

Operation Analysis And Design Of Signalized Intersections A Module For The Introductory Course In Transportation Engineering

Intended for an audience of graduate students, executive MBA students, and mid-to upper level government and corporate managers, Design, Analysis and Optimization of Supply Chains: A System Dynamic Approach examines the complexity of the types of organizations that comprise a modern supply chain, the problems that arise as a result of this complexity, and the solutions and analytical approaches available to managers that can help resolve these real world problems and dilemmas. The modern enterprise, be it a large corporation or a government agency, has two key dimensions of complexity: static and dynamic. The static complexity refers to the remarkable number of companies and agencies that enable delivery of the product or service. A static "snapshot" of this end-to-end enterprise would reveal hundreds if not thousands of companies involved in the supply network and many additional firms involved in the distribution and delivery to customers. Planning, communication, coordination and execution of this large system network is fundamentally challenging just because of the sheer size. This large, extended network represents the static complexity. The dynamic complexity arises from the difficulty of managing the performance of this extended enterprise over time. This requires having the appropriate metrics to track performance over time, the management skills to develop strategies, the ability to collect and monitor the correct data for true visibility, and the recognition and understanding of the long lags between actions and results. Design, Analysis and Optimization of Supply Chains: A System Dynamic Approach incorporates real-world examples and cases, representing actual complex enterprise systems including firms involved and with long lead times, to illustrate the multi-faceted activities occurring within a modern supply chain and the challenges they pose to managers. Simulation and optimization techniques are introduced and used to develop strategies for improved performance.

The book's text focuses on explaining and analyzing the dynamic performance of linear and nonlinear systems, in particular for Power Systems (PS) including Hybrid Power Sources (HPS). The system stability is important for both PS operation and planning. Placing emphasis on understanding the underlying stability principles, the book opens with an exploration of basic concepts using mathematical models and case studies from linear and nonlinear system, and continues with complex models and algorithms from field of PS. The book's features include: (1) progressive approach from simplicity to complexity, (2) deeper look into advanced aspects of stability theory, (3) detailed description of system stability using state space energy conservation principle, (4) review of some research in the field of PS stability analysis, (5) advanced models and algorithms for Transmission Network Expansion Planning (TNEP), (6) Stability enhancement including the use of Power System Stabilizer (PSS) and Flexible Alternative Current Transmission Systems (FACTS), and (7) examination of the influence of nonlinear control on fuel cell HPS dynamics. The book will be easy to read and understand and will be an essential resource for both undergraduate and graduate students in electrical engineering as well as to the PhDs and engineers from this field. It is also a clear and comprehensive reference text for undergraduate students, postgraduate and research students studying power systems, and also for practicing engineers and researchers who are working in electricity companies or in the development of power system technologies. All will appreciate the authors' accessible approach in introduction the power system dynamics and stability from both a mathematical and engineering viewpoint.

This book provides technological and socio-economic coverage of renewable energy. It discusses wind power technologies, solar photovoltaic technologies, large-scale energy storage technologies, and ancillary power systems. In this new edition, the book addresses advancements that have been made in renewable energy: grid-connected power plants, power electronics converters, and multi-phase conversion systems. The text has been revised to include up-to-date material, statistics, and current technology trends. Three new chapters have been added to cover turbine generators, AC and DC wind systems, and recent advances solar power conversion. Discusses additional renewable energy sources, such as ocean, special turbines, etc. Covers system integration for solar and wind energy Presents emerging DC wind systems Includes coverage on turbine generators Updated sections on solar power conversion It offers students, practicing engineers, and researchers a comprehensive look at wind and solar power technologies. It is designed as a reference and can serve as a textbook for senior undergraduates in a one-semester course on renewable power or energy systems.

