this book, which can be accessed with any Internet connection. To learn more, visit www.quepublishing.com/CUP. About MrExcel Library: Every book in the MrExcel Library pinpoints a specific set of crucial Excel tasks and presents focused skills and examples for performing them rapidly and effectively. Selected by Bill Jelen, Microsoft Excel MVP and mastermind behind the leading Excel solutions website MrExcel.com, these books will • Dramatically increase your productivity–saving you 50 hours a year or more • Present proven, creative strategies for solving real-world problems • Show you how to get great results, no matter how much data you have • Help you avoid critical mistakes that even experienced users make

This volume systematically details both the basic principles and new developments in Data Envelopment Analysis (DEA), offering a solid understanding of the methodology, its uses, and its potential. New material in this edition includes coverage of recent developments that have greatly extended the power and scope of DEA and have lead to new directions for research and DEA

uses. Each chapter accompanies its developments with simple numerical examples and discussions of actual applications. The first nine chapters cover the basic principles of DEA, while the final seven chapters provide a more advanced treatment.

This book provides a complete and comprehensive reference/guide to Pyomo (Python Optimization Modeling Objects) for both beginning and advanced modelers, including students at the undergraduate and graduate levels, academic researchers, and practitioners. The text illustrates the breadth of the modeling and analysis capabilities that are supported by the software and support of complex real-world applications. Pyomo is an open source software package for formulating and solving large-scale optimization and operations research problems. The text begins with a tutorial on simple linear and integer programming models. A detailed reference of Pyomo's modeling components is illustrated with extensive examples, including a discussion of how to load data from data sources like spreadsheets and databases. Chapters describing advanced modeling capabilities for nonlinear and stochastic optimization are also included. The Pyomo software provides familiar modeling features within Python, a powerful dynamic programming language that has a very clear, readable syntax and intuitive object orientation. Pyomo includes Python classes for defining sparse sets, parameters, and variables, which can be used to formulate algebraic expressions that define objectives and constraints. Moreover, Pyomo can be used from a command-line interface and within Python's interactive command environment, which makes it easy to create Pyomo models, apply a variety of optimizers, and examine solutions. The software supports a different modeling approach than commercial AML (Algebraic Modeling Languages) tools, and is designed for flexibility, extensibility, portability, and maintainability but also maintains the central ideas in modern AMLs.

Take Excel to the next level Excel is the world’s leading spreadsheet application. It’s a key module in Microsoft Office—the number-one productivity suite—and it is the number-one business intelligence tool. An Excel dashboard report is a visual presentation of critical data and uses gauges, maps, charts, sliders, and other graphical elements to present complex data in an easy-to-understand format. Excel Data Analysis For Dummies explains in depth how to use Excel as a tool for analyzing big data sets. In no time, you’ll discover how to mine and analyze critical data in order to make more informed business decisions. Work with external databases, PivotTables, and Pivot Charts Use Excel for statistical and financial functions and data sharing Get familiar with Solver Use the Small Business Finance Manager If you’re familiar with Excel but lack a background in the technical aspects of data analysis, this user-friendly book makes it easy to start putting it to use for you.

An easy-to-use reference/tutorial in the Running series takes readers through the Professional package--Microsoft Excel, Word, PowerPoint, Access, Outlook, and Internet Explorer--and includes copious screen shots, call-outs, cross-references, and tips. Original. (Intermediate).

This book is a single reference that’s indispensable for Excel beginners, intermediate users, power users, and would-be power users everywhere Fully updated for the new release, this latest edition provides comprehensive, soup-to-nuts coverage, delivering over 900 pages of Excel tips, tricks, and techniques readers won’t find anywhere else John Walkenbach, aka "Mr. Spreadsheet," is one of the world’s leading authorities on Excel Thoroughly updated to cover the revamped Excel interface, new file formats, enhanced interactivity with other Office applications, and upgraded collaboration features Includes a valuable CD-ROM with templates and worksheets from the book Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

A comprehensive and easy to understand introduction to a wide range of tools to help designers to optimize their projects. The authors are engineers and therefore many of the examples are on engineering applications, but the techniques presented are common to various areas of knowledge and pervade disciplinary divisions. The book describes the fundamental ideas, mathematical and graphic methods and shows how to use Matlab and EXCEL for optimization.

