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### VCATIJ - OLSEN CASSIUS

The main theme of this year's congress is 'Animal lives worth living'. This theme focuses on our responsibility for all animals kept or influenced by humans, to ensure that we can provide a life for them that takes into account all relevant aspects of animal welfare, aided by applied ethology as the key scientific discipline. This not only means avoiding and alleviating suffering but also promoting resilience and positive experiences. By monitoring and interpreting animal behaviour, we gain important insights into each of these aspects of quality of life.

From foundations to state-of-the-art; the tools and philosophy you need to build network models.

No matter how stuck you feel, no matter how bad you think your genetics are, and no matter how many "advanced" diets and workout programs you've tried and abandoned . . . . . you absolutely, positively can shatter muscle and strength plateaus, set new personal records, and build your best body ever. And better yet, you can do it without following restrictive or exotic diets, putting in long hours at the gym, or doing crushing workouts that leave you aching from tip to tail. This book shows you how. Here are just a few of the things you'll discover in it: · How to almost instantly optimize your environment so you need less willpower to stay on track with your diet, training, supplementation, and wellness routines. · The nitty-gritty details about how to use advanced diet strategies like mini-cuts, intermittent fasting, and calorie cycling to immediately boost muscle growth and fat loss. · The little-known and unorthodox methods of determining how big and strong you can get with your genetics, according to the hard work of two highly respected fitness researchers. · A paint-by-numbers training system that'll get you unstuck and steadily gaining muscle again in all the right places . . . spending only 4 to 6 hours in the gym every week doing challenging and fun workouts you actually enjoy. · The ancient secret of anatomy discovered by Leonardo da Vinci that gives you a simple blueprint for developing the exact proportions that literally make you look like a Greek god—a big, full chest; wide, tapered back; thick, powerful legs; and strong, bulging arms. · A no-BS guide to "sophisticated" supplements that'll show you what works and what doesn't, saving you hundreds if not thousands of dollars each year on exotic pills, powders, and potions. · And a whole lot more! The bottom line is you CAN gain real muscle and strength again, look forward to your workouts again, and feel like your fitness is finally under control again.

Robust Project Scheduling is to review the fundamentals of robust project scheduling through the deployment of proactive/reactive project scheduling procedures.

Operations Research: 1934-1941," 35, 1, 143-152; "British The goal of the Encyclopedia of Operations Research and Operational Research in World War II," 35, 3, 453-470; Management Science is to provide to decision makers and "U. S. Operations Research in World War II," 35, 6, 910-925; problem solvers in business, industry, government and and the 1984 article by Harold Lardner that appeared in academia a comprehensive overview of the wide range of Operations Research: "The Origin of Operational Research," ideas, methodologies, and synergistic forces that combine to 32, 2, 465-475. form the preeminent decision-aiding fields of operations research and management science (OR/MS). To this end, we The Encyclopedia contains no entries that define the fields enlisted a distinguished international group of academics of operations research and management science. OR and MS and practitioners to contribute articles on subjects for are often equated to one another. If one defines them by the which they are renowned. methodologies they employ, the equation would probably The editors, working with the Encyclopedia's Editorial stand inspection. If one defines them by their historical Advisory Board, surveyed and divided OR/MS into specific developments and the classes of problems they encompass, topics that collectively encompass the foundations, applica the equation becomes fuzzy. The formalism OR grew out of tions, and emerging elements of this ever-changing field. We the operational problems of the British and U. s. military also wanted to establish the close associations that OR/MS efforts in World War II.

Scheduling theory has received a growing interest since its origins in the second half of the 20th century. Developed initially for the study of scheduling problems with a single objective, the theory has been recently extended to problems involving multiple criteria. However, this extension has still left a gap between the classical multi-criteria approaches and some real-life problems in which not all jobs contribute to the evaluation of each criterion. In this book, we close this gap by presenting and developing multi-agent scheduling models in which subsets of jobs sharing the same resources are evaluated by different criteria. Several scenarios are introduced, depending on the definition and the intersection structure of the job subsets. Complexity results, approximation schemes, heuristics and exact algorithms are discussed for single-machine and parallel-machine scheduling environments. Definitions and algorithms are illustrated with the help of examples and figures.