Proceedings of an International Workshop

Operation Analysis

Operation Barbarossa: the Complete Organisational and Statistical Analysis, and Military Simulation Volume IIA

Linear Systems

Production and Operations Analysis

A System Dynamics Approach

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*Before they begin their university studies, most students have experience with traffic signals, as drivers, pedestrians and bicycle riders. One of the tasks of the introductory course in transportation engineering is to portray the traffic signal control system in a way that connects with these experiences. The challenge is to reveal the system in a simple enough way to allow the student "in the door," but to include enough complexity so that this process of learning about signalized intersections is both challenging and rewarding. We have approached the process of developing this module with the following guidelines: * Focusing on the automobile user and pretimed signal operation allows the student to learn about fundamental principles of a signalized intersection, while laying the foundation for future courses that address other users (pedestrians, bicycle riders, public transit operators) and more advanced traffic control schemes such as actuated control, coordinated signal systems, and adaptive control. * Queuing models are presented as a way of learning about the fundamentals of traffic flow at a signalized intersection. A graphical approach is taken so that students can see how flow profile diagrams, cumulative vehicle diagrams, and queue accumulation polygons are powerful representations of the operation and performance of a signalized intersection. * Only those equations that students can apply with some degree of understanding are presented. For example, the uniform delay equation is developed and used as a means of representing intersection performance. However, the second and third terms of the Highway Capacity Manual delay equation are not included, as students will have no basis for understanding the foundation of these terms. * Learning objectives are clearly stated at the beginning of each section so that the student knows what is to come. At the end of each section, the learning objectives are reiterated along with a set of concepts that students should understand once they complete the work in the section. * Over 70 figures are included in the module. We believe that graphically illustrating basic concepts is an important way for students to learn, particularly for queuing model concepts and the development of the change and clearance timing intervals. * Over 50 computational problems and two field exercises are provided to give students the chance to test their understanding of the material. The sequence in which concepts are presented in this module, and the way in which more complex ideas build on the more fundamental ones, was based on our study of student learning in the introductory course. The development of each concept leads to an element in the culminating activity: the design and evaluation of a signal timing plan in section 9. For example, to complete step 1 of the design process, the student must learn about the sequencing and control of movements, presented in section 3 of this module. But to determine split times, step 6 of the design process, four concepts must be learned including flow (section 2), sequencing and control of movements (section 3), sufficiency of capacity (section 6), and cycle length and splits (section 8). Depending on the pace desired by the instructor, this material can be covered in 9 to 12 class periods.*

The aim of this book is to cover various aspects of the Production and Operations Analysis. Apart from the introduction to basic understanding of each topic, the book will also provide insights to various conventional techniques as well as, various other mathematical and nature-based techniques extracted from the existing literature. Concepts like smart factories, intelligent manufacturing, and various techniques of manufacturing will also be included. Various types of numerical examples will also be presented in each chapter and the descriptions will be done in lucid style with figures, point-wise descriptions, tables, pictures to facilitate easy understanding of the subject.

Construction and Operation of the National Biodefense Analysis and Countermeasures Center (NBACC) Facility by the Department of Homeland Security at Fort Detrick

Design, Analysis and Optimization of Supply Chains

Analysis and Design of Power Converter Topologies for Application in Future More Electric Aircraft

Design, Analysis, and Operation

Food Processing Operations Modeling

New Tools for Industrial Chemical Reactor Operations

A practical, hands-on guidebook for the efficient modeling of VCSELs Vertical Cavity Surface Emitting Lasers (VCSELs) are a unique type of semiconductor laser whose optical output is vertically emitted from the surface as opposed to conventional edge-emitting semiconductor lasers. Complex in design and expensive to produce, VCSELs nevertheless represent an already widely used laser technology that promises to have even more significant applications in the future. Although the research has accelerated, there have been relatively few books written on this important topic. Analysis and Design of Vertical Cavity Surface Emitting Lasers seeks to encapsulate this growing body of knowledge into a single, comprehensive reference that will be of equal value for both professionals and academics in the field. The author, a recognized expert in the field of VCSELs, attempts to clarify often conflicting assumptions in order to help readers achieve the simplest and most efficient VCSEL models for any given problem. Highlights of the text include: * A clear and comprehensive theoretical treatment of VCSELs * Detailed derivations for understanding the operational principles of VCSELs * Mathematical models for the investigation of electrical, optical, and thermal properties of VCSELs * Case studies on the mathematical modeling of VCSELs and the implementation of simulation programs