This new and unique book demonstrates that Excel and VBA can play an important role in the explanation and implementation of numerical methods across finance. Advanced Modelling in Finance provides a comprehensive look at equities, options on equities and options on bonds from the early 1950s to the late 1990s. The book adopts a step-by-step approach to understanding the more sophisticated aspects of Excel macros and VBA programming, showing how these programming techniques can be used to model and manipulate financial data, as applied to equities, bonds and options. The book is essential for financial practitioners who need to develop their financial modelling skill sets as there is an increase in the need to analyse and develop ever more complex 'what if' scenarios. Specifically applies Excel and VBA to the financial markets Packaged with a CD containing the software from the examples throughout the book Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

You too can understand the statistics of life, even if you're math-challenged! What do you need to calculate? Manufacturing output? A curve for test scores? Sports stats? You and Excel can do it, and this non-intimidating guide shows you how. It demystifies the different types of statistics, how Excel functions and formulas work, the meaning of means and medians, how to interpret your figures, and more — in plain English. Getting there — learn how variables, samples, and probability are used to get the information you want Excel tricks — find out what's built into the program to help you work with Excel formulas Playing with worksheets — get acquainted with the worksheet functions for each step Graphic displays — present your data as pie graphs, bar graphs, line graphs, or scatter plots What's normal? — understand normal distribution and probability Hyping hypotheses — learn to use hypothesis testing with means and variables When regression is progress — discover when and how to use regression for forecasting What are the odds — work with probability, random variables, and binomial distribution Open the book and find: Ten statistical and graphical tips and traps The difference between descriptive and inferential statistics Why graphs are good How to measure variations What standard scores are and why they're used When to use two-sample hypothesis testing How to use correlations Different ways of working with probability

While Excel remains ubiquitous in the business world, recent Microsoft feedback forums are full of requests to include Python as an Excel scripting language. In fact, it's the top feature requested. What makes this combination so compelling? In this hands-on guide, Felix Zumstein--creator of xlwings, a popular open source package for automating Excel with Python--shows experienced Excel users how to integrate these two worlds efficiently. Excel has added quite a few new capabilities over the past couple of years, but its automation language, VBA, stopped evolving a long time ago. Many Excel power users have already adopted Python for daily automation tasks. This guide gets you started. Use Python without extensive programming knowledge Get started with modern tools, including Jupyter notebooks and Visual Studio code Use pandas to acquire, clean, and analyze data and replace typical Excel calculations Automate tedious tasks like consolidation of Excel workbooks and production of Excel reports Use xlwings to build interactive Excel tools that use Python as a calculation engine Connect Excel to databases and CSV files and fetch data from the internet using Python code Use Python as a single tool to replace VBA, Power Query, and Power Pivot

Introduction to Optimum Design is the most widely used textbook in engineering optimization and optimum design courses. It is intended for use in a first course on engineering design and optimization at the undergraduate or graduate level within engineering departments of all disciplines, but primarily within mechanical, aerospace and civil engineering. The basic approach of the text is to describe an organized approach to engineering design optimization in a rigorous yet simplified manner, illustrate various concepts and procedures with simple examples, and demonstrate their applicability to engineering design problems. Formulation of a design problem as an optimization problem is emphasized and illustrated throughout the text. Excel and MATLAB are featured throughout as learning and teaching aids. The 3rd edition has been reorganized and enhanced with new material, making the book even more appealing to instructors regardless of the level they teach the course. Examples include moving the introductory chapter on Excel and MATLAB closer to the front of the book and adding an early chapter on practical design examples for the more introductory course, and including a final chapter on advanced topics for the purely graduate level course. Basic concepts of optimality conditions and numerical methods are described with simple and practical examples, making the material highly teachable and learnable. Applications of the methods for structural, mechanical, aerospace and industrial engineering problems. Introduction to MATLAB Optimization Toolbox. Optimum design with Excel Solver has been expanded into a full chapter. Practical design examples introduce students to usage of optimization methods early in the book. New material on several advanced optimum design topics serves the needs of instructors teaching more advanced courses.