This book concentrates on real-world production scheduling in factories and industrial settings. It includes industry case studies that use innovative techniques as well as academic research results that can be used to improve production scheduling. Its purpose is to present scheduling principles, advanced tools, and examples of innovative scheduling systems to persons who could use this information to improve their own production scheduling.

This book provides a theoretical and application-oriented analysis of deterministic scheduling problems in advanced planning and computer systems. The text examines scheduling problems across a range of parameters: job priority, release times, due dates, processing times, precedence constraints, resource usage and more, focusing on such topics as computer systems and supply chain management. Discussion includes single and parallel processors, flexible shops and manufacturing systems, and resource-constrained project scheduling. Many applications from industry and service operations management and case studies are described. The handbook will be useful to a broad audience, from researchers to practitioners, graduate and advanced undergraduate students.

Stochastic scheduling is in the area of production scheduling. There is a dearth of work that analyzes the variability of schedules. In a stochastic environment, in which the processing time of a job is not known with certainty, a schedule is typically analyzed based on the expected value of a performance measure. This book addresses this problem and presents algorithms to determine the variability of a schedule under various machine configurations and objective functions. It is intended for graduate and advanced undergraduate students in manufacturing, operations management, applied mathematics, and computer science, and it is also a good reference book for practitioners. Computer software containing the algorithms is provided on an accompanying website for ease of student and user implementation.

An updated edition of the text that explores the core topics in scheduling theory The second edition of Principles of Sequencing and Scheduling has been revised and updated to provide comprehensive

coverage of sequencing and scheduling topics as well as emerging developments in the field. The text offers balanced coverage of deterministic models and stochastic models and includes new developments in safe scheduling and project scheduling, including coverage of project analytics. These new topics help bridge the gap between classical scheduling and actual practice. The authors—noted experts in the field—present a coherent and detailed introduction to the basic models, problems, and methods of scheduling theory. This book offers an introduction and overview of sequencing and scheduling and covers such topics as single-machine and multi-machine models, deterministic and stochastic problem formulations, optimization and heuristic solution approaches, and generic and specialized software methods. This new edition adds coverage on topics of recent interest in shop scheduling and project scheduling. This important resource: Offers comprehensive coverage of deterministic models as well as recent approaches and developments for stochastic models Emphasizes the application of generic optimization software to basic sequencing problems and the use of spreadsheet-based optimization methods Includes updated coverage on safe scheduling, lognormal modeling, and job selection Provides basic coverage of robust scheduling as contrasted with safe scheduling Adds a new chapter on project analytics, which supports the PERT21 framework for project scheduling in a stochastic environment. Extends the coverage of PERT 21 to include hierarchical scheduling Provides end-of-chapter references and access to advanced Research Notes, to aid readers in the further exploration of advanced topics Written for upper-undergraduate and graduate level courses covering such topics as scheduling theory and applications, project scheduling, and operations scheduling, the second edition of Principles of Sequencing and Scheduling is a resource that covers scheduling techniques and contains the most current research and emerging topics.

Besides scheduling problems for single and parallel machines and shop scheduling problems, the book covers advanced models involving due-dates, sequence dependent change-over times and batching. A discussion of multiprocessor task scheduling and problems with multi-purpose machines is accompanied by the methods used to solve such problems, such as polynomial algorithms, dynamic programming procedures, branch-and-bound algorithms and local search heuristics, and the whole is rounded off with an analysis of complexity issues.

Algorithms and Theory of Computation Handbook, Second Edition: General Concepts and Techniques provides an up-to-date compendium of fundamental computer science topics and techniques. It also illustrates how the topics and techniques come together to deliver efficient solutions to important practical problems. Along with updating and revising many of the existing chapters, this second edition contains four new chapters that cover external memory and parameterized algorithms as well as computational number theory and algorithmic coding theory. This best-selling handbook continues to help computer professionals and engineers find significant information on various algorithmic topics. The expert contributors clearly define the terminology, present basic results and techniques, and offer a number of current references to the in-depth literature. They also provide a glimpse of the major research issues concerning the relevant topics.

