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Engineering Catalogue

July - December 2025

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Contents

Civil Engineering	2
Electrical Engineering	10
Environmental Engineering	24
Ergonomics & Industrial Engineering	33
Materials & Chemical Engineering	48
Mechanical Engineering	59
Index	70

Analysis of Machine Elements Using SOLIDWORKS Simulation 2025



Shahin S. Nudehi , John R. Steffen

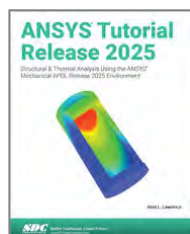
Analysis of Machine Elements Using SOLIDWORKS Simulation 2025 is written primarily for first-time SOLIDWORKS Simulation 2025 users who wish to understand finite element analysis capabilities applicable to stress analysis of mechanical elements. The focus of examples is on problems commonly found in introductory, undergraduate, Design of Machine Elements or similarly named courses.

SDC Publications
August 2025 : 550pp
Pb: 978-1-630-57711-7 : \$90

* For full contents and more information, visit: www.routledge.com/9781630577117

ANSYS Tutorial Release 2025

Structural & Thermal Analysis Using the ANSYS Mechanical APDL Release 2025 Environment



Kent L. Lawrence

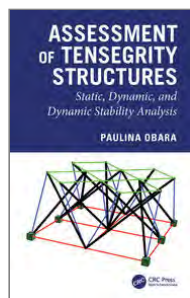
The eight chapters in this book introduce you to effective finite element problem solving by demonstrating the use of the comprehensive ANSYS FEM Release 2025 software in a series of step-by-step tutorials. The tutorials are suitable for either professional or student use. The concise treatment includes examples of truss, beam and shell elements completely updated for use with ANSYS APDL 2025.

SDC Publications
May 2025 : 200pp
Pb: 978-1-630-57730-8 : \$78

* For full contents and more information, visit: www.routledge.com/9781630577308

Assessment of Tensegrity Structures

Static, Dynamic, and Dynamic Stability Analysis



Paulina Obara

Dynamic stability analysis enables the determination of unstable regions, which adversely affect a tensegrity structure's durability. As internal forces hold the elements in stable equilibrium, the initial prestress crucially affects the distribution of unstable regions. First, basic theory and a geometrically non-linear model, and the methods used to evaluate the behavior of tensegrity structures are explained, before a broad spectrum of different planar and spatial design solutions is considered, from basic 2D structures to more complex tensegrity structures such as domes, towers, and plates.

CRC Press
June 2025 : 208pp
Hb: 978-1-032-87468-5 : \$210
eBook: 978-1-003-53441-9

* For full contents and more information, visit: www.routledge.com/9781032874685

2ND EDITION

Automated Driving and Driver Assistance Systems



Tom Denton Technical Consultant, Institute of the Motor Industry (IMI), UK, **Hayley Pells** Avia Sports Cars Ltd, UK, **Grahame Pells**

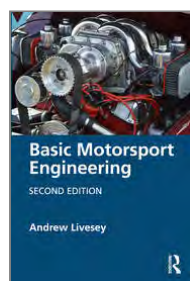
Automated vehicles are poised to revolutionise transportation, yet Advanced Driver Assistance Systems represent the cutting-edge technology of today. Written in accessible language, this breaks down complex concepts for automotive students at both further education and undergraduate levels, as well as for practising technicians and professionals in the automotive industry, and highlights the integration of existing systems in modern vehicles. Written in line with the UK's Autonomous Vehicles Act (2024) this heavily revised new edition offers practical insights and case studies for an international audience.

