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Industrial Engineering and Production Management

S. Chand Publishing For close to 20 years, Industrial Engineering and Production Management has been a successful text for students of Mechanical, Production and Industrial Engineering while also being equally helpful for students of other courses including Management. Divided in 5 parts and 52 chapters, the text combines theory with examples to provide in-depth coverage of the subject.

Industrial Engineering And Management

Transdisciplinary Engineering for Complex Socio-technical Systems

Proceedings of the 26th ISTE International Conference on Transdisciplinary Engineering, July 30 – August 1, 2019

IOS Press Industry and society are complex socio-technical systems, and both face problems that can only be solved by collaboration between different disciplines. Collaboration between academia and practice is also needed to develop viable solutions. Many engineering problems also require such an approach, which is known as Transdisciplinary Engineering (TE). This book presents the proceedings of the 26th ISTE International Conference on Transdisciplinary Engineering, held in Tokyo, Japan, from 30 July - 1 August 2019. The title of the conference was: Transdisciplinary Engineering for Complex Socio-technical Systems, and of the 86 submitted papers, 68 peer-reviewed papers by authors from 17 countries were delivered at the conference. These papers range from theoretical and conceptual to strongly pragmatic. They address industrial best practice and are grouped here under 10 themes: advanced robotics for smart manufacturing; design of personalized products and services; engineering methods for industry 4.0; additive and subtractive manufacturing; decision supporting tools and methods; complex systems engineering; big data analytics in manufacturing and services; concurrent engineering; cost modeling; and digital manufacturing, modeling and simulation. Presenting the latest research results and knowledge of product creation processes and related methodologies, the book will be of interest to researchers, design practitioners, and educators alike.

Technology Drivers

Engine for Growth

CRC Press This volume of proceedings from the conference provides an opportunity for readers to engage with a selection of refereed papers that were presented during the 6th International Conference NUiCONE'17. Researchers from industry and academia were invited to present their research work in the areas as listed below. The research papers presented in these tracks have been published in this proceeding with the support of CRC Press, Taylor & Francis Group. This proceeding will definitely provide a platform to

proliferate new findings among the researchers. Chemical Process Development and Design Technologies for Green Environment Advances in Transportation Engineering Emerging Trends in Water Resources and Environmental Engineering Construction Technology and Management Concrete and Structural Engineering Sustainable Manufacturing Processes Design and Analysis of Machine and Mechanism Energy Conservation and Management

Advanced Methodologies and Technologies in Network Architecture, Mobile Computing, and Data Analytics

IGI Global From cloud computing to data analytics, society stores vast supplies of information through wireless networks and mobile computing. As organizations are becoming increasingly more wireless, ensuring the security and seamless function of electronic gadgets while creating a strong network is imperative. Advanced Methodologies and Technologies in Network Architecture, Mobile Computing, and Data Analytics highlights the challenges associated with creating a strong network architecture in a perpetually online society. Readers will learn various methods in building a seamless mobile computing option and the most effective means of analyzing big data. This book is an important resource for information technology professionals, software developers, data analysts, graduate-level students, researchers, computer engineers, and IT specialists seeking modern information on emerging methods in data mining, information technology, and wireless networks.

Applied Strength of Materials for Engineering Technology

Createspace Independent Publishing Platform This algebra-based text is designed specifically for Engineering Technology students, using both SI and US Customary units. All example problems are fully worked out with unit conversions. Unlike most textbooks, this one is updated each semester using student comments, with an average of 80 changes per edition.

Continuous Nonlinear Optimization for Engineering

Applications in GAMS Technology

Springer This book presents the theoretical details and computational performances of algorithms used for solving continuous nonlinear optimization applications imbedded in GAMS. Aimed toward scientists and graduate students who utilize optimization methods to model and solve problems in mathematical programming, operations research, business, engineering, and industry, this book enables readers with a background in nonlinear optimization and linear algebra to use GAMS technology to understand and utilize its important capabilities to optimize algorithms for modeling and solving complex, large-scale, continuous nonlinear optimization problems or applications. Beginning with an overview of constrained nonlinear optimization methods, this book moves on to illustrate key aspects of mathematical modeling through modeling technologies based on algebraically oriented modeling languages. Next, the main feature of GAMS, an algebraically oriented language that allows for high-level algebraic representation of mathematical optimization models, is introduced to model and solve continuous nonlinear optimization applications. More than 15 real nonlinear optimization applications in algebraic and GAMS representation are presented which are used to illustrate the performances of the algorithms described in this book. Theoretical and computational results, methods, and techniques effective for solving nonlinear optimization problems, are detailed through the algorithms MINOS, KNITRO, CONOPT, SNOPT and IPOPT which work in GAMS technology.