An innovative approach that helps students move from the classroom to professional practice This text offers a comprehensive, unified methodology to analyze and design chemical reactors, using a reaction-based design formulation rather than the common species-based design formulation. The book's acclaimed approach addresses the weaknesses of current pedagogy by giving readers the knowledge and tools needed to address the technical challenges they will face in practice. Principles of Chemical Reactor Analysis and Design prepares readers to design and operate real chemical reactors and to troubleshoot any technical problems that may arise. The text's unified methodology is applicable to both single and multiple chemical reactions, to all reactor configurations, and to all forms of rate expression. This text also . . . Describes reactor operations in terms of dimensionless design equations, generating dimensionless operating curves that depict the progress of individual chemical reactions, the composition of species, and the temperature. Combines all parameters that affect heat transfer into a single dimensionless number that can be estimated a priori. Accounts for all variations in the heat capacity of the reacting fluid. Develops a complete framework for economic-based optimization of reactor operations. Problems at the end of each chapter are categorized by their level of

difficulty from one to four, giving readers the opportunity to test and develop their skills. Graduate and advanced undergraduate chemical engineering students will find that this text's unified approach better prepares them for professional practice by teaching them the actual skills needed to design and analyze chemical reactors.

The Seventh Edition of Production and Operations Analysis builds a solid foundation for beginning students of production and operations management. Continuing a long tradition of excellence, Nahmias and Olsen bring decades of combined experience to craft the most clear and up-to-date resource available. The authors' thorough updates include incorporation of current technology that improves the effectiveness of production processes, additional qualitative sections, and new material on service operations management and servicization. Bolstered by copious examples and problems, each chapter stands alone, allowing instructors to tailor the material to their specific needs. The text is essential reading for learning how to better analyze and improve on all facets of operations.

Design, Analysis, and Operation, Second Edition

Environmental Impact Statement

System Engineering Analysis, Design, and Development

Handbook of Stochastic Models and Analysis of Manufacturing System Operations

Design, Operation, and Systems Analysis

Traditional, Latest, and Smart Views

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.

Focuses on the use of simulation techniques to model and evaluate repetitive construction operations. Based on the CYCLONE and MICROCYCLONE software developed by the authors and used at 38 universities nationwide, it uses a variety of examples from all areas of construction to demonstrate the application of simulation to analyze construction operations.

Object-Oriented Analysis and Design for Information Systems clearly explains real object-oriented programming in practice. Expert author Raul Sidnei Wazlawick explains concepts such as object responsibility, visibility and the real need for delegation in detail. The object-oriented code generated by using these concepts in a systematic way is concise, organized and reusable. The patterns and solutions presented in this book are based in research and industrial applications. You will come away with clarity regarding processes and use cases and a clear understand of how to expand a use case. Wazlawick clearly explains clearly how to build meaningful sequence diagrams. Object-Oriented Analysis and Design for Information Systems illustrates how and why building a class model is not just placing classes into a diagram. You will learn the necessary organizational patterns so that your software architecture will be maintainable. Learn how to build better class models, which are more maintainable and understandable. Write use cases in a more efficient and standardized way, using more effective and less complex diagrams. Build true object-oriented code with division of responsibility and delegation.

Advanced Techniques and Applications for Linear and Nonlinear Systems

A Module for the Introductory Course in Transportation Engineering

Design and Analysis of Simulation Experiments

Ferromagnetic Core Functions in the Analysis and Design of Self-saturating Magnetic Amplifiers

Operational Analysis and Indian Defence

Operation, Planning, and Analysis of Energy Storage Systems in Smart Energy Hubs

Solar and wind energy systems have flourished throughout the United States in the last few years as the public calls for reduced dependence on foreign oil. This has stimulated the growth of an industry that provides wind and solar systems, and many small businesses have sprung up to install these

systems. Training programs and courses are now ubiquitous as the demand for designers and installers increases. This book provides a resource for engineering students interested in the design and operation of solar electric, solar thermal, wind, and other renewable systems. While there are many good reference books on power systems and renewable energy, this book integrates the engineering basics of existing power systems with design problems and solutions using renewable energy sources. The author includes chapters on concepts and background review. Details of photovoltaic and wind systems as interconnected or stand-alone designs, estimating and predicting energy production using industry distribution functions and online programs, and concepts of temperature coefficients, synchronization, power conversion, and system protection are explained and illustrated. The book is a very "hands-on" practical guide, structured to motivate you to experience the design and installation process.