This book focuses on all major aspects of the asset management industry including its regulations, strategies, processes, applied technologies and risks. It provides a serious resource for readers seeking greater depth and alternative opinions on specific industry developments, and breadth for specialists interested in the dynamics of the industry.

This text provides coverage of scheduling for operations, both manufacturing and services. It includes: reservations systems; systems design; flexible system scheduling; workforce scheduling; and future scheduling issues such as Web-based systems.

Proceedings of the NATO Advanced Study and Research Institute on Theoretical Approaches to Scheduling Problems, Durham, England, July 6-17, 1981

From the Preface: Collectively, the chapters in this book address application domains including inpatient and outpatient services, public health networks, supply chain management, and resource constrained settings in developing countries. Many of the chapters provide specific examples or case studies illustrating the applications of operations research methods across the globe, including Africa, Australia, Belgium, Canada, the United Kingdom, and the United States. Chapters 1-4 review operations research methods that are most commonly applied to health care operations management including: queuing, simulation, and mathematical programming. Chapters 5-7 address challenges related to inpatient services in hospitals such as surgery, intensive care units, and hospital wards. Chapters 8-10 cover outpatient services, the fastest growing part of many health systems, and describe operations research models for primary and specialty care services, and how to plan for patient no-shows. Chapters 12 - 16 cover topics related to the broader integration of health services in the context of public health, including optimizing the location of emergency vehicles, planning for mass vaccination events, and the coordination among different parts of a health system. Chapters 17-18 address supply chain management within hospitals, with a focus on pharmaceutical supply management, and the challenges of managing inventory for nursing units. Finally, Chapters 19-20 provide examples of important and emerging research in the realm of humanitarian logistics.

The field of industrial engineering continues to advance at a rapid rate due to innovative technologies such as robotics and automation that improve performance and efficiencies. Emerging research on these latest trends, strategies, and techniques is needed to ensure that industry professionals remain up to date on the best practices for success. Optimizing Current Strategies and Applications in Industrial Engineering is a pivotal reference source that provides vital research on the development, improvement, implementation, and evaluation of integrated systems in engineering. While highlighting topics such as engineering economy, material handling, and operations management, this book is ideally designed for engineers, policymakers, educators, researchers, and practitioners.

An easy-to-read introduction to the concepts associated with the creation of optimization models for production planning starts off this book. These concepts are then applied to well-known planning models, namely mrp and MRP II. From this foundation, fairly sophisticated models for supply chain management are developed. Another unique feature is that models are developed with an eye toward implementation. In fact, there is a chapter that provides explicit examples of implementation of the basic models using a variety of popular, commercially available modeling languages.

Das Stranggießen als Bindeglied zwischen der prozessindustriellen Verarbeitung flüssiger Chargen und der fertigungsindustriellen Generierung einzelner Brammen weist ein hohes Maß an planerischen Freiheitsgraden auf, welche bislang kaum systematisch ausgenutzt werden. Matthias Wichmann entwickelt ein Planungssystem zur optimalen Nutzung der Freiheitsgrade im Rahmen der Gestaltung und Sequenzierung von Chargen und Brammen. Das Einsatzpotential des Systems wird in einer an Realdaten angelehnten Fallstudie aufgezeigt.

Focusing on theory and applications of scheduling, the applications are drawn primarily from production and manufacturing environments, but state principles that are relevant to other settings as well. The broad range of topics includes deterministic and stochastic models.

