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KEY=ENGINEERING - LANE WATTS

Fundamentals of Hydraulic Engineering Systems *Prentice Hall* **This book provides a fundamental treatment of engineering hydraulics. It is intended to bridge the gap between basic principles and techniques applied to design and analysis of hydraulic engineering systems. Concepts of Engineering System Design Handbook of Engineering Systems Design** *Springer* **This handbook charts the new engineering paradigm of engineering systems. It brings together contributions from leading thinkers in the field and discusses the design, management and enabling policy of engineering systems. It contains explorations of core themes including technical and (socio-) organisational complexity, human behaviour and uncertainty. The text includes chapters on the education of future engineers, the way in which interventions can be designed, and presents a look to the future. This book follows the emergence of engineering systems, a new engineering paradigm that will help solve truly global challenges. This global approach is characterised by complex sociotechnical systems that are now co-dependent and highly integrated both functionally and technically as well as by a realisation that we all share the same: climate, natural resources, a highly integrated economical system and a responsibility for global sustainability goals. The new paradigm and approach requires the (re)designing of engineering systems that take into account the shifting dynamics of human behaviour, the influence of global stakeholders, and the need for system integration. The text is a reference point for scholars, engineers and policy leaders who are interested in broadening their current perspective on engineering systems design and in devising interventions to help shape societal futures. Business Systems Engineering Managing Breakthrough Changes for Productivity and Profit** *John Wiley & Sons* **A guide to combining two powerful management techniques totransform any business organization into a masterpiece of businessefficiency. Lester Dean Thurow, Dean of MIT's Sloan School ofManagement, recently stated that benchmarking combined with processengineering will be the most important management technique of the1990s. Now, in this groundbreaking book, Gregory Watson describeshow top corporations worldwide have already successfullyimplemented that powerful cutting-edge technique--which he calls"business systems engineering"--to promote continuous improvement.More importantly, he clearly demonstrates how you can do the samein your organization. * Introduces business systems engineering, a dynamic new approachto rethinking and redesigning business processes to achievedramatic improvements in quality, cost, service, speed, andmore * Offers clear guidelines for using business systems engineeringtechniques to make your organization more dynamic, productive, andable to adapt to change in today's global marketplace * Incorporates key aspects of TQM, business process improvement,policy deployment, industrial engineering, teamwork, problemsolving, and information technology into one holistic system * Includes business systems engineering success stories, includingthose at Compaq, United Services Automobile Association andMotorola, as well as a survey of the effect of systems changeacross the global automobile industry Effective Model-Based Systems Engineering** *Springer* **This textbook presents a proven, mature Model-Based Systems Engineering (MBSE) methodology that has delivered success in a wide range of system and enterprise programs. The authors introduce MBSE as the state of the practice in the vital Systems Engineering discipline that manages complexity and integrates technologies and design approaches to achieve effective, affordable, and balanced system solutions to the needs of a customer organization and its personnel. The book begins with a summary of the background and nature of MBSE. It summarizes the theory behind Object-Oriented Design applied to complex system architectures. It then walks through the phases of the MBSE methodology, using system examples to illustrate key points. Subsequent chapters broaden the application of MBSE in Service-Oriented Architectures (SOA), real-time systems, cybersecurity, networked enterprises, system simulations, and prototyping. The vital subject of system and architecture governance completes the discussion. The book features exercises at the end of each chapter intended to help readers/students focus on key points, as well as extensive appendices that furnish additional detail in particular areas. The self-contained text is ideal for students in a range of courses in systems architecture and MBSE as well as for practitioners seeking a highly practical presentation of MBSE principles and techniques. Tribological Research and Design for Engineering Systems Proceedings of the 29th Leeds-Lyon Symposium** *Elsevier* **These papers represent the proceedings from the 29th Leeds-Lyon Symposium on Tribology, 'Tribological Research and Design for Engineering Systems' which was held in September 2002. Over 130 delegates from 18 countries attended the symposium, and the extensive discussions generated over 150 written questions and responses, which are documented