Praise for the first edition: "This excellent text will be useful to every system engineer (SE) regardless of the domain. It covers ALL relevant SE material and does so in a very clear, methodical fashion. The breadth and depth of the author's presentation of SE principles and practices is outstanding." –Philip Allen This textbook presents a comprehensive, step-by-step guide to System Engineering analysis, design, and development via an integrated set of concepts, principles, practices, and methodologies. The methods presented in this text apply to any type of human system -- small, medium, and large organizational systems and system development projects delivering engineered systems or services across multiple business sectors such as medical, transportation, financial, educational, governmental, aerospace and defense, utilities, political, and charity, among others. Provides a common focal point for "bridging the gap" between and unifying System Users, System Acquirers, multi-discipline System Engineering, and Project, Functional, and Executive Management education, knowledge, and decision-making for developing systems, products, or services Each chapter provides definitions of key terms, guiding principles, examples, author's notes, real-world examples, and exercises, which highlight and reinforce key SE&D concepts and practices Addresses concepts employed in Model-Based Systems Engineering (MBSE), Model-Driven Design (MDD), Unified Modeling Language (UMLTM) / Systems Modeling Language (SysMLTM), and Agile/Spiral/V-Model Development such as user needs, stories, and use cases analysis; specification development; system architecture development; User-Centric System Design (UCSD); interface definition & control; system integration & test; and Verification & Validation (V&V) Highlights/introduces a new 21st Century Systems Engineering & Development (SE&D) paradigm that is easy to understand and implement. Provides practices that are critical staging points for technical decision making such as Technical Strategy Development; Life Cycle requirements; Phases, Modes, & States; SE Process; Requirements Derivation; System Architecture Development, User-Centric System Design (UCSD); Engineering Standards, Coordinate Systems, and Conventions; et al. Thoroughly illustrated, with end-of-chapter exercises and numerous case studies and examples, Systems Engineering Analysis, Design, and Development, Second Edition is a primary textbook for multi-discipline, engineering, system analysis, and project management undergraduate/graduate level students and a valuable reference for professionals.

The search for clean, renewable energy sources has yielded enormous growth and new developments in these technologies in a few short years, driving down costs and encouraging utilities in many nations, both developed and developing, to add and expand wind and solar power capacity. The first, best-selling edition of Wind and Solar Power Systems provides

Discrete Analysis and Operations Research

Principles of Chemical Reactor Analysis and Design

Object-Oriented Analysis and Design for Information Systems

Analysis and Design of a Tunable Magnetron for Millimeter Wavelength Operation

Systems Analysis and Design as Related to Library Operations

Rethinking the Process of Operational Research & Systems Analysis

Operation Barbarossa: Volume IIA concerns the Wehrmacht. All the significant German weapon systems and combat squads used in the campaign are analysed using the quantitative methodology detailed in Volume I, along with the contextual history. An assessment of each weapon system's inherent 'combat power' is provided, as well as attributes such as the relative anti-tank, anti-personnel and anti-aircraft values. Volume IIA then focuses on the detailed Kriegstarkenachweisungen (KStN, or TOE) for German land units (including those in the West), as well as the unit's actual organisation and equipment. All significant units in the German Army (Heer), Waffen SS, Luftwaffe and security forces are included; ranging from the largest panzer divisions, down to small anti-aircraft companies, military-police units, Landeschützen battalions, and rail-road and construction companies. In all cases the data is presented in detailed tables, using the weapon systems and combat squads previously analysed.