Reflects the latest applied research and features state-of-the-art software for building and solving spreadsheet optimization models Thoroughly updated to reflect the latest topical and technical advances in the field, Optimization Modeling with Spreadsheets, Second Edition continues to focus on solving real-world optimization problems through the creation of mathematical models and the use of spreadsheets to represent and analyze those models. Developed and extensively classroom-tested by the author, the book features a systematic approach that equips readers with the skills to apply optimization tools effectively without the need to rely on specialized algorithms. This new edition uses the powerful software package Risk Solver Platform (RSP) for optimization, including its Evolutionary Solver, which employs many recently developed ideas for heuristic programming. The author provides expanded coverage of integer programming and discusses linear and nonlinear programming using a systematic approach that emphasizes the use of spreadsheet-based optimization tools. The Second Edition also features: Classifications for the various problem types, providing the reader with a broad framework for building and recognizing optimization models Network models that allow for a more general form of mass balance A systematic introduction to Data Envelopment Analysis (DEA) The identification of qualitative patterns in order to meaningfully interpret linear programming solutions An introduction to stochastic programming and the use of RSP to solve problems of this type Additional examples, exercises, and cases have been included throughout, allowing readers to test their comprehension of the material. In addition, a related website features Microsoft Office® Excel files to accompany the figures and data sets in the book. With its accessible and comprehensive presentation, Optimization Modeling with Spreadsheets, Second Edition is an excellent book for courses on deterministic models, optimization, and spreadsheet modeling at the upper-undergraduate and graduate levels. The book can also serve as a reference for researchers, practitioners, and consultants working in business, engineering, operations research, and management science.

Completely updated guide for scientists, engineers and students who want to use Microsoft Excel 2007 to its full potential. Electronic spreadsheet analysis has become part of the everyday work of researchers in all areas of engineering and science. Microsoft Excel, as the industry standard spreadsheet, has a range of scientific functions that can be utilized for the modeling, analysis and presentation of quantitative data. This text provides a straightforward guide to using these functions of Microsoft Excel, guiding the reader from basic principles through to more complicated areas such as formulae, charts, curve-fitting, equation solving, integration, macros, statistical functions, and presenting quantitative data. Content written specifically for the requirements of science and engineering students and professionals working with Microsoft Excel, brought fully up to date with the new Microsoft Office release of Excel 2007. Features of Excel 2007 are illustrated through a wide variety of examples based in technical contexts, demonstrating the use of the program for analysis and presentation of experimental results. Updated with new examples, problem sets, and applications.

Optimization models play an increasingly important role in financial decisions. This is the first textbook devoted to explaining how recent advances in optimization models, methods and software can be applied to solve problems in computational finance more efficiently and accurately. Chapters discussing the theory and efficient solution methods for all major classes of optimization problems alternate with chapters illustrating their use in modeling problems of mathematical finance. The reader is guided through topics such as volatility estimation, portfolio optimization problems and constructing an index fund, using techniques such as nonlinear optimization models, quadratic programming formulations and integer programming models respectively. The book is based on Master's courses in financial engineering and comes with worked examples, exercises and case studies. It will be welcomed by applied mathematicians, operational researchers and others who work in mathematical and computational finance and who are seeking a text for self-learning or for use with courses.

Take your Excel formulas to the next level with this updated reference John Walkenbach's name is synonymous with excellence in computer books that decipher complex technical topics. Known as "Mr. Spreadsheet," Walkenbach provides you with clear explanations on all the methods you can use to maximize the power of Excel with formulas within the frameworks of all the new features of Excel 2010. You'll learn how to create financial formulas, maximize the power of array formulas, develop custom worksheet functions with VBA, debug formulas, and much more. This invaluable reference is fully updated for the new Microsoft Office release and provides comprehensive formulas coverage, delivering more than 800 pages of Excel tips, tricks, and techniques you won't find anywhere else. Demonstrates how to use all the new features of Excel 2010 to maximize your formulas Shows how to develop custom worksheet functions with VBA, debug formulas, create financial formulas, and more Serves as an indispensable reference no matter your skill level Includes a valuable CD-ROM with sample files, templates and worksheets from the book, plus John Walkenbach's award-winning Power Utility Pak Prepare to excel with Excel when you have John Walkenbach and Excel 2010 Formulas by your side! Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