at the end of this proceedings volume. There have been many advances in the field of tribology in recent years, with progress being made in the engineering and interaction of surfaces; micro and nano-tribology; elastohydrodynamics; surface films; surface texture; tribochemistry; wear and life prediction; with both experimental and theoretical contributions. These advances were reviewed, and the impact of this understanding on the fundamentals upon total engineering activity in design, manufacture and machine operation were considered. Readership: Scientists and researchers in the field of tribology. Smart Modeling for Engineering Systems Proceedings of the Conference 50 Years of the Development of Grid-Characteristic Method** *Springer* **This book highlights the work of several world-class researchers on smart modeling of complex systems. The contributions are grouped into the four**

main categories listed below. · Numerical schemes construction for the solution of partial differential equations. · Numerical methods in continuum media mechanics problems. · Mathematical modeling in aerodynamics, plasma physics, deformable body mechanics, and geological hydrocarbon exploration. · Mathematical modeling in medical applications. The book offers a valuable resource for theoreticians and application scientists and engineers, as well as postgraduate students, in the fields of computational methods, numerical experiments, parallel algorithms, deformable solid bodies, seismic stability, seismic prospecting, migration, elastic and acoustic wave investigation, gas dynamics, astrophysics, aerodynamics, fluid dynamics, turbulent flows, hypersonic flows, detonation waves, composite materials, fracture mechanics, melting of metals, mathematical economics, medicine, and biology. System of Systems Engineering Innovations for the 21st Century *John Wiley & Sons* **Discover the emerging science and engineering of System ofSystems Many challenges of the twenty-first century, such as fossil fuelenergy resources, require a new approach. The emergence of Systemof Systems (SoS) and System of Systems Engineering (SoSE) presentsengineers and professionals with the potential for solving many ofthe challenges facing our world today. This groundbreaking bookbrings together the viewpoints of key global players in the fieldto not only define these challenges, but to provide possiblesolutions. Each chapter has been contributed by an international expert,and topics covered include modeling, simulation, architecture, theemergence of SoS and SoSE, net-centricity, standards, management,and optimization, with various applications to defense,transportation, energy, the environment, healthcare, serviceindustry, aerospace, robotics, infrastructure, and informationtechnology. The book has been complemented with several casestudies—Space Exploration, Future Energy Resources,Commercial Airlines Maintenance, Manufacturing Sector, ServiceSector, Intelligent Transportation, Future Combat Missions, GlobalEarth Observation System of Systems project, and many more—togive readers an understanding of the real-world applications ofthis relatively new technology. System of SystemsEngineering is an indispensable resource for aerospace anddefense engineers and professionals in related fields. Biomedical Engineering Systems** *McGraw-Hill Companies* **Aircraft Design A Systems Engineering Approach** *John Wiley & Sons* **A comprehensive approach to the air vehicle design processusing the principles of systems engineering Due to the high cost and the risks associated with development,complex aircraft systems have become a prime candidate for theadoption of systems engineering methodologies. This book presentsthe entire process of aircraft design based on a systemsengineering approach from conceptual design phase, through topreliminary design phase and to detail design phase. Presenting in one volume the methodologies behind aircraftdesign, this book covers the components and the issues affected bydesign procedures. The basic topics that are essential to theprocess, such as aerodynamics, flight stability andcontrol, aero-structure, and aircraft performance are reviewedin various chapters where required. Based on thesefundamentals and design requirements, the author explains thedesign process in a holistic manner to emphasise the integration ofthe individual components into the overall design. Throughout thebook the various design options are considered and weighed againsteach other, to give readers a practical understanding of theprocess overall. Readers with knowledge of the fundamental concepts ofaerodynamics, propulsion, aero-structure, and flight dynamics willfind this book ideal to progress towards the next stage in theirunderstanding of the topic. Furthermore, the broad variety ofdesign techniques covered ensures that readers have the freedom andflexibility to satisfy the design requirements when approachingreal-world projects. Key features: • Providesfull coverage of the design aspects of an air vehicle including:aeronautical concepts, design techniques and design flowcharts • Featuresend of chapter problems to reinforce the learning process as wellas fully solved design examples at component level • Includes fundamental explanations for aeronautical engineeringstudents