Workflows may be defined as abstractions used to model the coherent flow of activities in the context of an *in silico* scientific experiment. They are employed in many domains of science such as bioinformatics, astronomy, and engineering. Such workflows usually present a considerable number of activities and activations (i.e., tasks associated with activities) and may need a long time for execution. Due to the continuous need to store and process data efficiently (making them data-intensive workflows), high-performance computing environments allied to parallelization techniques are used to run these workflows. At the beginning of the 2010s, cloud technologies emerged as a promising environment to run scientific workflows. By using clouds, scientists have expanded beyond single parallel computers to hundreds or even thousands of virtual machines. More recently, Data-Intensive Scalable Computing (DISC) frameworks (e.g., Apache Spark and Hadoop) and environments emerged and are being used to execute data-intensive workflows. DISC environments are composed of processors and disks in large-commodity computing clusters connected using high-speed communications switches and networks. The main advantage of DISC frameworks is that they support and grant efficient in-memory data management for large-scale applications, such as data-intensive workflows. However, the execution of workflows in cloud and DISC environments raise many challenges such as scheduling workflow activities and activations, managing produced data, collecting provenance data, etc. Several existing approaches deal with the challenges mentioned earlier. This way, there is a real need for understanding how to manage these workflows and various big data platforms that have been developed and introduced. As such, this book can help researchers understand how linking workflow management with Data-Intensive Scalable Computing can help in understanding and analyzing scientific big data. In this book, we aim to identify and distill the body of work on workflow management in clouds and DISC environments. We start by discussing the basic principles of data-intensive scientific workflows. Next, we present two workflows that are executed in a single site and multi-site clouds taking advantage of provenance. Afterward, we go towards workflow management in DISC environments, and we present, in detail, solutions that enable the optimized execution of the workflow using frameworks such as Apache Spark and its extensions.

"This book presents the most recent and established developments of Particle swarm optimization (PSO) within a unified framework by noted researchers in the field"--Provided by publisher.

Multidisciplinary Scheduling: Theory and Applications is a volume of nineteen reviewed papers that were selected from the sixty-seven papers presented during the First Multidisciplinary International Conference of Scheduling (MISTA). This is the initial volume of MISTA—the primary forum on interdisciplinary research on scheduling research. Each paper in the volume has been rigorously reviewed and carefully copyedited to ensure its readability. The MISTA volume focuses on the following leading edge topics: Fundamentals of Scheduling, Multi-Criteria Scheduling, Personnel Scheduling, Scheduling in Space, Scheduling the Internet, Machine Scheduling, Bin Packing, Educational Timetabling, Sports Scheduling, and Transport Scheduling.

The production control of flexible manufacturing systems is a relevant component that must go along with the requirements of being flexible in terms of new product variants, new machine skills and reaction to unforeseen events during runtime. This work focuses on developing a reactive job-shop scheduling system for flexible and re-configurable manufacturing systems. Reinforcement Learning approaches are therefore investigated for the concept of multiple agents that control products including transportation and resource allocation.

An overview of the rapidly growing field of ant colony optimization that describes theoretical findings, the major algorithms, and current applications. The complex social behaviors of ants have been much studied by science, and computer scientists are now finding that these behavior patterns can provide models for solving difficult combinatorial optimization problems. The attempt to develop algorithms inspired by one aspect of ant behavior, the ability to find what computer scientists would call shortest paths, has become the field of ant colony optimization (ACO), the most successful and widely recognized algorithmic technique based on ant behavior. This book presents an overview of this rapidly growing field, from its theoretical inception to practical applications, including descriptions of many available ACO algorithms and their uses. The book first describes the translation of observed ant behavior into working optimization algorithms. The ant colony metaheuristic is then introduced and viewed in the general context of combinatorial optimization. This is followed by a detailed description and guide to all major ACO algorithms and a report on current theoretical findings. The book surveys ACO applications now in use, including routing, assignment, scheduling, subset, machine learning, and bioinformatics problems. AntNet, an ACO algorithm designed for the network routing problem, is described in detail. The authors conclude by summarizing the progress in the field and outlining future research directions. Each chapter ends with bibliographic material, bullet points setting out important ideas covered in the chapter, and exercises. Ant Colony Optimization will be of interest to academic and industry researchers, graduate students, and practitioners who wish to learn how to implement ACO algorithms.