More quality, more flexibility, and less costs seem to be the key to meeting the demands of the global marketplace. The secret to success in this arena lies in the expert execution of the critical tasks in the product definition stage. Prototyping is an essential part of this stage, yet can be very expensive. It must be planned well and use state-o

Excel is the number-one spreadsheet application, with ever-expanding capabilities. If you're only using it to balance the books, you're missing out on a host of functions that can benefit your business or personal finances by uncovering trends and other important information hidden within the numbers.

Large corporations like IBM and Oracle are using Excel dashboards and reports as a Business Intelligence tool, and many other smaller businesses are looking to these tools in order to cut costs for budgetary reasons. An effective analyst not only has to have the technical skills to use Excel in a productive manner but must be able to synthesize data into a story, and then present

that story in the most impactful way. Microsoft shows its recognition of this with Excel. In Excel, there is a major focus on business intelligence and visualization. Data Visualization with Excel Dashboards and Reports fills the gap between handling data and synthesizing data into meaningful reports. This title will show readers how to think about their data in ways other than columns and rows. Most Excel books do a nice job discussing the individual functions and tools that can be used to create an "Excel Report". Titles on Excel charts, Excel pivot tables, and other books that focus on "Tips and Tricks" are useful in their own right; however they don't hit the mark for most data analysts. The primary reason these titles miss the mark is they are too focused on the mechanical aspects of building a chart, creating a pivot table, or other functionality. They don't offer these topics in the broader picture by showing how to present and report data in the most effective way. What are the most meaningful ways to show trending? How do you show relationships in data? When is showing variances more valuable than showing actual data values? How do you deal with outliers? How do you bucket data in the most meaningful way? How do you show impossible amounts of data without inundating your audience? In Data Visualization with Excel Reports and Dashboards, readers will get answers to all of these questions. Part technical manual, part analytical guidebook; this title will help Excel users go from reporting data with simple tables full of dull numbers, to creating hi-impact reports and dashboards that will wow management both visually and substantively. This book offers a comprehensive review of a wide array of technical and analytical concepts that will help users create meaningful reports and dashboards. After reading this book, the reader will be able to: Analyze large amounts of data and report their data in a meaningful way Get better visibility into data from different perspectives Quickly slice data into various views on the fly Automate redundant reporting and analyses Create impressive dashboards and What-If analyses Understand the fundamentals of effective visualization Visualize performance comparisons Visualize changes and trends over time

This book contains a selection of refereed papers presented at the “International Conference on Operations Research (OR 2011)” which took place at the University of Zurich from August 30 to September 2, 2011. The conference was jointly organized by the German speaking OR societies from Austria (ÖGOR), Germany (GOR) and Switzerland (SVOR) under the patronage of SVOR. More than 840 scientists and students from over 50 countries attended OR 2011 and presented 620 papers in 16 parallel topical streams, as well as special award sessions. The conference was designed according to the understanding of Operations Research as an interdisciplinary science focusing on modeling complex socio-technical systems to gain insight into behavior under interventions by decision makers. Dealing with “organized complexity” lies in the core of OR and designing useful support systems to master the challenge of system management in complex environment is the ultimate goal of our professional societies. To this end, algorithmic techniques and system modeling are two fundamental competences which are also well-balanced in these proceedings.

This Fourth Edition introduces the latest theory and applications in optimization. It emphasizes constrained optimization, beginning with a substantial treatment of linear programming and then proceeding to convex analysis, network flows, integer programming, quadratic programming, and convex optimization. Readers will discover a host of practical business applications as well as non-business applications. Topics are clearly developed with many numerical examples worked out in detail. Specific examples and concrete algorithms precede more abstract topics. With its focus on solving practical problems, the book features free C programs to implement the major algorithms covered, including the two-phase simplex method, primal-dual simplex method, path-following interior-point method, and homogeneous self-dual methods. In addition, the author provides online JAVA applets that illustrate various pivot rules and variants of the simplex method, both for linear programming and for network flows. These C programs and JAVA tools can be found on the book's website. The website also includes new online instructional tools and exercises.