and practicing engineers • Features a solutions manual to sample questions on the book’scompanion website Companion website - ahref="http://www.wiley.com/go/sadraey"www.wiley.com/go/sadraey/a Systems of Systems Engineering Principles and Applications** *CRC Press* **As technology presses forward, scientific projects are becoming increasingly complex. The international space station, for example, includes over 100 major components, carried aloft during 88 spaces flights which were organized by over 16 nations. The need for improved system integration between the elements of an overall larger technological system has sparked further development of systems of systems (SoS) as a solution for achieving interoperability and superior coordination between heterogeneous systems. Systems of Systems Engineering: Principles and Applications provides engineers with a definitive reference on this newly emerging technology, which is being embraced by such engineering giants as Boeing, Lockheed Martin, and Raytheon. The book covers the complete range of fundamental SoS topics, including modeling, simulation, architecture, control, communication, optimization, and applications. Containing the contributions of pioneers at the forefront of SoS development, the book also offers insight into applications in national security, transportation, energy, and defense as well as healthcare, the service industry, and information technology. System of systems (SoS) is still a relatively new concept, and in time numerous problems and open-ended issues must be addressed to realize its great potential. THis book offers a first look at this rapidly developing technology so that engineers are better equipped to face such challenges. Cost-Effectiveness Analysis A Systems Engineering Perspective** *CRC Press* **This book provides an overview of cost-effectiveness analysis, which is a well-known and intuitive method for defining and choosing among a set of alternatives. This book relates cost-effectiveness analysis to systems engineering to solve everyday problems at home and the office. It can also be used in technical processes, system design, and project management. Cost-Effectiveness Analysis: A Systems Engineering Perspective starts with providing an overview and background of cost-effectiveness analysis and how it’s used. It then goes on to discuss cost-effectiveness concerning systems engineering and links its use to resolving military issues and problems. The book comes to an end with exploring the usage related to systems architecting, re-engineering office systems, and comparing its use to everyday life decision-making scenarios. Targeted market includes general engineers, systems engineers, process engineers, project management, scientists, technologists, mathematicians, and lawyers. INCOSE Systems Engineering Handbook A Guide for System Life Cycle Processes and Activities** *John Wiley & Sons* **A detailed and thorough reference on the discipline and practice of systems**

engineering The objective of the International Council on Systems Engineering (INCOSE) Systems Engineering Handbook is to describe key process activities performed by systems engineers and other engineering professionals throughout the life cycle of a system. The book covers a wide range of fundamental system concepts that broaden the thinking of the systems engineering practitioner, such as system thinking, system science, life cycle management, specialty engineering, system of systems, and agile and iterative methods. This book also defines the discipline and practice of systems engineering for students and practicing professionals alike, providing an authoritative reference that is acknowledged worldwide. The latest edition of the INCOSE Systems Engineering Handbook: Is consistent with ISO/IEC/IEEE 15288:2015 Systems and software engineering—System life cycle processes and the Guide to the Systems Engineering Body of Knowledge (SEBoK) Has been updated to include the latest concepts of the INCOSE working groups Is the body of knowledge for the INCOSE Certification Process This book is ideal for any engineering professional who has an interest in or needs to apply systems engineering practices. This includes the experienced systems engineer who needs a convenient reference, a product engineer or engineer in another discipline who needs to perform systems engineering, a new systems engineer, or anyone interested in learning more about systems engineering. IUTAM Symposium on Exploiting Nonlinear Dynamics for Engineering Systems *Springer* **This is the proceedings of the IUTAM Symposium on Exploiting Nonlinear Dynamics for Engineering Systems that was held in Novi Sad, Serbia, from July 15th to 19th, 2018. The appearance of nonlinear phenomena used to be perceived as dangerous, with a general tendency to avoid them or control them. This perception has led to intensive research using various approaches and tailor-made tools developed over decades. However, the Nonlinear Dynamics of today is experiencing a profound shift of paradigm since recent investigations rely on a different strategy which brings good effects of nonlinear phenomena to the forefront. This strategy has a positive impact on different fields in science and engineering, such as vibration isolation, energy