

Mechanical Operations By Anup K Swain G K Roy Hemlata

This book outlines the process of sustainable product design and development. It presents design guidelines that help prolong the life of a product and minimize its environmental impact. These guidelines specifically enable product design for end-of-life (EoL) objectives such as reuse, recycling and remanufacturing. Sustainable Product Design and Development also presents mathematical models that will help the designer determine the cost of designing sustainable products. This cost can be computed early during the design stage of a product. Sustainable Product Design and Development presents different ways and means by which a product can address all three pillars of sustainability—environmental conservation, social sustainability, and economic sustainability. Various case studies are incorporated in different chapters. Case studies on designing products for assembly, disassembly and remanufacturing have been presented in their respective chapters. The book also provides an overview of global environmental legislation to help the reader grasp the importance of waste management and sustainable product design. This book is aimed at professionals, engineering students, environmental scientists, and those in the business environment.

Work is all around us and permeates everything we do and everyday activities. Not all work is justified, not all work is properly designed, or evaluated accurately, or integrated. A systems model will make work more achievable through better management. Work is defined as a process of performing a defined task or activity, such as research, development, operations, maintenance, repair, assembly, production, and so on. Very little is written on how to design, evaluate, justify, and integrate work. Using a comprehensive systems approach, this book facilitates a better understanding of work for the purpose of making it more effective and rewarding.

This textbook covers the processing of advanced composites and their various technologies, with special emphasis on the distinct characteristics of processability. The book covers the impact of different processing techniques on the performance and characteristics of the final product. Written with a didactic approach, the volume contains extensive illustrations and pedagogic features (including examples and exercises) to help the reader assess and correlate existing technologies. The book will be useful as a text in graduate courses in processing of polymers and composites and can additionally be used as a professional reference.

This book presents a selection of papers on advanced technologies for 3D printing and additive manufacturing, and demonstrates how these technologies have changed the face of direct, digital technologies for the rapid production of models, prototypes and patterns. Because of their wide range of applications, 3D printing and additive manufacturing technologies have sparked a powerful new industrial revolution in the field of manufacturing. The evolution of 3D printing and additive manufacturing technologies has changed design, engineering and manufacturing processes across such diverse industries as consumer products, aerospace, medical devices and automotive engineering. This book will help designers, R&D personnel, and practicing engineers grasp the latest developments in the field of 3D Printing and Additive Manufacturing.

Control of an impartial balance between risks and returns has become important for investors, and having a combination of financial instruments within a portfolio is an advantage. Portfolio management has thus become very important for reaching a resolution in high-risk investment opportunities and addressing the risk-reward tradeoff by maximizing returns and minimizing risks within a given investment period for a variety of assets. Metaheuristic Approaches to Portfolio Optimization is an essential reference source that examines the proper selection of financial instruments in a financial portfolio management scenario in terms of metaheuristic approaches. It also explores common measures used for the evaluation of risks/returns of portfolios in real-life situations. Featuring research on topics such as closed-end funds, asset allocation, and risk-return paradigm, this book is ideally designed for investors, financial professionals, money managers, accountants, students, professionals, and researchers.

Effective from 2008-09 session, U.P.T.U. has introduced the subject of manufacturing processes for first year engineering students of all streams. This textbook covers the entire course material in a distilled form.

Integrates the various disciplines of the science of health disparities in one comprehensive volume The Science of Health Disparities Research is an indispensable source of up-to-date information on clinical and translational health disparities science. Building upon the advances in health disparities research over the past decade, this authoritative volume informs policies and practices addressing the diseases, disorders, and gaps in health outcomes that are more prevalent in minority populations and socially disadvantaged communities. Contributions by recognized scholars and leaders in the field—featuring contemporary research, conceptual models, and a broad range of scientific perspectives—provide an interdisciplinary approach to reducing inequalities in population health, encouraging community engagement in the research process, and promoting social justice. In-depth chapters help readers better understand the specifics of minority health and health disparities while demonstrating the importance of advancing theory, refining measurement, improving investigative methods, and diversifying scientific research. In 26 chapters, the book examines topics including the etiology of health disparities research, the determinants of population health, research ethics, and research in African American, Asians, Latino, American Indian, and other vulnerable populations. Providing a unified framework on the principles and applications of the science of health disparities research, this important volume: Defines the field of health disparities science and suggests new directions in scholarship and research Explains basic definitions, principles, and concepts for identifying, understanding and addressing health disparities Provides guidance on both conducting health disparities research and translating the results Examines how social, historical and contemporary injustices may influence the health of racial and ethnic minorities Illustrates the increasing national and global importance of addressing health disparities Discusses population health training, capacity-building, and the transdisciplinary tools needed to advance health equity A significant contribution to the field, The Science of Health Disparities Research is an essential resource for students and basic and clinical researchers in genetics, population genetics, and public health, health care policymakers, and epidemiologists, medical students, and clinicians, particularly those working with minority, vulnerable, or underserved populations.