Street-Fighting Mathematics

The Art of Educated Guessing and Opportunistic Problem Solving

MIT Press An antidote to mathematical rigor mortis, teaching how to guess answers without needing a proof or an exact calculation. In problem solving, as in street fighting, rules are for fools: do whatever works—don't just stand there! Yet we often fear an unjustified leap even though it may land us on a correct result. Traditional mathematics teaching is largely about solving exactly stated problems exactly, yet life often hands us partly defined problems needing only moderately accurate solutions. This engaging book is an antidote to the rigor mortis brought on by too much mathematical rigor, teaching us how to guess answers without needing a proof or an exact

calculation. In Street-Fighting Mathematics, Sanjoy Mahajan builds, sharpens, and demonstrates tools for educated guessing and down-and-dirty, opportunistic problem solving across diverse fields of knowledge—from mathematics to management. Mahajan describes six tools: dimensional analysis, easy cases, lumping, picture proofs, successive approximation, and reasoning by analogy. Illustrating each tool with numerous examples, he carefully separates the tool—the general principle—from the particular application so that the reader can most easily grasp the tool itself to use on problems of particular interest. Street-Fighting Mathematics grew out of a short course taught by the author at MIT for students ranging from first-year undergraduates to graduate students ready for careers in physics, mathematics, management, electrical engineering, computer science, and biology. They benefited from an approach that avoided rigor and taught them how to use mathematics to solve real problems. Street-Fighting Mathematics will appear in print and online under a Creative Commons Noncommercial Share Alike license.

Industrial Communication Systems

CRC Press The Industrial Electronics Handbook, Second Edition, Industrial Communications Systems combines traditional and newer, more specialized knowledge that helps industrial electronics engineers develop practical solutions for the design and implementation of high-power applications. Embracing the broad technological scope of the field, this collection explores fundamental areas, including analog and digital circuits, electronics, electromagnetic machines, signal processing, and industrial control and communications systems. It also facilitates the use of intelligent systems—such as neural networks, fuzzy systems, and evolutionary methods—in terms of a hierarchical structure that makes factory control and supervision more efficient by addressing the needs of all production components. Enhancing its value, this fully updated collection presents research and global trends as published in the IEEE Transactions on Industrial Electronics Journal, one of the largest and most respected publications in the field. Modern communication systems in factories use many different—and increasingly sophisticated—systems to send and receive information. Industrial Communication Systems spans the full gamut of concepts that engineers require to maintain a well-designed, reliable communications system that can ensure successful operation of any production process. Delving into the subject, this volume covers: Technical principles Application-specific areas Technologies Internet programming Outlook, including trends and expected challenges Other volumes in the set: Fundamentals of Industrial Electronics Power Electronics and Motor Drives Control and Mechatronics Intelligent Systems

Human and Nature Minding Automation

An Overview of Concepts, Methods, Tools and Applications

Springer Science & Business Media Man is the best thing in the World. Nature does nothing uselessly. Aristotle There is a pleasure in the pathless woods, There is rapture on the lonely shore, There is society, where none intrudes, By the deep sea, and music in its roar: I love not Man the less, but Nature more. John Burroughs The basic purpose of development is to enlarge people's choices. The objective of development is to create an enabling environment for people to enjoy long, healthy and creative lives. Mahbub ul Hag Founder of the Human Development Report Theaimofthisbookis toprovidea compiledset ofconcepts,principles,methods and issues used for studying, designing and operating human-minding and natu- minding automation and industrial systems. The depth of presentation is suf?cient for the reader to understand the problems involved and the solution approaches, and appreciate the need of human–automation cooperative interaction, and the - portance of the efforts required for environment and ecosystem protection during any technological and development process in the society. Humans and technology are living and have to live together in a sustainable society and nature. Humans must not be viewed as components of automation and technology in the same way as machines. Automation and technology must incorporate the humans' needs and preferences, and radiate "beauty" in all ways, namely functionally, technically and humanistically. In overall, automation and technology should create comfort and give pleasure.