harvesting, micro/nano-electro-mechanical systems, etc. Therefore, the ENOLIDES Symposium was devoted to demonstrate the benefits and to unlock the potential of exploiting nonlinear dynamical behaviour in these but also in other emerging fields of science and engineering. This proceedings is useful for researchers in the fields of nonlinear dynamics of mechanical systems and structures, and in Mechanical and Civil Engineering. System and Software Requirements Engineering Reliability Evaluation of Engineering Systems Concepts and Techniques** *Springer Science & Business Media* **This book has evolved from our deep interest and involvement in the development and application of reliability evaluation techniques. Its scope is not limited to anyone engineering discipline as the concepts and basic techniques for reliability evaluation have no disciplinary boundaries and are applicable in most, if not all, engineering applications. We firmly believe that reliability evaluation is an important and integral feature of the planning, design and operation of all engineering systems; from the smallest and most simple to the largest and most complex. Also, we believe that all engineers involved with such systems should be aware of, and appreciate, not only the benefits which can accrue from reliability assessment, but also how such assessments can be made. Our primary objective has been to compile a book which provides practising engineers and engineering graduates who have little or no background in probability theory or statistics, with the concepts and basic techniques for evaluating the reliability of engineering systems. It is hoped that the material presented will enable them to reach quickly a level of self-confidence which will permit them to assimilate, understand and appreciate the more detailed applications and additional material which is available in the journals and publications associated with their own discipline. Smart Engineering System Design Neural Networks, Evolutionary Programming, Data Mining, and Artificial Life : Proceedings of the Artificial Neural Networks in Engineering Conference (ANNIE 2005) : Held November 7-9, 2005, in St. Louis, Missouri, U.S.A.** *Intelligent Engineering System* **The newest volume in this series presents refereed papers in the following categories and their applications in the engineering domain: Neural Networks; Complex Networks; Evolutionary Programming; Data Mining; Fuzzy Logic; Adaptive Control; Pattern Recognition; Smart Engineering System Design. These papers are intended to provide a forum for researchers in the field to exchange ideas on smart engineering system design. Wind Energy Systems Control Engineering Design** *CRC Press* **Presenting the latest developments in the field, Wind Energy Systems: Control Engineering Design offers a novel take on advanced control engineering design techniques for wind turbine applications. The book introduces concurrent quantitative engineering techniques for the design of highly efficient and reliable controllers, which can be used to solve the most critical problems of multi-megawatt wind energy systems. This book is based on the authors' experience during the last two decades designing commercial multi-megawatt wind turbines and control systems for industry leaders, including NASA and the European Space Agency. This work is their response to the urgent need for a truly reliable concurrent engineering methodology for the design of advanced control systems. Outlining a roadmap for such a coordinated architecture, the authors consider the links between all aspects of a multi-megawatt wind energy project, in which the wind turbine and the control system must be cooperatively designed to achieve an optimized, reliable, and successful system. Look inside for links to a free download of QFTCT—a new interactive CAD tool for QFT controller design with MATLAB® that the authors developed with the European Space Agency. The textbook's big-picture insights can help students and practicing engineers control and optimize a wind energy system, in which large, flexible, aerodynamic structures are connected to a demanding variable electrical grid and work automatically under very turbulent and unpredictable environmental conditions. The book covers topics including robust QFT control, aerodynamics, mechanical and electrical dynamic modeling, economics, reliability, and efficiency. It also addresses standards, certification, implementation, grid integration, and power quality, as well as environmental and maintenance issues. To reinforce understanding, the authors present real examples of experimentation with commercial multi-megawatt direct-drive wind turbines, as well as on-shore, offshore, floating, and airborne wind turbine applications. They also offer a unique in-depth exploration of the quantitative feedback theory (QFT)—a proven, successful robust control technique for real-world applications—as well as advanced switching control techniques that help engineers exceed classical linear limitations. U.S. Environmental Protection Agency Library System Book Catalog Holdings as of July 1973**