In many real-world applications, the problems with the data used for scheduling such as processing times, set-up times, release dates or due dates is not exactly known before applying a specific solution algorithm which restricts practical aspects of scheduling theory. During the last decades, several approaches have been developed for sequencing and scheduling with inaccurate data, depending on whether the data is given as random numbers, fuzzy numbers or whether it is uncertain (ie: it can take values from a given interval). This book considers the four major approaches for dealing with such problems: a stochastic approach, a fuzzy approach, a robust approach and a stability approach. Each of the four parts is devoted to one of these approaches. First, it contains a survey chapter on this subject, as well as between further chapters, presenting some recent research results in the particular area. The book provides the reader with a comprehensive and up-to-date introduction into scheduling with inaccurate data. The four survey chapters deal with scheduling with stochastic approaches, fuzzy job-shop scheduling, min-max regret scheduling problems and a stability approach to sequencing and scheduling under uncertainty. This book will be useful for applied mathematicians, students and PhD students dealing with scheduling theory, optimisation and calendar planning.

Operations in Financial Services establishes a framework for this research area from an operations management perspective. The first section presents an introduction and provides an overview of the topic. The second section establishes links between the current state of the art in relevant areas of operations management and operations research and three of the more important aspects of operations in financial services - (i) financial product design and testing, (ii) process delivery design, and (iii) process delivery management. The third section focuses on the current issues that are important in the financial services operations area. These issues center primarily on mobile online banking and trading in a global environment. The fourth section discusses operational risk aspects of financial services. The final section concludes with a discussion on research directions that may become of interest in the future.

Single-machine sequencing with independent jobs; General purpose methodologies for the single-machine problem; Extension of the basic model; Parallel machine models; Flow shop scheduling; Job

shop scheduling; Simulation studies of the dynamic job shop; Network methods for project scheduling; Resource constrained project scheduling.

This new edition of the well established text *Scheduling - Theory, Algorithms, and Systems* provides an up-to-date coverage of important theoretical models in the scheduling literature as well as significant scheduling problems that occur in the real world. It again includes supplementary material in the form of slide-shows from industry and movies that show implementations of scheduling systems. The main structure of the book as per previous edition consists of three parts. The first part focuses on deterministic scheduling and the related combinatorial problems. The second part covers probabilistic scheduling models; in this part it is assumed that processing times and other problem data are random and not known in advance. The third part deals with scheduling in practice; it covers heuristics that are popular with practitioners and discusses system design and implementation issues. All three parts of this new edition have been revamped and streamlined. The references have been made completely up-to-date. Theoreticians and practitioners alike will find this book of interest. Graduate students in operations management, operations research, industrial engineering, and computer science will find the book an accessible and invaluable resource. *Scheduling - Theory, Algorithms, and Systems* will serve as an essential reference for professionals working on scheduling problems in manufacturing, services, and other environments. Reviews of third edition: This well-established text covers both the theory and practice of scheduling. The book begins with motivating examples and the penultimate chapter discusses some commercial scheduling systems and examples of their implementations." (Mathematical Reviews, 2009)