Routledge
August 2025 : 152pp
Pb: 978-1-032-93606-2 : \$66.99
Hb: 978-1-032-93953-7 : \$140

* For full contents and more information, visit: www.routledge.com/9781032936062

2ND EDITION

Basic Motorsport Engineering



Andrew Livesey

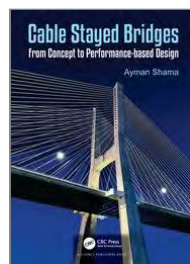
Are you just starting out on a career in motorsport, whether this is your first vocational choice, or a second career looking to be involved in something exciting? Andrew is a practising lecturer and motorsport engineer who has trained race engineers who are working for the major motorsport teams, including McLaren and Ferrari, and their supply chains. There are hundreds of different types of jobs in motorsport, this book will help you understand both the technology and the terminology so that you can progress your career quickly, using IMI or EAL qualifications at Level 2. This book is followed by Advanced Motorsport Engineering, also written by Andrew.

Routledge
November 2025 : 224pp
Pb: 978-1-032-84727-6 : \$59.95
Hb: 978-1-032-84730-6 : \$160

* For full contents and more information, visit: www.routledge.com/9781032847276

Cable Stayed Bridges

From Concept to Performance-based Design



Ayman Shama

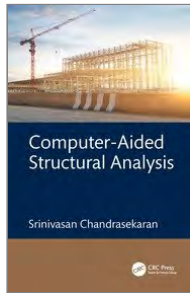
The evolution of cable-stayed bridge design is described in this book with an emphasis on the significant advancements over the last two decades. The fundamentals of cable-stayed bridge analysis, design, construction, and maintenance are also covered. Specific issues such as aerodynamic stability and structural health monitoring are explained. The performance-based design approach is given particular consideration. The method's application to cable-stayed bridge seismic and fire safety design is also discussed.

CRC Press
May 2025 : 486pp
Hb: 978-1-138-55789-5 : \$200
eBook: 978-1-315-15113-7

* For full contents and more information, visit: www.routledge.com/9781138557895

Computer-Aided Structural Analysis

Integration Techniques and Case Studies



Srinivasan Chandrasekaran Indian Institute of Technology Madras, India

Computer-Aided Structural Analysis offers a novel and comprehensive approach to teaching advanced structural analysis using computer programming, specifically through MATLAB®. By focusing on developing fundamental programming skills, this book encourages learners to move beyond the "black box" mentality of commercial software. The inclusion of real-world examples, clear explanations, and practical tutorials ensures students gain not only theoretical knowledge but also the confidence to design their own programs for specialized applications.

CRC Press
September 2025 : 296pp
Hb: 978-1-041-07159-4 : \$120

* For full contents and more information, visit: www.routledge.com/9781041071594

Design of Fibre-Polymer Composite Structures

Commentary to European Technical Specification CEN/TS 19101: 2022



Edited by **João R. Correia** Instituto Superior Técnico, Lisbon, Portugal, **Thomas Keller**, **Jan Knippers**, **J. Toby Mottram**, **Carlo Paulotto**, **José Sena-Cruz** University of Minho, Portugal, **Luigi Ascione**

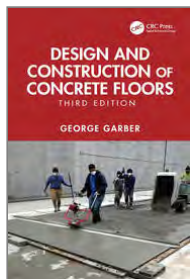
The European Technical Specification CEN/TS 19101:2022, 'Design of Fibre-Polymer Composite Structures', constitutes a milestone for the use of fibre-polymer composites in civil engineering works. This Open Access book comprises around 400 background reports covering the most relevant paragraphs of the Technical Specification, providing supplementary information to the Technical Specification, justifying the options that were followed, and introducing references that were considered. It is ideal for professional engineers working in structural design, as well as a source of consensus information for graduate students and researchers in the area.

CRC Press
June 2025 : 890pp
Hb: 978-1-032-70683-2 : \$260

* For full contents and more information, visit: www.routledge.com/9781032706832

3RD EDITION

Design and Construction of Concrete Floors



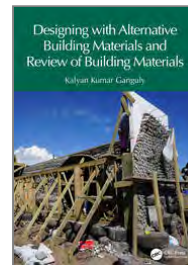
George Garber

Design and Construction of Concrete Floors recognizes that a good floor must do far more than support its intended loads. As well as covering structural design this addresses crack control, flatness, wear resistance, slip resistance, and suitability for floor coverings. This thoroughly updated edition gives more on polished concrete, limestone cement, and jointless floors for structural engineers, architects, and builders worldwide.