A Handbook of Software and Systems Engineering Empirical Observations, Laws, and Theories *Pearson Education* **This book is intended as a handbook for students and practitioners alike. The book is structured around the type of tasks that practitioners are confronted with, beginning with requirements definition and concluding with maintenance and withdrawal. It identifies and discusses existing laws that have a significant impact on the software engineering field. These laws are largely independent of the technologies involved, which allow students to learn the principles underlying software engineering. This also guides students toward the best practice when implementing software engineering techniques. Parallel and Distributed Computing in Engineering Systems Proceedings of the IMACS/IFAC International Symposium on Parallel and Distributed Computing in Engineering Systems, Corfu, Greece, 23-28 June 1991** *North Holland* **This book presents 91 papers reflecting the experience of a large family of workers in the field of parallel and distributed computing systems. It explores fresh results and important methods and tools. Among topics addressed are: architectures and algorithms, parallel computing in non-numerical processes, parallel computing in optimization, control and signal/image processing, distributed computing and control, neural computing, communication networks, and engineering applications. Research institutes and companies, as well as universities and individual computer, control, systems, or communications scientists and engineers should find this a valuable addition to their libraries. Managing Hospitality Engineering Systems** *Educational Inst of the Amer Hotel* **Smart Product Engineering Proceedings of the 23rd CIRP Design Conference, Bochum, Germany, March 11th - 13th, 2013** *Springer Science & Business Media* **The collection of papers in this book comprises the proceedings of the 23rd CIRP Design Conference held between March 11th and March 13th 2013 at the Ruhr-Universität Bochum in Germany. The event was organized in cooperation with the German Academic Society for Product Development – WiGeP. The focus of the conference was on »Smart Product Engineering«, covering two major aspects of modern product creation: the development of intelligent (“smart”) products as well as the new (“smart”) approach of engineering, explicitly taking into account consistent systems integration. Throughout the 97 papers contained in these proceedings, a range of topics are covered, amongst them the different facets and aspects of what makes a product or an engineering solution “smart”. In addition, the conference papers investigate new ways of engineering for production planning and collaboration towards Smart Product Engineering. The publications provide a solid insight into the pressing issues of modern digital product creation facing increasing challenges in a rapidly changing industrial environment. They also give implicit advice how a “smart” product or engineering solution (processes, methods and tools) needs to be designed and implemented in order to become successful. Advances in Systems Engineering Select Proceedings of NSC 2019** *Springer Nature* **This book comprises select proceedings of the 43rd National Systems Conference on Innovative and Emerging Trends in Engineering Systems (NSC 2019) held at the Indian Institute of Technology, Roorkee, India. The contents cover latest research in the highly multidisciplinary field of systems engineering, and discusses its various aspects like systems design, dynamics, analysis, modeling and simulation. Some of the topics covered include computing systems, consciousness systems, electrical systems, energy systems, manufacturing systems, mechanical systems, literary systems, social systems, and quantum and nano systems. Given the scope of the contents, this book will be useful for researchers and professionals from diverse engineering and management background. H-infinity Engineering and Amplifier Optimization** *Birkhäuser* **H-infinity engineering continues to establish itself as a discipline of applied mathematics. As such, this extensively illustrated monograph makes a significant application of H-infinity theory to electronic amplifier design, demonstrating how recent developments in H-infinity engineering equip amplifier designers with new tools and avenues for research. The presentation, at the interface of applied mathematics and engineering, emphasizes how to (1) compute the best possible performance available from any matching circuits; (2) benchmark existing matching solutions; and (3) generalize results to multiple amplifiers. As the monograph develops, many research directions are pointed out for both disciplines. The physical meaning of a mathematical problem is made explicit for the mathematician, while circuit problems are presented in the H-infinity framework for the engineer. A final chapter organizes these research topics into a collection of open problems ranging from electrical engineering, numerical implementations, and generalizations to H-infinity theory. The Linux Operating System: An Introduction Abstract: "Linux is a Unix-like operating system for Intel 386/486/Pentium based IBM-PCs and compatibles. The kernel of this operating system was written from scratch by Linus Torvalds and, although copyright by the author, may be freely distributed. A world-wide group of enthusiastic volunteers has collaborated in developing