If you want to be muscular, lean, and strong as quickly as possible without steroids, good genetics, or wasting ridiculous amounts of time in the gym and money on supplements...then you want to read this book. Here's the deal: Getting into awesome shape isn't nearly as complicated as the fitness industry wants you to believe. You don't need to spend hundreds of dollars per month on the worthless supplements that steroid freaks shill in advertisements. You don't need to constantly change up your exercise routines to "confuse" your muscles. I'm pretty sure muscles lack cognitive abilities, but this approach is a good way to just confuse you instead. You don't need to burn through buckets of protein powder every month, stuffing down enough protein each day to feed a third world village. You don't need to toil away in the gym for a couple of hours per day, doing tons of sets, supersets, drop sets, giant sets, etc. (As a matter of fact, this is a great way to stunt gains and get nowhere.) You don't need to grind out hours and hours of boring cardio to shed ugly belly fat and love handles and get a shredded six-pack. (How many flabby treadmillers have you come across over the years?) You don't need to completely abstain from "cheat" foods while getting down to single-digit body fat percentages. If you plan cheat meals correctly, you can actually speed your metabolism up and accelerate fat loss. In this book you're going to learn something most guys will never know: The exact formula of exercise and eating that makes putting on 10 to 15 pounds of quality lean mass a breeze...and it only takes 8-12 weeks. This book reveals secrets like... The 6 biggest myths and mistakes of building muscle that stunt 99% of guys' muscle gains. (These BS lies are pushed by all the big magazines and even by many trainers.) How to get a lean, cut physique that you love (and that girls drool over) by spending no more than 5 percent of your time each day. The 4 laws of muscle growth that, when applied, turn your body into an anabolic, muscle-building machine. You'll be shocked at how easy it really is to get big once you know what you're doing... How to develop a lightning-fast metabolism that burns up fat quickly and leaves you feeling full of energy all day long. The carefully-selected exercises that deliver MAXIMUM results for your efforts, helping you build a big, full chest, a wide, tapered back, and bulging biceps. A no-BS guide to supplements that will save you hundreds if not THOUSANDS of dollars each year that you would've wasted on products that are nothing more than bunk science and marketing hype. How to get shredded while still indulging in the "cheat" foods that you love every week like pasta, pizza, and ice cream. And a whole lot more! The bottom line is you CAN achieve that "Hollywood hunk" body without having your life revolve around it--no long hours in the gym, no starving yourself, no grueling cardio that turns your stomach. Imagine, just 12 weeks from now, being constantly complimented on how you look and asked what the heck you're doing to make such startling gains. Imagine enjoying the added benefits of high energy levels, no aches and pains, better spirits, and knowing that you're getting healthier every day. SPECIAL BONUS FOR READERS! With this book you'll also get a free 75-page bonus report from the author called "The Year One Challenge." In this bonus report, you'll learn exactly how to train, eat, and supplement to make maximum gains in your first year of training. By applying what you learn in the book and in this report, you can make more progress in one year than most guys make in three, four, or even five (seriously!). Scroll up, click the "Buy" button now, and begin your journey to a bigger, leaner, and stronger you!

Researchers in management, industrial engineering, operations, and computer science have intensely studied scheduling for more than 50 years, resulting in an astounding body of knowledge in this field. *Handbook of Scheduling: Algorithms, Models, and Performance Analysis*, the first handbook on scheduling, provides full coverage of the most re

Pinedo is a major figure in the scheduling area (well versed in both stochastics and combinatorics) , and knows both the academic and practitioner side of the discipline. This book includes the integration of case studies into the text. It will appeal to engineering and business students interested in operations research.

The Mueller Report is the official two-volume report presenting the findings and conclusions of Special Counsel Robert Mueller's investigation into Russian efforts to interfere in the 2016 United States presidential election, allegations of conspiracy or coordination between Donald Trump's presidential campaign and Russia, and allegations of obstruction of justice. The first volume of the report focuses on Russian interference in the 2016 presidential election. Robert Mueller provided evidence which argued that Russian government had sabotaged the presidential campaigning of the Democratic candidate, Hillary Clinton. In the second volume Muller addresses the cases of obstruction of justice made by Trump and his associated.

Agricultural expansion has transformed and fragmented forest habitats at alarming rates across the globe, but particularly so in tropical landscapes. The resulting land-use configurations encompass varying mosaics of tree cover, human settlements and agricultural land units. Meanwhile, global demand for agricultural commodities is at unprecedented levels. The need to feed nine billion people by 2050 in a world of changing food demands is causing increasing agricultural intensification. As such, market-orientated production systems are now increasingly replacing traditional farming practices, but at what cost? The Agrarian Change project, coordinated by the Center for International Forestry Research, explores the conservation, livelihood and food security implications of land-use and agrarian change processes at the landscape scale. This book provides detailed background information on seven multi-functional landscapes in Ethiopia, Cameroon, Indonesia, Nicaragua, Bangladesh, Zambia and Burkina Faso. The focal landscapes were selected as they exhibit various scenarios of changing forest cover, agricultural modification and integration with local and global commodity markets. A standardized research protocol will allow for future comparative analyses between these sites. Each case study chapter provides a comprehensive description of the physical and socioeconomic context of each focal landscape and a structured account of the historical and political drivers of land-use change occurring in the area. Each case study also draws on contemporary