Assessing the Societal Implications of Emerging Technologies

Anticipatory governance in practice

Routledge A growing problem of interest in the field of science and technology policy is that the next generation of innovations is arriving at an accelerating rate, and the governance system is struggling to catch up. Current approaches and institutions for effective technology assessment are ill suited and poorly designed to proactively address the multidimensional, interconnected societal impacts of science and technology advancements that are already taking place and expected to continue over the course of the 21st century. This book offers tangible insights into the strategies deployed by well-known, high-profile organizations involved in anticipating the various societal and policy implications of nanotechnology and synthetic biology. It focuses predominantly on an examination of the practices adopted by the often-cited and uniquely positioned Project on Emerging Nanotechnologies in the United States, as well as being informed by comparisons with a range of institutions also interested in embedding forward-looking perspectives in their respective area of innovation. The book lays out one of the first actionable roadmaps that other interested stakeholders can follow when working toward institutionalizing anticipatory governance practices throughout the policymaking process.

The Industrial Electronics Handbook, Second Edition - Five Volume Set

CRC Press Industrial electronics systems govern so many different functions that vary in complexity—from the operation of relatively simple applications, such as electric motors, to that of more complicated machines and systems, including robots and entire fabrication processes. The Industrial Electronics Handbook, Second Edition combines traditional and newer, more specialized knowledge that will help industrial electronics engineers develop practical solutions for the design and implementation of modern industrial systems. Embracing the broad technological scope of the field, this collection explores fundamental areas, including analog and digital circuits, electronics, electromagnetic machines, and signal processing. It also facilitates the use of intelligent systems—such as neural networks, fuzzy systems, and evolutionary methods—in terms of a hierarchical structure that makes factory control and supervision more efficient by addressing the needs of all production components. Assembling the world's leading researchers to cover key aspects of this branch of science, the handbook includes the following volumes, which are available individually or as a complete set: Fundamentals of Industrial Electronics Power Electronics and Motor Drives Control and Mechatronics Industrial Communication Systems Intelligent Systems To help readers deal with myriad physical phenomena—and the sensors used

to measure them—the handbook re-evaluates the importance of electronic circuits. It goes beyond their value as an end product and focuses on their importance as building blocks in larger systems. Taking into account the relative complexity of most fabrication processes, contributors simplify the development and application of communication systems that can be tailored for specific industrial environments to link the various elements of each. Enhancing its value, this fully updated collection presents research and global trends as published in the IEEE Transactions on Industrial Electronics Journal, one of the largest and most respected publications in the field.

Real World Speech Processing

Springer Science & Business Media Real World Speech Processing brings together in one place important contributions and up-to-date research results in this fast-moving area. The contributors to this work were selected from the leading researchers and practitioners in this field. The work, originally published as Volume 36, Numbers 2-3 of the Journal of VLSI Signal Processing Systems for Signal, Image, and Video Technology, will be valuable to anyone working or researching in the field of speech processing. It serves as an excellent reference, providing insight into some of the most challenging issues being examined today.

Enhancing Synergies in a Collaborative Environment

Springer This volume contains a selection of the best papers presented at the 8th International Conference on Industrial Engineering and Industrial Management, XX International Conference on Industrial Engineering and Operations Management, and International IIE Conference 2014, hosted by ADINGOR, ABEPRO and the IIE, whose mission is to promote links between researchers and practitioners from different branches, to enhance an interdisciplinary perspective of industrial engineering and management. The conference topics covered: operations research, modelling and simulation, computer and information systems, operations research, scheduling and sequencing, logistics, production and information systems, supply chain and logistics, transportation, lean management, production planning and control, production system design, reliability and maintenance, quality management, sustainability and eco-efficiency, marketing and consumer behavior, business administration and strategic management, economic and financial management, technological and organizational innovation, strategy and entrepreneurship, economics engineering, enterprise engineering, global operations and cultural factors, operations strategy and performance, management social responsibility, environment and sustainability. This book will be of interest to researchers and practitioners working in any of the fields mentioned above.