many aspects of Linux on the Internet. Linux can run the powerful set of compilers and programming tools (the 'GNU' corpus) of the Free Software Foundation, and XFree86, a port of the X Window System from MIT. Most capabilities associated with high performance workstations, such as networking, shared file systems, electronic mail, TEX, LATEX, etc. are freely available for Linux. It can thus transform cheap IBM-PC compatible machines into Unix workstations with considerable capabilities. The author explains how Linux may be obtained, installed and networked. He also describes some interesting applications for Linux that are freely available. One useful feature of Linux is its ability to coexist with other operating systems. Thus a user who has made an investment in DOS/MSWindows software, may continue running these applications on his machine and install Linux on a separate partition on his existing hard disk. If needed, files from DOS/MSWindows partitions can be accessed by Linux. The enormous consumer market for IBM-PC compatible machines continually drives down prices of CPU chips, memory, hard disks, CDROMS etc. Linux can convert such machines into powerful workstations that can be used for teaching, research and software development. For professionals who use Unix based workstations at work, Linux permits virtually identical working environments on their personal home machines. For cost conscious educational institutions (especially in developing nations), Linux can create world-class computing environments from cheap, easily maintained, PC clones. Finally, for university students, especially in science and engineering, Linux provides an essentially cost-free path away from DOS into the world of Unix and X Windows." Civil Engineering Systems** *Scholium International* **Adaptation in Natural and Artificial Systems An Introductory Analysis with Applications to Biology, Control, and Artificial Intelligence** *MIT Press* **Genetic algorithms are**

playing an increasingly important role in studies of complex adaptive systems, ranging from adaptive agents in economic theory to the use of machine learning techniques in the design of complex devices such as aircraft turbines and integrated circuits. Adaptation in Natural and Artificial Systems is the book that initiated this field of study, presenting the theoretical foundations and exploring applications. In its most familiar form, adaptation is a biological process, whereby organisms evolve by rearranging genetic material to survive in environments confronting them. In this now classic work, Holland presents a mathematical model that allows for the nonlinearity of such complex interactions. He demonstrates the model's universality by applying it to economics, physiological psychology, game theory, and artificial intelligence and then outlines the way in which this approach modifies the traditional views of mathematical genetics. Initially applying his concepts to simply defined artificial systems with limited numbers of parameters, Holland goes on to explore their use in the study of a wide range of complex, naturally occuring processes, concentrating on systems having multiple factors that interact in nonlinear ways. Along the way he accounts for major effects of coadaptation and coevolution: the emergence of building blocks, or schemata, that are recombined and passed on to succeeding generations to provide, innovations and improvements. Scientific and Technical Aerospace Reports Lists citations with abstracts for aerospace related reports obtained from world wide sources and announces documents that have recently been entered into the NASA Scientific and Technical Information Database. Stochastic Large-Scale Engineering Systems *CRC Press* **This book focuses on the class of large-scale stochastic systems, which has dominated the attention of many academic and research groups. It discusses distributed-sensor networks, decentralized detection theory, and econometric models with integrated and decentralized policymakers. Systems and Synthetic Biotechnology for Production of Nutraceuticals** *Springer Nature* **This book discusses systems and synthetic biotechnologies for the production of nutraceuticals, and summarizes recent advances in nutraceutical research in terms of the physiological effects on health, potential applications, drawbacks of traditional production processes, characteristics of production strains, and advances in microbial production based on systems and synthetic biotechnology. It also examines future directions in the microbial production of nutraceuticals using systems and synthetic biology. The book is intended for researchers and graduate students in the field of molecular biology and industrial biotechnology as well as staff working in the nutraceutical industry. The Characteristics of Mechanical Engineering Systems** *Pergamon* **Decision Making Applications in Modern Power Systems** *Academic Press* **Decision Making Applications in Modern Power Systems presents an enhanced decision-making framework for power systems. Designed as an introduction to enhanced electricity system analysis using decision-making tools, it provides an overview of the different elements, levels and actors involved within an integrated framework for decision-making in the