This book discusses the emerging research centred on using methanol- whose excellent fuel properties, easy production and relative compatibility with existing technology- make it attractive to researchers looking to alternative fuels to meet the rising energy demand. The volume is divided into broadly 4 parts which discuss various aspects of the proposed methanol economy and the technological advances in engine design for the utilisation of this fuel. This book will be of interest to researchers and policy makers interested in using methanol as the principal source of ready and stored energy in societal functioning.

This book, divided in two volumes, originates from Techno-Societal 2018: the 2nd International Conference on Advanced Technologies for Societal Applications, Maharashtra, India, that brings together faculty members of various engineering colleges to solve Indian regional relevant problems under the guidance of eminent researchers from various reputed organizations. The focus is on technologies that help develop and improve society, in particular on issues such as the betterment of differently abled people, environment impact, livelihood, rural employment, agriculture, healthcare, energy, transport, sanitation, water, education. This conference aims to help innovators to share their best practices or products developed to solve specific local problems which in turn may help the other researchers to take inspiration to solve problems in their region. On the other hand, technologies proposed by expert researchers may find applications in different regions. This offers a multidisciplinary platform for researchers from a broad range of disciplines of Science, Engineering and Technology for reporting innovations at different levels.

"This book brings together empirical research, theoretical concepts, and the various approaches in the design and discovery of new materials, highlighting optimization tools and soft computing methods"--

The book covers fundamental concepts, description, terminology, force analysis and methods of analysis and design. The emphasis in treating the machine elements is on methods and procedures that give the student competence in applying these to mechanical components in general. The book offers the students to learn to use the best available scientific understanding together with empirical information, good judgement, and often a degree of ingenuity, in order to produce the best product. Few unique articles e.g., chain failure modes, lubrication of chain drive, timing belt pulleys, rope lay selection, wire rope manufacturing methods, effect of sheave size etc., are included. Friction materials are discussed in detail for both wet and dry running with the relevant charts used in industry. Design of journal bearing is dealt exhaustively. Salient Features: " Compatible with the Machine Design Data Book (same author and publisher). " Thorough treatment of the requisite engineering mechanics topics. " Balance between analysis and design. " Emphasis on the materials, properties and analysis of the machine element. " Material, factor of safety and manufacturing method are given for each machine element. " Design steps are given for all important machine elements. " The example design problems and solution techniques are spelled out in detail. " Objective type, short answer and review problems are given at the end of each chapter. " All the illustrations are done with the help of suitable diagrams. " As per Indian Standards.

"This book examines the latest advances in next-generation manufacturing. It explores the basic and applied knowledge of additive manufacturing"--

Mechanical Operations, 1ETata McGraw-Hill EducationMechanical OperationsMechanical OperationsProceedings of International Conference in Mechanical and Energy TechnologyICMET 2019, IndiaSpringer Nature

Mechanical engineering, as its name suggests, deals with the mechanics of operation of mechanical systems. This is the branch of engineering which includes design, manufacturing, analysis and maintenance of mechanical systems. It combines engineering physics and mathematics principles with material science to design, analyse, manufacture and maintain mechanical systems. This book covers the field requires an understanding of core areas including thermodynamics, material science, manufacturing, energy conversion systems, power transmission systems and mechanisms. This book includes basic knowledge of various mechanical systems used in day to day life. My hope is that this book, through its careful explanations of concepts, practical examples and figures bridges the gap between knowledge and proper application of that knowledge.

Sustainable Procurement is an emerging concept in supply chain and operations management. Manufacturing industries have made improvements in moving from cost-based to quality-based, and customer-focused supply chain management strategies. This is becoming an integrated component in the supply chain system, with players becoming aware of the regulations and needs of the customer. It is imperative for production firms to look at the procurement activity as one of the strategic enablers for sustaining the business in the competitive global environment. This book will provide industries with an understanding of the concepts related to sustainable procurement policies and its implementation. Provides decision and theory development models in sustainable procurement supply chains Includes contributions in all three major analytics: descriptive, predictive, and perspectives in the context of sustainable procurement supply chain Discusses new business models with suppliers and opportunities for co-branding Covers how to develop new tools to measure and allocate the gains from sustainable practices among stakeholders Analyses the science of translating data into meaningful and actionable insights