information obtained from key informant interviews, focus group discussions and preliminary data collection regarding key topics of interest including: changes in forest cover and dependency on forest products, farming practices, tenure institutions, the role and presence of conservation initiatives, and major economic activities. The follow-on empirical study is already underway in the landscapes described in this book. It examines responses to agrarian change processes at household, farm, village and landscape levels with a focus on poverty levels, food security, dietary diversity and nutrition, agricultural yields, biodiversity, migration and land tenure. This research intends to provide much needed insights into how landscape-scale land-use trajectories manifest in local communities and advance understanding of multi-functional landscapes as socioecological systems.

This comprehensive text explores the mathematical models underlying the theory of scheduling. Organized according to scheduling problem type, it examines three solution techniques: algebraic, probabilistic, and Monte Carlo simulation by computer. Topics include problems of sequence, measures for schedule evaluation, finite sequencing for a single machine, and further problems with one operation per job. Additional chapters cover flow-shop scheduling, the general  $n/m$  job-shop problem, general network problems related to scheduling, selection disciplines in a single-server queuing system, single-server queuing systems with setup classes, multiple-server queuing models, and experimental investigation of the continuous job-shop process. 1967 edition.

The demand and supply chain planning process for manufacturers, distributors, and retailers has evolved over the years. It has gone from a disjointed, unconnected, slow, inaccurate, fairly manual set of processes to an integrated, timely process enabled by the use and coordination of highly trained people, lean, agile processes, and cutting-edge technology. To make this set of processes work effectively, one has to fully understand and appreciate that there is an "art and science" aspect to the process which can take years of education and experience to fully understand. Essentially, this book will offer the reader a chance to fully understand the interconnected set of processes in a "best-practice" application. Furthermore, examples and cases will be used to illustrate its practical application in today's complex global supply chain. In addition, readers will understand and be able

to apply and articulate the concepts, tools, and techniques used in the efficient supply of goods and services in today's changing global economy. It will help them to learn how businesses, through their supply chain, work both internally and with their trading partners - both upstream and downstream - to build strong relationships and integrate demand and supply planning activities across the supply chain to deliver customer value efficiently and effectively. They will learn about the tools and technologies enabling integration, and the critical drivers and key metrics of supply chain performance.

The book is devoted to the problem of manufacturing scheduling, which is the efficient allocation of jobs (orders) over machines (resources) in a manufacturing facility. It offers a comprehensive and integrated perspective on the different aspects required to design and implement systems to efficiently and effectively support manufacturing scheduling decisions. Obtaining economic and reliable schedules constitutes the core of excellence in customer service and efficiency in manufacturing operations. Therefore, scheduling forms an area of vital importance for competition in manufacturing companies. However, only a fraction of scheduling research has been translated into practice, due to several reasons. First, the inherent complexity of scheduling has led to an excessively fragmented field in which different sub problems and issues are treated in an independent manner as goals themselves, therefore lacking a unifying view of the scheduling problem. Furthermore, mathematical brilliance and elegance has sometimes taken preference over practical, general purpose, hands-on approaches when dealing with these problems. Moreover, the paucity of research on implementation issues in scheduling has restricted translation of valuable research insights into industry. "Manufacturing Scheduling Systems: An Integrated View on Models, Methods and Tools" presents the different elements constituting a scheduling system, along with an analysis the manufacturing context in which the scheduling system is to be developed. Examples and case studies from real implementations of scheduling systems are presented in order to drive the presentation of the theoretical insights. The book is intended for an ample readership including industrial engineering/operations post-graduate students and researchers, business managers, and readers seeking an introduction to the field.