A comprehensive introduction to the tools, techniques and applications of convex optimization.

Complete and practical yet easy-to-understand graduate-level statistics course with all of the problems worked out in Excel. Thoroughly covers all topics of an intense graduate statistics course using nothing but step-by-step, simple explanations. Loaded with completed, real-world problems all in Excel, this e-manual is an outstanding supplement to a graduate statistics course. Very clear explanations are used to show exactly how the Excel formulas integrate with the statistical frameworks being applied. The reader will learn how to master and apply graduate-level statistics much faster than a student in a normal graduate statistics course because this e-manual's emphasis is entirely on problem solving, not on useless, forgettable theory that fills up many statistics courses. This e-manual achieves two goals: teaching graduate-level statistical frameworks in an easy-to-understand way and then showing how to implement all of it in Excel. The widely-used Microsoft Excel program provides a very simple but incredibly complete platform to perform heavy-duty, advanced statistical analysis. All other statistical software packages, such as Minitab, SyStat, and SPSS, are expensive, require lots of user training, and expect that the user is an expert statistician right from the start. Not this e-manual nor Microsoft Excel. The ability to perform graduate-level statistics in Excel is an extremely useful and powerful tool for any graduate statistics student and business manager. Homework assignments can be quickly checked with Excel. Once difficult statistical business problems are now readily solvable in Excel. The easy-to-follow frameworks in this e-manual can be cleanly and swiftly duplicated in the real world and on statistics exams by hand (without Excel) right away. The lessons are all in bite-size chunks that are quickly absorbed for immediate use. More than half of the lessons in this e-manual are supplemented with step-by-step videos for more convenient learning. Some of the major topics covered in detail include regression, ANOVA, hypothesis tests, confidence intervals, combinations, permutations, correlation, covariance, t-tests, histograms, and charting. This e-manual also contains two complete chapters with numerous videos showing exactly how to create user-interactive graphs of the 10 major distributions in Excel. These user-interactive Excel graphs allow the user to vary the cells containing all of the distribution's parameters, such as mean, standard deviation, and degrees of freedom, and watch the graphed distribution instantly change right on the spreadsheet to conform to the new parameters. This is an excellent and unique tool to fully grasp the functionality of the distributions discussed in this e-manual. All problem-solving techniques are presented as step-by-step frameworks that can be readily applied to similar problems, not as seemingly unrelated and difficult-to-apply statistical theorems like most statistics course do. A number of problem-solving techniques are presented in this e-manual that do not appear in any other statistical text. One example of a statistical technique presented only in this e-manual and nowhere else is a detailed description showing how to solve every type of hypothesis test using the same four steps. A number of widely-used and complicated statistical tests, such as the chi-square independence test, the chi-

square population variance test, and conjoint analysis using dummy variable regression are described from top to bottom and also in Excel. Graduate statistics students and business managers will find this e-manual to be, by far, the easiest and fastest way to master graduate-level statistics and to apply advanced statistics in Excel to solve difficult, real-world problems, homework assignments, and exam questions. The reader of this e-manual will quickly become an Excel Statistical Master.