This text provides a survey of the analytical methods used to support the functions of production and operations management. This latest edition continues to bring the most thorough coverage of cutting-edge quantitative models used in operations, while presenting it in a clean, easy to understand fashion. There are many new problems both solved and unsolved for students to comprehend the quantitative material of the book. Furthermore, we have enhanced the technology package of this book to have more applied learning of concepts and skills for students. Lastly, technology, such as the internet, ecommerce, etc has been added to reflect the changes in how business is conducted. This text reflects Steve Nahmias' extensive teaching background and experience in both business and engineering schools.

The contributions to this volume have all been translated from the first volume of the Russian journal Discrete Analysis and Operational Research, published at the Sobolev Institute of Mathematics, Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia, in 1994. The papers collected here give an excellent overview of recent Russian research in topics such as analysis of algorithms, combinatorics, graphs, lower bounds for complexity of Boolean functions, packing and coverings, scheduling theory, search and sorting, linear programming, and testing. Audience: This book

will be of interest to specialists in discrete mathematics and computer science, and engineers.

Planning and Analysis of Construction Operations

Modeling with UML, OCL, and IFML

Structural Sensitivity Analysis and Optimization 1

Cost Analysis Applications of Economics and Operations Research

Single Point Urban Interchange Design and Operations Analysis

Managing Manufacturing Operations: Analysis and Discussion

Cost Analysis is an emerging sub-discipline of Economics and Operations Research. This is the first collection of readings that spans the discipline. The contributions are both theoretical and application oriented. This book is directed to researchers in Economics, Operations Research, Industrial Engineering, and Managerial Accounting. In particular, the book provides an overview of the types of problems that are of interest to cost researchers. These papers are a subset of the papers that were presented at the 1989 Joint National Meeting of the Institute of Cost Analysis and the National Bureau of Economic Research, Washington, D.C.

This handbook surveys important stochastic problems and models in manufacturing system operations and their stochastic analysis. Using analytical models to design and control manufacturing systems, their operations entail critical stochastic performance analysis as well as integrated optimization models of these systems. Topics deal with the areas of facilities planning, transportation, and material handling systems, logistics and supply chain management, and integrated productivity and quality models covering:

- Stochastic modeling and analysis of manufacturing systems
- Design, analysis, and control of manufacturing systems
- Facilities planning, transportation, and material handling systems analysis
- Production planning, scheduling systems, management, and control
- Analytical approaches to logistics and supply chain management
- Integrated productivity and quality models, and their analysis
- Literature surveys of issues relevant in manufacturing systems
- Case studies of manufacturing system operations and analysis

Today's manufacturing system operations are becoming increasingly complex. Advanced knowledge of best practices for treating these problems is not always available. The purpose of the book is to create a foundation for the development of stochastic models and their analysis in manufacturing system operations. Given the handbook nature of the volume, the principles, concepts, and algorithms for treating these problems and their solutions is the main intent of this handbook. Readers unfamiliar with these research areas will be able to find a resource for studying these problems and systems.

Extensive numerical methods for computing design sensitivity are included in the text for practical application and software development. The numerical method allows integration of CAD-FEA tools, so that design optimization can be carried out using CAD geometric models instead of FEA models. This capability allows integration of CAD-CAE-CAM so that optimized designs can be manufactured effectively.

Teachers' Manual

Seventh Edition

Operational Analysis and Prediction of Ocean Wind Waves

Capacity Analysis Techniques for Design and Operation of Freeway Facilities

Concepts, Principles, and Practices

Application of Risk Analysis to Offshore Oil and Gas Operations

This book discusses the design and scheduling of residential, industrial, and commercial energy hubs, and their integration into energy storage technologies and renewable energy sources. Each chapter provides theoretical background and application examples for specific power systems including, solar, wind, geothermal, air and hydro. Case-studies are included to provide engineers, researchers, and students with the most modern technical and intelligent approaches to solving power and energy integration problems with special attention given to the environmental and economic aspects of energy storage systems.