power sector. In addition, it presents a state-of-play on current energy systems, strategies, alternatives, viewpoints and priorities in support of decision-making in the electric power sector, including discussions of energy storage and smart grids. As a practical training guide on theoretical developments and the application of advanced methods for practical electrical energy engineering problems, this reference is ideal for use in establishing medium-term and long-term strategic plans for the electric power and energy sectors. Provides panoramic coverage of state-of-the-art energy systems, strategies and priorities in support of electrical power decision-making Introduces innovative research outcomes, programs, algorithms and approaches to address challenges in understanding, creating and managing complex techno-socio-economic engineering systems Includes practical training on theoretical developments and the application of advanced methods for realistic electrical energy engineering problems Hybrid Intelligent Engineering Systems** *World Scientific* **This book on hybrid intelligent engineering systems is unique, in the sense that it presents the integration of expert systems, neural networks, fuzzy systems, genetic algorithms, and chaos engineering. It shows that these new techniques enhance the capabilities of one another. A number of hybrid systems for solving engineering problems are presented. Design Tools and Methods in Industrial Engineering Proceedings of the International Conference on Design Tools and Methods in Industrial Engineering, ADM 2019, September 9–10, 2019, Modena, Italy** *Springer Nature* **This book reports on cutting-edge design methods and tools in industrial engineering, advanced findings in mechanics and material science, and relevant technological applications. Topics span from geometric modelling tools to applications of virtual/augmented reality, from interactive design to ergonomics, human factors research and reverse engineering. Further topics include integrated design and optimization methods, as well as experimental validation techniques for product, processes and systems development, such as additive manufacturing technologies. This book is based on the International Conference on Design Tools and Methods in Industrial Engineering, ADM 2019, held on September 9–10, 2019, in Modena, Italy, and organized by the Italian Association of Design Methods and Tools for Industrial Engineering, and the Department of Engineering "Enzo Ferrari" of the University of Modena and Reggio Emilia, Italy. It provides academics and professionals with a timely overview and extensive information on trends and technologies in industrial design and manufacturing. Process Systems Engineering for Biofuels Development** *John Wiley & Sons* **A comprehensive overview of current developments and applications in biofuels production Process Systems Engineering for Biofuels Development brings together the latest and most cutting-edge research on the production of biofuels. As the first book specifically devoted to process systems engineering for the production of biofuels, Process Systems Engineering for Biofuels Development covers theoretical, computational and experimental issues in biofuels process engineering. Written for researchers and postgraduate students working on biomass conversion and sustainable process design, as well as industrial practitioners and engineers involved in process design, modeling and optimization, this book is an indispensable guide to the newest developments in areas including: Enzyme-catalyzed biodiesel production Process analysis of biodiesel production (including kinetic modeling, simulation and optimization) The use of ultrasonification in biodiesel production Thermochemical processes for biomass transformation to biofuels Production of alternative biofuels In addition to the comprehensive overview of the subject of biofuels found in the Introduction of the book, the authors of various chapters have provided extensive discussions of the production and separation of biofuels via novel**

applications and techniques. Unmanned Aircraft Design Techniques *John Wiley & Sons* **Provides a comprehensive introduction to the design and analysis of unmanned aircraft systems with a systems perspective Written for students and engineers who are new to the field of unmanned aerial vehicle design, this book teaches the many UAV design techniques being used today and demonstrates how to apply aeronautical science concepts to their design. Design of Unmanned Aerial Systems covers the design of UAVs in three sections—vehicle design, autopilot design, and ground systems design—in a way that allows readers to fully comprehend the science behind the subject so that they can then demonstrate creativity in the application of these concepts on their own. It teaches students and engineers all about: UAV classifications, design groups, design requirements, mission planning, conceptual design, detail design, and design procedures. It provides them with in-depth knowledge of ground stations, power systems, propulsion systems, automatic flight control systems, guidance systems, navigation systems, and launch and recovery systems. Students will also learn about payloads, manufacturing considerations, design