This book offers new transparent views and step-by-step methods for performance evaluation of a set of units using Data Envelopment Analysis (DEA). The book has twelve practical chapters. Elementary concepts and definitions are gradually built in Chapters 1-6 based upon four examples of one input and one output factors, two input factors, two output factors, and four input and three output factors. Simultaneously, the mathematical foundations using linear programming are also introduced without any prerequisites. A reader with basic knowledge of mathematics and computers is able to understand the contents of the book. In addition, to prevent pre-judgment about the available concepts and definitions in the DEA literature, some new phrases are introduced and, after elucidating each phrase in detail in Chapters 1-6, they are reintroduced for industry-wide accuracy in Chapter 7. After that, some of the more advanced DEA topics are illustrated in Chapters 8-12, such as: production-planning problems, output-input ratio analysis, efficiency over different time periods, Malmquist efficiency indexes, and a delta neighborhood model. A clear overview of many of the elementary and advanced concepts of DEA is provided, including Technical Efficiency, Relative Efficiency, Cost/Revenue/Profit Efficiency, Price/Overall Efficiency, the DEA axioms, the mathematical background to measure technical efficiency and overall efficiency, the multiplier/envelopment form of basic DEA models in input/output-orientation, the multiplier/envelopment of Additive DEA model, the multiplier/envelopment of slacks-based models, and others. The book also covers a variety of DEA techniques, input-output ratio analysis, the natural relationships between DEA frontier and the ratio of output to input factors, production-planning problems, planning ideas with a centralized decision-making unit, context-dependent DEA, Malmquist efficiency index, efficiency over different time periods, and others. End-of-chapter exercises are provided for each chapter.

Valuable software, realistic examples, and fascinating topics . . . everything you need to master the most widely used management science techniques using Microsoft Excel is right here! Learning to make decisions in today's business world takes training and experience. Cliff Ragsdale--the respected innovator in the field of management science--is an outstanding guide to help you learn the skills you need, use Microsoft Excel for Windows to implement those skills, and gain the confidence to apply what you learn to real business situations. SPREADSHEET MODELING AND DECISION ANALYSIS gives you step-by-step instructions and annotated screen shots to make examples easy to follow. Plus, interesting sections called The World of Management Science show you how each topic has been applied in a real company.

Decision support systems have experienced a marked increase in attention and importance over the past 25 years. The aim of this book is to survey the decision support system (DSS) field – covering both developed territory and emergent frontiers. It will give the reader a clear understanding of fundamental DSS concepts, methods, technologies, trends, and issues. It will serve as a basic reference work for DSS research, practice, and instruction. To achieve these goals, the book has been designed according to a ten-part structure, divided in two volumes with chapters authored by well-known, well-versed scholars and practitioners from the DSS community.

Linear programming is one of the most extensively used techniques in the toolbox of quantitative methods of optimization. One of the reasons of the popularity of linear programming is that it allows to model a large variety of situations with a simple framework. Furthermore, a linear program is relatively easy to solve. The simplex method allows to solve most linear programs efficiently, and the Karmarkar interior-point method allows a more efficient solving of some kinds of linear programming. The power of linear programming is greatly enhanced when came the opportunity of solving integer and mixed integer linear programming. In these models all or some of the decision variables are integers, respectively. In this book we provide a brief introduction to linear programming, together with a set of exercises that introduce some applications of linear programming. We will also provide an introduction to solve linear programming in R. For each problem a possible solution through linear programming is introduced, together with the code to solve it in R and its numerical solution.

Data Science gets thrown around in the press like it'smagic. Major retailers are predicting everything from when theircustomers are pregnant to when they want a new pair of ChuckTaylors. It's a brave new world where seemingly meaningless datacan be transformed into valuable insight to drive smart businessdecisions. But how does one exactly do data science? Do you have to hireone of these priests of the dark arts, the "data scientist," toextract this gold from your data? Nope. Data science is little more than using straight-forward steps toprocess raw data into actionable insight. And in DataSmart, author and data scientist John Foreman will show you howthat's done within the familiar environment of aspreadsheet. Why a spreadsheet? It's comfortable! You get to look at the dataevery step of the way, building confidence as you learn the tricksof the trade. Plus, spreadsheets are a vendor-neutral place tolearn data science without the hype. But don't let the Excel sheets fool you. This is a book forthose serious about learning the analytic techniques, the math andthe magic, behind big data. Each chapter will cover a different technique in aspreadsheet so you can follow along: Mathematical optimization, including non-linear programming andgenetic algorithms Clustering via k-means, spherical k-means, and graphmodularity Data mining in graphs, such as outlier detection Supervised AI through logistic regression, ensemble models, andbag-of-words models Forecasting, seasonal adjustments, and prediction intervalsthrough monte carlo simulation Moving from spreadsheets into the R programming language You get your hands dirty as you work alongside John through eachtechnique. But never fear, the topics are readily applicable andthe author laces humor throughout. You'll even learnwhat a dead squirrel has to do with optimization modeling, whichyou no doubt are dying to know.