Understanding Engineering Mathematics

Routledge Studying engineering, whether it is mechanical, electrical or civil relies heavily on an understanding of mathematics. This new textbook clearly demonstrates the relevance of mathematical principles and shows how to apply them to solve real-life engineering problems. It deliberately starts at an elementary level so that students who are starting from a low knowledge base will be able to quickly get up to the level required. Students who have not studied mathematics for some time will find this an excellent refresher. Each chapter starts with the basics before gently increasing in complexity. A full outline of essential definitions, formulae, laws and procedures are introduced before real world situations, practicals and problem solving demonstrate how the theory is applied. Focusing on learning through practice, it contains examples, supported by 1,600 worked problems and 3,000 further problems contained within exercises throughout the text. In addition, 34 revision tests are included at regular intervals. An interactive companion website is also provided containing 2,750 further problems with worked solutions and instructor materials

Electronic Packaging Materials and Their Properties

CRC Press Packaging materials strongly affect the effectiveness of an electronic packaging system regarding reliability, design, and cost. In electronic systems, packaging materials may serve as electrical conductors or insulators, create structure and form, provide thermal paths, and protect the circuits from environmental factors, such as moisture, contamination, hostile chemicals, and radiation. Electronic Packaging Materials and Their Properties examines the array of packaging architecture, outlining the classification of materials and their use for various tasks requiring performance over time. Applications discussed include: interconnections printed circuit boards substrates encapsulants dielectrics die attach materials electrical contacts thermal materials solders Electronic Packaging Materials and Their Properties also reviews key electrical, thermal, thermomechanical, mechanical, chemical, and miscellaneous properties as well as their significance in electronic packaging.

Engineering Metrology and Measurements

OUP India Engineering Metrology and Measurements is a textbook designed for students of mechanical, production and allied disciplines to facilitate learning of various shop-floor measurement techniques and also understand the basics of mechanical measurements.

Food Process Engineering and Technology

Academic Press Food Process Engineering and Technology, Third Edition combines scientific depth with practical usefulness, creating a tool for graduate students and practicing food engineers, technologists and researchers looking for the latest information on transformation and preservation processes and process control and plant hygiene topics. This fully updated edition provides recent research and developments in the area, features sections on elements of food plant design, an introductory section on the elements of classical fluid mechanics, a section on non-thermal processes, and recent technologies, such as freeze concentration, osmotic dehydration, and active packaging that are discussed in detail. Provides a strong emphasis on the relationship between engineering and product quality/safety Considers cost and environmental factors Presents a fully updated, adequate review of recent research and developments in the area Includes a new, full chapter on elements of food plant design Covers recent technologies, such as freeze concentration, osmotic dehydration, and active packaging that are discussed in detail

High Value Fermentation Products, Volume 1

Human Health

John Wiley & Sons Green technologies are no longer the "future" of science, but the present. With more and more mature industries, such as the process industries, making large strides seemingly every single day, and more consumers demanding products created from green technologies, it is essential for any business in any industry to be familiar with the latest processes and technologies. It is all part of a global effort to "go greener," and this is nowhere more apparent than in fermentation technology. This book describes relevant aspects of industrial-scale fermentation, an expanding area of activity, which already generates commercial values of over one third of a trillion US dollars annually, and which will most likely radically change the way we produce chemicals in the long-term future. From biofuels and bulk amino acids to monoclonal antibodies and stem cells, they all rely on mass suspension cultivation of cells in stirred bioreactors, which is the most widely used and versatile way to produce. Today, a wide array of cells can be cultivated in this way, and for most of them genetic engineering tools are also available. Examples of products, operating procedures, engineering and design aspects, economic drivers and cost, and regulatory issues are addressed. In addition, there will be a discussion of how we got to where we are today, and of the real world in industrial fermentation. This chapter is exclusively dedicated

to large-scale production used in industrial settings.