challenges, flight software, microcontroller, and design examples. In addition, the book places major emphasis on the automatic flight control systems and autopilots. Provides design steps and procedures for each major component Presents several fully solved, step-by-step examples at component level Includes numerous UAV figures/images to emphasize the application of the concepts Describes real stories that stress the significance of safety in UAV design Offers various UAV configurations, geometries, and weight data to demonstrate the real-world applications and examples Covers a variety of design techniques/processes such that the designer has freedom and flexibility to satisfy the design requirements in several ways Features many end-of-chapter problems for readers to practice Design of Unmanned Aerial Systems is an excellent text for courses in the design of unmanned aerial vehicles at both the upper division undergraduate and beginning graduate levels. Electric Power Transmission System Engineering Analysis and Design** *Wiley-Interscience* **This is a book for engineers involved with the mechanical design of electrical transmission systems. It includes a review of transmission system engineering and the basics of analysis, and then goes on to cover in detail topics such as the construction of overhead lines, structural supports, insulation requirements, vibration, sag and tension analysis, right-of-way planning and methods of locating structures and underground cables. Also included is material about cost analysis methods and techniques which are unique to transmission line design where fixed costs are shared among joint users. In addition to this the development of system reliability reporting to conform to standard requirements is covered, along with a modern, comprehensive treatment of the design aspects of electrical power systems. New topics of importance, such as fault analysis, system protection, line balancing and economic analysis are contained, with a brief review of analytical techniques which are pre-requisites to designing a system or component. Handbook of Cognitive and Autonomous Systems for Fire Resilient Infrastructures** *Springer Nature* **This handbook aims at modernizing the current state of civil engineering and firefighting, especially in this era where infrastructures are reaching new heights, serving diverse populations, and being challenged by unique threats. Its aim is to set the stage toward realizing contemporary, smart, and resilient infrastructure. The Handbook of Cognitive and Autonomous Systems for Fire Resilient Infrastructures draws convergence between civil engineering and firefighting to the modern realm of interdisciplinary sciences (i.e., artificial intelligence, IoT, robotics, sensing, and human psychology). As such, this work aims to revolutionize the current philosophy of design for one of the most notorious extreme events: fire. Unlike other publications, which are narrowed to one specific research area, this handbook cultivates a paradigm in which critical aspects of structural design, technology, and human behavior are studied and examined through chapters written by leaders in their fields. This handbook can also serve as a textbook for graduate and senior undergraduate students in Civil, Mechanical, and Fire Protection engineering programs as well as for students in Architectural and social science disciplines. Students, engineers, academics, professionals, scientists, firefighters, and government officials involved in national and international societies such as the American Society of Civil Engineers (ASCE), Society of Fire Protection Engineers (SFPE), National Fire Protection Association (NFPA), and Institute of Electrical and Electronics Engineers (IEEE), among others, will benefit from this handbook. Smart Engineering Systems Neural Networks, Fuzzy Logic, Data Mining, and Evolutionary Programming : Proceedings of the Artificial Neural Networks in Engineering Conference (ANNIE '97), Held November 9-12, 1997, in St. Louis, Missouri, U.S.A.** *Intelligent Engineering System* **Proceedings of the Artificial Neural Networks in Engineering Conference, November 9-12, 1997, St. Louis, Missouri. The papers compiled in this book focus on building smart components to engineering systems currently available. The term smart in this context indicates physical systems that can interact with their environment and adapt to changes in both space and time by their ability to manipulate the environment through self-awareness and perceived models of the world based on both quantitative and qualitative information. Recent technologies such as artificial neural networks, fuzzy logic, evolutionary programming, data mining wavelets, complex systems, and virtual reality form the basis of Smart Engineering System Design. In 1997, the Department of Engineering Management at the University of Missouri-Rolla organized the ANNIE'97 conference, to advance the techniques of Smart Engineering Sustem Design in collaboration with the IEEE Neural Network Council. This was the seventh meeting held in St. Louis,Missouri,U.S.A, since the founding of the conference in 1991. The conference attracted over 162 papers from 20 countries, which, after being peer-reviewed and revised, have been included in this book.**