The field of international business is dynamic, complex, and challenging, vulnerable to fast-breaking events such as economic shifts, political turmoil, and natural disasters. This concise and affordable textbook will help future international business executives acquire the skills to function effectively under these challenging conditions. "Basics of International Business" incorporates coverage of the ongoing turmoil in the world financial markets. It's designed to familiarize students with the external environments that affect international businesses, to show them how to recognize the processes in identifying potential foreign markets, and to help them understand the functional strategies that can be developed to succeed in this highly competitive environment. The text focuses on 'must-know' core concepts in international business. The concepts, theories, and techniques are organized around seven major topical areas: introduction and overview of international business; environmental variables of culture, politics, and economics; entry strategies for new markets and countries; international trade and foreign direct investments; integration of functional areas; specific functioning areas (marketing, finance, accounting, etc.); global outsourcing and its role in international operations. The text is filled with helpful charts, chapter summaries, exercises, and applied cases. A detailed instructor's manual including course outlines, classroom exercises, and a complete test bank is available to adopters on the MES website.

Written by experts from all over the world, the book comprises the latest applications of mathematical and models in food engineering and fermentation. It provides the fundamentals on statistical methods to solve standard problems associated with food engineering and fermentation technology. Combining theory with a practical, hands-on approach, this book covers key aspects of food engineering. Presenting cuttingedge information, the book is an essential reference on the fundamental concepts associated with food engineering.

This book comprises select peer-reviewed contributions from the 6th International Conference on Production and Industrial Engineering (CPIE – 2019). The volume focuses on latest research in the field of Industrial and Systems Engineering, and its allied areas. Articles on variety of topics such as Human Factors Engineering, Lean Manufacturing, Six Sigma, Logistics and Supply Chain Management, Operations Research, Quality Engineering, Measurement and Control, Reliability and Maintenance Engineering, Green Supply Chain Management, Modelling and Simulation, Sustainability, Technology Management, Agile and Flexible Manufacturing, Technology Management and Computer Aided Manufacturing are discussed in this book. Given the range of topics covered, the book will be useful for students, researchers, and professionals interested in different areas of Industrial and Systems Engineering.

Content analysis is one of the most important but complex research methodologies in the social sciences. In this thoroughly updated Second Edition of The Content Analysis Guidebook, author Kimberly Neuendorf provides an accessible core text for upper-level undergraduates and graduate students across the social sciences. Comprising step-by-step instructions and practical advice, this text unravels the complicated aspects of content analysis.

During the last two decades, computer and information technologies have forced great changes in the ways businesses manage operations in meeting the desired quality of products and services, customer demands, competition, and other challenges. The

Handbook of Computational Intelligence in Manufacturing and Production Management focuses on new developments in computational intelligence in areas such as forecasting, scheduling, production planning, inventory control, and aggregate planning, among others. This comprehensive collection of research provides cutting-edge knowledge on information technology developments for both researchers and professionals in fields such as operations and production management, Web engineering, artificial intelligence, and information resources management.

As understanding of the engineering design and configuration processes grows, the recognition that these processes intrinsically involve imprecise information is also growing. This book collects some of the most recent work in the area of representation and manipulation of imprecise information during the synthesis of new designs and selection of configurations. These authors all utilize the mathematics of fuzzy sets to represent information that has not-yet been reduced to precise descriptions, and in most cases also use the mathematics of probability to represent more traditional stochastic uncertainties such as uncontrolled manufacturing variations, etc. These advances form the nucleus of new formal methods to solve design, configuration, and concurrent engineering problems. Hans-Jurgen Sebastian Aachen, Germany Erik K. Antonsson Pasadena, California
ACKNOWLEDGMENTS We wish to thank H.-J. Zimmermann for inviting us to write this book. We are also grateful to him for many discussions about this new field Fuzzy Engineering Design which have been very stimulating. We wish to thank our collaborators in particular: B. Funke, M. Tharigen, K. Müller, S. Jarvinen, T. Goudarzi-Pour, and T. Kriese in Aachen who worked in the PROKON project and who elaborated some of the results presented in the book. We also wish to thank Michael J. Scott for providing invaluable editorial assistance. Finally, the book would not have been possible without the many contributions and suggestions of Alex Greene of Kluwer Academic Publishers. **1 MODELING IMPRECISION IN ENGINEERING DESIGN** Erik K. Antonsson, Ph.D., P.E.