Product Design and Development

Treating such contemporary design and development issues as identifying customer needs, design for manufacturing, prototyping, and industrial design, Product Design and Development, 3/e, by Ulrich and Eppinger presents in a clear and detailed way a set of product development techniques aimed at bringing together the marketing, design, and manufacturing functions of the enterprise. The integrative methods in the book facilitate problem solving and decision making among people with different disciplinary perspectives, reflecting the current industry trend to perform product design and development in cross-functional teams.

Programming .NET Components

Design and Build .NET Applications Using Component-Oriented Programming

"*O'Reilly Media, Inc.*" 'Programming .NET Components', second edition, updated to cover .NET 2.0., introduces the Microsoft .NET Framework for building components on Windows platforms. From its many lessons, tips, and guidelines, readers will learn how to use the .NET Framework to program reusable, maintainable, and robust components.

Security Analytics

A Data Centric Approach to Information Security

CRC Press The book gives a comprehensive overview of security issues in cyber physical systems by examining and analyzing the vulnerabilities. It also brings current understanding of common web vulnerabilities and its analysis while maintaining awareness and knowledge of contemporary standards, practices, procedures and methods of Open Web Application Security Project. This book is a medium to funnel creative energy and develop new skills of hacking and analysis of security and expedites the learning of the basics

of investigating crimes, including intrusion from the outside and damaging practices from the inside, how criminals apply across devices, networks, and the internet at large and analysis of security data. Features Helps to develop an understanding of how to acquire, prepare, visualize security data. Unfolds the unventured sides of the cyber security analytics and helps spread awareness of the new technological boons. Focuses on the analysis of latest development, challenges, ways for detection and mitigation of attacks, advanced technologies, and methodologies in this area. Designs analytical models to help detect malicious behaviour. The book provides a complete view of data analytics to the readers which include cyber security issues, analysis, threats, vulnerabilities, novel ideas, analysis of latest techniques and technology, mitigation of threats and attacks along with demonstration of practical applications, and is suitable for a wide-ranging audience from graduates to professionals/practitioners and researchers.

Handbook of Optics, Third Edition Volume II: Design, Fabrication and Testing, Sources and Detectors, Radiometry and Photometry

McGraw Hill Professional The most comprehensive and up-to-date optics resource available Prepared under the auspices of the Optical Society of America, the five carefully architected and cross-referenced volumes of the Handbook of Optics, Third Edition, contain everything a student, scientist, or engineer requires to actively work in the field. From the design of complex optical systems to world-class research and development methods, this definitive publication provides unparalleled access to the fundamentals of the discipline and its greatest minds. Individual chapters are written by the world's most renowned experts who explain, illustrate, and solve the entire field of optics. Each volume contains a complete chapter listing for the entire Handbook, extensive chapter glossaries, and a wealth of references. This pioneering work offers unprecedented coverage of optics data, techniques, and applications. Volume II covers design, fabrications, testing, sources, detectors, radiometry, and photometry.

Sustainable Energy--without the Hot Air

Uit Cambridge Limited Provides an overview of the sustainable energy crisis that is threatening the world's natural resources, explaining how energy consumption is estimated and how those numbers have been skewed by various factors and discussing

alternate forms of energy that can and should be used.

Industrial IoT Application Architectures and Use Cases

CRC Press As the number of Internet of Things (IoT) elements grows exponentially, their interactions can generate a massive amount of raw and multi-structured data. The challenge with this data explosion is to transform any raw data into information and knowledge, which can be used by people and systems to make intelligent decisions. Industrial IoT Application Architectures and Use Cases explores how artificial intelligence (AI), data analytics, and IoT technology combine to promote intelligent decision-making and automation in a range of industries. With faster, more stable AI algorithms and approaches, knowledge discovery and dissemination from IoT-device data can be simplified and streamlined. An era of powerful cognitive technology is beginning due to cloud-based cognitive systems that are forming the foundation of game-changing intelligent applications. This book presents next-generation use cases of IoT and IoT data analytics for a variety of industrial verticals as given below: An Intelligent IoT framework for smart water management An IoT-enabled smart traffic control system for congestion control and smart traffic management An intelligent airport system for airport management and security surveillance An IoT framework for healthcare to integrate and report patient information Fuzzy scheduling with IoT for tracking and monitoring hotel assets An IoT system for designing drainage systems and monitoring drainage pipes Predictive maintenance of plant equipment to decide the actual mean time to malfunction Integrated neural networks and IoT systems for predictive equipment maintenance IoT integration in blockchain for smart waste management This book also includes a chapter on the IoT paradigm and an overview of uses cases for personal, social, and industrial applications.