Shows ordinary users how to tap the rich data analysis functionality of Excel, make sense of their organization's critical financial and statistical information, and put together compelling data presentations Now revised with over 30 percent new content to cover the enhancements in Excel 2007, including the completely redesigned user interface, augmented charting and PivotTable capabilities, improved security, and better data exchange through XML Provides thorough coverage of Excel features that are critical to data analysis-working with external databases, creating PivotTables and PivotCharts, using Excel statistical and financial functions, sharing data, harnessing the Solver, taking advantage of the Small Business Finance Manager, and more

Since the late 1940s, linear programming models have been used for many different purposes. Airline companies apply these models to optimize their use of planes and staff. NASA has been using them for years to optimize their use of limited resources. Oil companies use them to optimize their refinery operations. Small and medium-sized businesses use linear programming to

solve a huge variety of problems, often involving resource allocation. In my study, a typical product-mix problem in a manufacturing system producing two products (each product consists of two sub-assemblies) is solved for ist optimal solution through the use of the latest versions of MATLAB having the command simlp, which is very much like linprog. As analysts, we try to find a good enough solution for the decision maker to make a final decision. Our attempt is to give the mathematical description of the product-mix optimization problem and bring the problem into a form ready to call MATLAB's simlp command. The objective of this study is to find the best product mix that maximizes profit. The graph obtained using MATLAB commands, give the shaded area enclosed by the constraints called the feasible region, which is the set of points satisfying all the constraints. To find the optimal solution we look at the lines of equal profit to find the corner of the feasible region which yield the highest profit. This corner can be found out at the farthest line of equal profit, which still touches the feasible region. The most critical part is the sensitivity analysis, using Excel Solver, and Parametric Analysis, using computer software, which allows us to study the effect on optimal solution due to discrete and continuous change in parameters of the LP model including to identify bottlenecks. We have examined other options like product outsourcing, one-time cost, cross training of one operator, manufacturing of hypothetical third product on under-utilized machines and optimal sequencing of jobs on machines.

Elements of Numerical Mathematical Economics with Excel: Static and Dynamic Optimization shows readers how to apply static and dynamic optimization theory in an easy and practical manner, without requiring the mastery of specific programming languages that are often difficult and expensive to learn. Featuring user-friendly numerical discrete calculations developed within the Excel worksheets, the book includes key examples and economic applications solved step-by-step and then replicated in Excel. After introducing the fundamental tools of mathematical economics, the book explores the classical static optimization theory of linear and nonlinear programming, applying the core concepts of microeconomics and some portfolio theory. This provides a background for the more challenging worksheet applications of the dynamic optimization theory. The book also covers special complementary topics such as inventory modelling, data analysis for business and economics, and the essential elements of Monte Carlo analysis. Practical and accessible, Elements of Numerical Mathematical Economics with Excel: Static and Dynamic Optimization increases the computing power of economists worldwide. This book is accompanied by a companion website that includes Excel examples presented in the book, exercises, and other supplementary materials that will further assist in understanding this useful framework. Explains how Excel provides a practical numerical approach to optimization theory and analytics Increases access to the economic applications of this universally-available, relatively simple software program Encourages readers to go to the core of theoretical continuous calculations and learn more about optimization processes

This unique text uses Microsoft Excel® workbooks to instruct students. In addition to explaining fundamental concepts in microeconomic theory, readers acquire a great deal of sophisticated Excel skills and gain the practical mathematics needed to succeed in advanced courses. In addition to the innovative pedagogical approach, the book features explicitly repeated use of a single central methodology, the economic approach. Students learn how economists think and how to think like an economist. With concrete, numerical examples and novel, engaging applications, interest for readers remains high as live graphs and data respond to manipulation by the user. Finally, clear writing and active learning are features sure to appeal to modern practitioners and their students. The website accompanying the text is found at www.depauw.edu/learn/microexcel.

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