With the increasing complexity and dynamism in today's product design and manufacturing, more optimal, robust and practical approaches and systems are needed to support product design and manufacturing activities. Multi-objective Evolutionary Optimisation for Product Design and Manufacturing presents a focused collection of quality chapters on state-of-the-art research efforts in multi-objective evolutionary optimisation, as well as their practical applications to integrated product design and manufacturing. Multi-objective Evolutionary Optimisation for Product Design and Manufacturing consists of two major sections. The first presents a broad-based review of the key areas of research in multi-objective evolutionary optimisation. The second gives in-depth treatments of selected methodologies and systems in intelligent design and integrated manufacturing. Recent developments and innovations in multi-objective evolutionary optimisation make Multi-objective Evolutionary Optimisation for Product Design and Manufacturing a useful text for a broad readership, from academic researchers to practicing engineers.

From fundamental concepts and theories to implementation protocols and cutting-edge applications, the Handbook of Mobile Systems Applications and Services supplies a complete examination of the evolution of mobile services technologies. It examines service-oriented architecture (SOA) and explains why SOA and service oriented computing (SOC) will pl

This book presents selected peer-reviewed papers from the International Conference on Mechanical and Energy Technologies, which was held on 7–8 November 2019 at Galgotias College of Engineering and Technology, Greater Noida, India. The book reports on the latest developments in the field of mechanical and energy technology in contributions prepared by experts from academia and industry. The broad range of topics covered includes aerodynamics and fluid mechanics, artificial intelligence, nonmaterial and nonmanufacturing technologies, rapid manufacturing technologies and prototyping, remanufacturing, renewable energies technologies, metrology and computer-aided inspection, etc. Accordingly, the book offers a valuable resource for researchers in various fields, especially mechanical and industrial engineering, and energy technologies.

This book serves a unique purpose within the world of engineering. It covers the economics of modern manufacturing and focuses on examining the techniques and methods from a cost perspective. It can be used by both students and professionals alike. The book is useful to students in industrial engineering and mechanical engineering programs as a primary textbook for engineering economy, production costing, and related courses. It can also be used by MBA students specializing in production management and finance. Specific topics of coverage include the computation of direct and indirect cost for manufacturing operations, including a variety of overhead operations in such an environment. Costing of manufacturing methods such as casting, forging, turning, milling, and welding is addressed along with inventory analysis. The book also includes fundamental concepts such as cash flow analysis, present and future worth analysis, and rate of return analysis. Related topics such as equipment replacement, comparison of alternatives, depreciation, buy versus make decisions, interest factors, and equivalence are covered in detail as well. **Key Features:** Addresses the costing of manufacturing operations through a step-by-step problem solving approach. Includes traditional engineering topics such as cash flow analysis, present worth, future worth analysis, replacement analysis, equivalence, and depreciation are addressed in depth as well. Offers a variety of solved examples that can be used to develop a thorough understanding of the underlying concept. Provides a number of practice problems at the end of each chapter. Presents a large number of figures and tables in almost every chapter, to assist in visualizing the concept and apply it successfully. **Production Economics: Evaluating Costs of Operations in Manufacturing and Service Industries** focuses on rigorous problem solving. Each topic is presented succinctly along with numerous solved examples, along with a large number of end-of-chapter practice problems where applicable. A web application involves many specialists, but it takes people in web ops to ensure that everything works together throughout an application's lifetime. It's the expertise you need when your start-up gets an unexpected spike in web traffic, or when a new feature causes your mature application to fail. In this collection of essays and interviews, web veterans such as Theo Schlossnagle, Baron Schwartz, and Alistair Croll offer insights into this evolving field. You'll learn stories from the trenches--from builders of some of the biggest sites on the Web--on what's necessary to help a site thrive. Learn the skills needed in web operations, and why they're gained through experience rather than schooling Understand why it's important to gather metrics from both your application and infrastructure Consider common approaches to database architectures and the pitfalls that come with increasing scale Learn how to handle the human side of outages and degradations Find out how one company avoided disaster after a huge traffic deluge Discover what went wrong after a problem occurs, and how to prevent it from happening again Contributors include: John Allspaw Heather Champ Michael Christian Richard Cook Alistair Croll Patrick Debois Eric Florenzano Paul Hammond Justin Huff Adam Jacob Jacob Loomis Matt Massie Brian Moon Anoop Nagwani Sean Power Eric Ries Theo Schlossnagle Baron Schwartz Andrew Shafer

This book addresses a range of complex issues associated with condition monitoring (CM), fault diagnosis and detection (FDD) in smart buildings, wide area monitoring (WAM), wind energy conversion systems (WECSs), photovoltaic (PV) systems, structures, electrical systems, mechanical systems, smart grids, etc. The book's goal is to develop and combine all advanced nonintrusive CMFD approaches on a common platform. To do so, it explores the main components of various systems used for CMFD purposes. The content is divided into three main parts, the first of which provides a brief introduction, before focusing on the state of the art and major research gaps in the area of CMFD. The second part covers the step-by-step implementation of novel soft computing applications in CMFD for electrical and mechanical systems. In the third and final part, the simulation codes for each chapter are included in an extensive appendix to support newcomers to the field.