Materials, Design, and Manufacturing for Sustainable Environment

Select Proceedings of ICMDMSE 2020

Springer Nature This book comprises the select proceedings of the International Conference on Materials, Design and Manufacturing for Sustainable Environment (ICMDMSE 2020). The primary focus is on emerging materials and cutting-edge manufacturing technologies for sustainable environment. The book covers a wide range of topics such as advanced materials, vibration, tribology,

finite element method (FEM), heat transfer, fluid mechanics, energy engineering, additive manufacturing, robotics and automation, automobile engineering, industry 4.0, MEMS and nanotechnology, optimization techniques, condition monitoring, and new paradigms in technology management. Contents of this book will be useful to students, researchers, and practitioners alike.

Nanotechnology for Energy Sustainability, 3 Volume Set

John Wiley & Sons In three handy volumes, this ready reference provides a detailed overview of nanotechnology as it is applied to energy sustainability. Clearly structured, following an introduction, the first part of the book is dedicated to energy production, renewable energy, energy storage, energy distribution, and energy conversion and harvesting. The second part then goes on to discuss nano-enabled materials, energy conservation and management, technological and intellectual property-related issues and markets and environmental remediation. The text concludes with a look at and recommendations for future technology advances. An essential handbook for all experts in the field - from academic researchers and engineers to developers in industry.

Proceedings of the International Conference on Industrial and Manufacturing Systems (CIMS-2020)

Optimization in Industrial and Manufacturing Systems and Applications

Springer Nature In order to deal with the societal challenges novel technology plays an important role. For the advancement of technology, Department of Industrial and Production Engineering under the aegis of NIT Jalandhar is organizing an "International Conference on Industrial and Manufacturing Systems" (CIMS-2020) from 26th -28th June, 2020. The present conference aims at providing a leading forum for sharing original research contributions and real-world developments in the field of Industrial and Manufacturing Systems so as to contribute its share for technological advancements. This volume encloses various manuscripts having its roots in the core of industrial and production engineering. Globalization provides all around development and this development is impossible without technological contributions. CIMS-2020, gathered the spirits of various academicians, researchers,

scientists and practitioners, answering the vivid issues related to optimisation in the various problems of industrial and manufacturing systems.

Textbook on Professional Ethics and Human Values

New Age International

AI Superpowers

China, Silicon Valley, and the New World Order

Houghton Mifflin Introduction -- China's Sputnik moment -- Copycats in the Coliseum -- China's alternate Internet universe -- A tale of two countries -- The four waves of AI -- Utopia, dystopia, and the real AI crisis -- The wisdom of cancer -- A blueprint for human co-existence with AI -- Our global AI story

CAD/CAM.

With the advancement in Technology, developments have taken place in the CAD/CAM industry too, in the last few years. The Second Edition has much enhanced coverage on CAD. The applications of CAD and CAM are discussed in detail. Highlights of the Second.

Control Engineering in Robotics and Industrial Automation

Malaysian Society for Automatic Control Engineers (MACE) Technical Series 2018

Springer Nature This book is the first research collection by the Malaysian Society for Automatic Control Engineers (MACE). Numerous applications of control engineering, sensor, and instrumentation technology in robotics, industrial automation, and other mechatronic systems are presented in this book. The book begins by introducing control engineering in robotics and industrial automation. It progresses through a series of chapters, discussing the application of control engineering in various areas such as: brake-by-wire technology; web scrubber systems; robot localization; and, autonomous navigation systems. Coverage of swarm robotics behaviors and applications of sensor technology in the field of music, biomedical technology, and structural analysis takes the book beyond its core of mechatronic systems and demonstrates a more diverse application of the ideas it presents. Each chapter provides comprehensive and detailed coverage of the main ideas, design methods, and practical needs of its chosen topic, making this book accessible and useful to researchers, engineers, postgraduates, and undergraduate students.