Invited contributions from distinguished practitioners and methodologists of operational research and applied systems analysis which represent a true state-of-the-art and which provide, perhaps for the first time, a coherent, interlocking, set of ideas which may be considered the foundations of the subject as a science in its own right.

This monograph is an attempt to compile the present state of knowledge on ocean wave analysis and prediction. The emphasis of the monograph is on the development of ocean wave analysis and prediction procedures and their utility for real-time operations and applications. Most of the material in the monograph is derived from journal articles, research reports and recent conference proceedings; some of the basic material is extracted from standard text books on physical oceanography and wind waves. Ocean wave analysis and prediction is becoming an important activity in the meteorological and oceanographic services of many countries. The present status of ocean wave prediction may be comparable to the status of numerical weather prediction of the mid-sixties and early seventies when a number of weather prediction models were developed for research purposes, many of which were later put into operational use by meteorological services of several countries. The increased emphasis on sea-state analysis and prediction has created a need for a ready reference material on various ocean wave analysis and modelling techniques and their utility. The present monograph is aimed at fulfilling this need. The monograph should prove useful to the ocean wave modelling community as well as to marine forecasters, coastal engineers and offshore technologists. The monograph could also be used for a senior undergraduate (or a first year graduate) level course in ocean wave modelling and marine meteorology.

Proceedings of the Institute of Cost Analysis National Conference, Washington, D.C., July 5–7, 1989

Operations Research Analysis in Test and Evaluation

Wind and Solar Power Systems

Integrated Community Energy Systems Engineering Analysis and Design Bibliography

Operation, Analysis, and Design of Signalized Intersections

Power Systems and Renewable Energy

A comprehensive survey of thermal processing and modelling techniques in food process engineering. It combines theory and practice to solve actual problems in the food processing industry - emphasizing heat and mass transfer, fluid flow, electromagnetics, stochastic processes, and neural network analysis in food systems. There are specific case studies. This thesis proposes new power converter topologies suitable for aircraft systems. It also proposes both AC-DC and DC-DC types of converters for different electrical loads to improve the performance these systems. To increase fuel efficiency and reduce environmental impacts, less efficient non-electrical aircraft systems are being replaced by electrical systems. However, more electrical systems requires more electrical power to be generated in the aircraft. The increased consumption of electrical power in both civil and military aircrafts has necessitated the use of more efficient electrical power conversion technologies. This book presents a comprehensive mathematical analysis and the design and digital simulation of the power converters. Subsequently it discusses the construction of the hardware prototypes of each converter and the experimental tests carried out to verify the benefits of the proposed solutions in comparison to the existing solutions.

This is a new edition of Kleijnen's advanced expository book on statistical methods for the Design and Analysis of Simulation Experiments (DASE). Altogether, this new edition has approximately 50% new material not in the original book. More specifically, the author has made significant changes to the book's organization, including placing the chapter on Screening Designs immediately after the chapters on Classic Designs, and reversing the order of the chapters on Simulation Optimization and Kriging Metamodels. The latter two chapters reflect how active the research has been in these areas. The validation section has been moved into the chapter on Classic Assumptions versus Simulation Practice, and the chapter on Screening now has a section on selecting the number of replications in sequential bifurcation through Wald's sequential probability ratio test, as well as a section on sequential bifurcation for multiple types of simulation responses. Whereas all references in the original edition were placed at the end of the book, in this edition references are placed at the end of each chapter. From Reviews of the First Edition: "Jack Kleijnen has once again produced a cutting-edge approach to the design and analysis of simulation experiments." (William E. BILES, JASA, June 2009, Vol. 104, No. 486)

Design and Analysis

Analysis, Control and Optimal Operations in Hybrid Power Systems

Analysis and Design of Vertical Cavity Surface Emitting Lasers

A Manual for a Symposium Sponsored by the Upstate New York Chapter, Special Libraries Association, Saratoga Springs, N.Y., September 17-18, 1966

Analysis and Design of Operational Data Management Systems for Maintenance of Parks and Urban Open Space

Performance Analysis of Manufacturing Systems