This book comprises select proceedings of the International Conference on Future Learning Aspects of Mechanical Engineering (FLAME 2018). The book discusses different topics of industrial and production engineering such as sustainable manufacturing systems, computer-aided engineering, rapid prototyping, manufacturing management and automation, metrology, manufacturing process optimization, casting, welding, machining, and machine tools. The contents of this book will be useful for researchers as well as professionals.

Sustainable management of natural resources is an urgent need, given the changing climatic conditions of Earth systems. The ability to monitor natural resources precisely and accurately is increasingly important. New and advanced remote sensing tools and techniques are continually being developed to monitor and manage natural resources in an effective way. Remote sensing technology uses electromagnetic sensors to record, measure and monitor even small variations in natural resources. The addition of new remote sensing datasets, processing techniques and software makes remote sensing an exact and cost-effective tool and technology for natural resource monitoring and management. *Advances in Remote Sensing for Natural Resources Monitoring* provides a detailed overview of the potential applications of advanced satellite data in natural resource monitoring. The book determines how environmental and - ecological knowledge and satellite-based information can be effectively combined to address a wide array of current natural resource management needs. Each chapter covers different aspects of remote sensing approach to monitor the natural resources effectively, to provide a platform for decision and policy. This important work: Provides comprehensive coverage of advances and applications of remote sensing in natural resources monitoring Includes new and emerging approaches for resource monitoring with case studies Covers different aspects of forest, water, soil- land resources, and agriculture Provides exemplary illustration of themes such as glaciers, surface runoff, ground water potential and soil moisture content with temporal analysis Covers blue carbon, seawater intrusion, playa wetlands, and wetland inundation with case studies Showcases disaster studies

The book gathers papers addressing state-of-the-art research in all areas of Information and Communication Technologies and their applications in intelligent computing, cloud storage, data mining and software analysis. It presents the outcomes of the third International Conference on Information and Communication Technology for Intelligent Systems, which was held on April 6–7, 2018, in Ahmedabad, India. Divided into two volumes, the book discusses the fundamentals of various data analytics and algorithms, making it a valuable resource for researchers' future studies.

Artificial intelligence (AI) has grown in presence in asset management and has revolutionized the sector in many ways. It has improved portfolio management, trading, and risk management practices by increasing efficiency, accuracy, and compliance. In particular, AI techniques help construct portfolios based on more accurate risk and return forecasts and more complex constraints. Trading algorithms use AI to devise novel trading signals and execute trades with lower transaction costs. AI also improves risk modeling and forecasting by generating insights from new data sources. Finally, robo-advisors owe a large part of their success to AI techniques. Yet the use of AI can also create new risks and challenges, such as those resulting from model opacity, complexity, and reliance on data integrity.

This book presents the select proceedings of the International Conference on Advances in Sustainable Technologies (ICAST 2020), organized by Lovely Professional University, Punjab, India. This book caters to the industrial and production engineering aspects. It covers the industrial and production engineering areas such as sustainable manufacturing systems, decision sciences, supply chain management, Just in Time (JIT), logistics and supply chain management, rapid prototyping and reverse engineering, quality control and reliability, six sigma, smart manufacturing, time and motion study, six sigma, ergonomics, operations management, manufacturing management, metrology, manufacturing process optimization, machining and machine tools, casting, welding, and forming. This book will be useful for industry professionals and researchers working in the area of mechanical engineering, especially industrial and production engineering.

This book comprises the select proceedings of the 2nd International Conference on Future Learning Aspects of Mechanical Engineering (FLAME) 2020. In particular, this volume discusses different topics of industrial and production engineering such as sustainable manufacturing processes, logistics, Industry 4.0 practices, circular economy, lean six sigma, agile manufacturing, additive manufacturing, IoT and Big Data in manufacturing, 3D printing, simulation, manufacturing management and automation, surface roughness, multi-objective optimization and modelling for production processes, developments in casting, welding, machining, and machine tools. The contents of this book will be useful for researchers as well as industry professionals.

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