Modern Electric, Hybrid Electric, and Fuel Cell Vehicles

CRC Press "This book is an introduction to automotive technology, with specic reference to battery electric, hybrid electric, and fuel cell electric vehicles. It could serve electrical engineers who need to know more about automobiles or automotive engineers who need to know about electrical propulsion systems. For example, this reviewer, who is a specialist in electric machinery, could use this book to better understand the automobiles for which the reviewer is designing electric drive motors. An automotive engineer, on the other hand, might use it to better understand the nature of motors and electric storage systems for application in automobiles, trucks or motorcycles. The early chapters of the book are accessible to technically literate people who need to know something about cars. While the rst chapter is historical in nature, the second chapter is a good introduction to automobiles, including dynamics of propulsion and braking. The third chapter discusses, in some detail, spark ignition and compression ignition (Diesel) engines. The fourth chapter discusses the nature of transmission systems." —James Kirtley, Massachusetts Institute of Technology, USA "The third edition covers extensive topics in modern electric, hybrid electric, and fuel cell vehicles, in which the profound knowledge, mathematical modeling, simulations, and control are clearly presented. Featured with design of various vehicle drivetrains, as well as a multi-objective optimization software, it is an estimable work to meet the needs of automotive industry." —Haiyan Henry Zhang,

Purdue University, USA "The extensive combined experience of the authors have produced an extensive volume covering a broad range but detailed topics on the principles, design and architectures of Modern Electric, Hybrid Electric, and Fuel Cell Vehicles in a well-structured, clear and concise manner. The volume offers a complete overview of technologies, their selection, integration & control, as well as an interesting Technical Overview of the Toyota Prius. The technical chapters are complemented with example problems and user guides to assist the reader in practical calculations through the use of common scientic computing packages. It will be of interest mainly to research postgraduates working in this eld as well as established academic researchers, industrial R&D engineers and allied professionals." —Christopher Donaghy-Sparg, Durham University, United Kingdom The book deals with the fundamentals, theoretical bases, and design methodologies of conventional internal combustion engine (ICE) vehicles, electric vehicles (EVs), hybrid electric vehicles (HEVs), and fuel cell vehicles (FCVs). The design methodology is described in mathematical terms, step-by-step, and the topics are approached from the overall drive train system, not just individual components. Furthermore, in explaining the design methodology of each drive train, design examples are presented with simulation results. All the chapters have been updated, and two new chapters on Mild Hybrids and Optimal Sizing and Dimensioning and Control are also included • Chapters updated throughout the text. • New homework problems, solutions, and examples. • Includes two new chapters. • Features accompanying MATLABTM software.

Membranverfahren

Grundlagen der Modul- und Anlagenauslegung

Springer-Verlag Membranverfahren sind Ingenieuren und Naturwissenschaftlern längst mehr als nur ein Begriff. Unentbehrlich in Medizin, Wasser- und Lebensmitteltechnik, mit hohen Wachstumsraten im Umweltschutz und der Chemie gehören sie zu den Schlüsseltechnologien des 21. Jahrhunderts. Und so sollten sie auch zum Allgemeinwissen des Ingenieurs gehören. Ging es aber um eine konkrete Anwendung oder einen Verfahrensvergleich oder waren gar Pilotversuche und dann eine Auslegung verlangt, so war guter Rat zwar nicht teuer, aber er lautete übereinstimmend: "bei Rautenbach nachlesen". Die zweite, vollständig überarbeitete und wesentlich erweiterte Auflage behält die erfolgreiche Kombination von Handbuch und Lehrbuch bei. Ausgehend von klar dargestellten Grundlagen werden die Werkzeuge und Methoden der Auslegung von Membranverfahren erarbeitet und an Beispielen demonstriert. Sämtliche Kapitel erfuhren eine gründliche Überarbeitung und Erweiterung. Das Kapitel Membrankontaktoren ist neu, ebenso wie die Darstellung der anorganischen Materialien, der getauchten Modulsysteme und des Einsatzes von Strömungssimulation und Molecular

Modelling.

Enzymology and Enzyme Technology

S. Chand Publishing Enzyme : An Introduction • Enzyme Structure • Enzyme Specificity & Catalysis • Purification & Characterization Of Enzymes • Enzyme Assay • Enzyme Engineering • Enzyme Microenvironment : Catalysis In Non-Aqueous Solvent • Bioenergetics • Introduction To Metabolism • Knzyme Kinetics • Single Substrate Enzyme Inhibition • Kinetics Of Multisubtrate Enzymes • Enzyme'S Regulation And Cooperativity • Enzymes Immbilsation Techniques• Enzyme Biosensor

Engineering Fluid Dynamics 2018

MDPI "Engineering Fluid Dynamics 2018". The topic of engineering fluid dynamics includes both experimental as well as computational studies. Of special interest were submissions from the fields of mechanical, chemical, marine, safety, and energy engineering. We welcomed both original research articles as well as review articles. After one year, 28 papers were submitted and 14 were accepted for publication. The average processing time was 37.91 days. The authors had the following geographical distribution: China (9); Korea (3); Spain (1); and India (1). Papers covered a wide range of topics, including analysis of fans, turbines, fires in tunnels, vortex generators, deep sea mining, as well as pumps.

Metaheuristic Algorithms in Industry 4.0

CRC Press Due to increasing industry 4.0 practices, massive industrial process data is now available for researchers for modelling and optimization. Artificial Intelligence methods can be applied to the ever-increasing process data to achieve robust control against foreseen and unforeseen system fluctuations. Smart computing techniques, machine learning, deep learning, computer vision, for example, will be inseparable from the highly automated factories of tomorrow. Effective cybersecurity will be a must for all Internet of Things (IoT) enabled work and office spaces. This book addresses metaheuristics in all aspects of Industry 4.0. It covers metaheuristic applications in IoT, cyber physical systems, control systems, smart computing, artificial intelligence, sensor networks, robotics, cybersecurity, smart factory, predictive analytics and more. Key features: Includes industrial case studies. Includes chapters on cyber physical systems, machine learning, deep learning, cybersecurity, robotics, smart manufacturing and predictive analytics. surveys current trends and challenges in metaheuristics and industry 4.0. Metaheuristic Algorithms in Industry 4.0 provides a guiding light to

engineers, researchers, students, faculty and other professionals engaged in exploring and implementing industry 4.0 solutions in various systems and processes.

Automation, Production Systems, and Computer-integrated Manufacturing

Prentice Hall For advanced undergraduate/ graduate-level courses in Automation, Production Systems, and Computer-Integrated Manufacturing. This exploration of the technical and engineering aspects of automated production systems provides the most advanced, comprehensive, and balanced coverage of the subject of any text on the market. It covers all the major cutting-edge technologies of production automation and material handling, and how these technologies are used to construct modern manufacturing systems.

The ONS Productivity Handbook: A Statistical Overview and Guide

Palgrave Macmillan ONS Productivity Handbook: a Statistical Overview and Guide examines the importance and relevance of economic productivity and serves as a reference on the subject. Areas covered include productivity analysis within various sectors and at firm level as well as measures of labour and capital inputs.

The Plant Family Brassicaceae

Contribution Towards Phytoremediation

Springer Science & Business Media With the advent of the industrial revolution , the biosphere has been continuously polluted with a myriad of contaminants that urgently need global attention. In this perspective, most of the genera of the plant family Brassicaceae (Crucifereae or the mustard family) are a significant part of the plants- and associated microbes-based strategies adopted for the

cleanup of varied contaminants from environmental compartments. Important genus such as Alyssum, Arabidopsis, Brassica and Thlaspi from Brassicaceae which, besides acting as an attractive genetic model, well-represent the metal hyperaccumulation among approximately 0.2% of all angiosperms and thus, play a key role in the phytoremediation technology. This book i) provides an exhaustive evaluation of the current status of contaminants (metals/metalloids)-addition to varied environmental compartments and its consequences, ii) offers comprehensive and state-of-the-art information on the significance of the plants from the family Brassicaceae in solving environmental pollution issues, iii) examines the physiological, biochemical and molecular-genetic strategies adopted by the plants from Brassicaceae for the remediation of and tolerance to varied environmental contaminants, and iv) supplies a broad reference to the field of environmental science and related disciplines. As a pioneer work and significant addition to the Environmental Pollution book series, the current volume promises to be a useful asset for researchers, students, other academicians and policy makers involved in sustainable remediation of varied environmental compartments.