CRC Press
June 2025 : 332pp
Hb: 978-1-032-93282-8 : \$125
eBook: 978-1-003-56595-6

* For full contents and more information, visit: www.routledge.com/9781032932828

Designing with Alternative Building Materials and Review of Building Materials



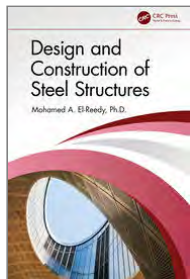
Kalyan Kumar Ganguly

This book explains possible alternative building materials along with the test results including review of common building materials, earth engineering and construction, suitable soil, soil mechanics and production, masonry construction, rammed earth construction, use of ferrocement units for projects, and fibre reinforced concrete for projects and applications. Other items such as project management, computer aided work, education, training for engineers, construction work, quality control, safety aspect, communication, applications, and case studies etc. have been covered with construction photographs. This book is aimed at professionals in civil and construction engineering.

CRC Press
June 2025 : 704pp
Hb: 978-1-032-33318-2 : \$200

* For full contents and more information, visit: www.routledge.com/9781032333182

Design and Construction of Steel Structures



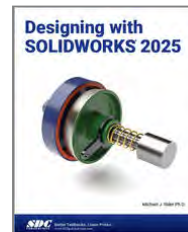
Mohamed A. El-Reedy

This book examines the design of steel structures and defines the approaches for various design codes, including AISC, BS, and EC3. It also discusses the theoretical background for the design of different structural members and provides illustrative examples of each, as well as structural connections, base plates with anchor bolt designs, and more. In addition, best practices for on-site construction methods including receipt of materials, and quality control and assurance, and inspection are also presented. Both non-destructive testing and destructive testing methods are presented.

CRC Press
July 2025 : 404pp
Hb: 978-1-032-29524-4 : \$140

* For full contents and more information, visit: www.routledge.com/9781032295244

Designing with SOLIDWORKS 2025



Michael J. Rider

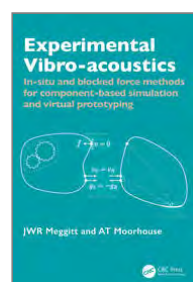
Designing with SOLIDWORKS 2025 is a thoughtfully crafted guide that presents you with a basic introduction to engineering design while simultaneously providing you with a strong foundation using SOLIDWORKS. This textbook goes beyond merely teaching the functionalities of SOLIDWORKS 2025; it underscores the pivotal role of SOLIDWORKS in modern engineering and design, making it an essential skill for aspiring engineers and designers. The book's blend of practical skills and theoretical knowledge prepares you for real-world challenges, fostering innovation and problem-solving skills.

SDC Publications
May 2025 : 350pp
Pb: 978-1-630-57721-6 : \$89.99

* For full contents and more information, visit: www.routledge.com/9781630577216

Experimental Vibro-acoustics

In-situ and blocked force methods for component-based simulation and virtual prototyping



Andrew Moorhouse University of Salford, UK, **Joshua Meggitt** University of Salford, UK

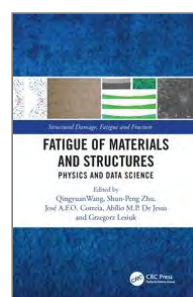
This first comprehensive practical engineering guide to using vibro-acoustic data in a component-based approach to the analysis, simulation, virtual prototyping and 'digital twinning' of machines and mechanical systems. It gives a full set of practical and theoretical tools to characterise, combine and recombine components into virtual assemblies and predict vibration and audible sound, including the in situ blocked force method. Principles of sources, components, assemblies and interfaces are followed by techniques of measurement, data processing and uncertainties, then case studies and a detailed example for design engineers across transport, industrial and building engineering.

CRC Press
August 2025 : 484pp
Hb: 978-1-032-47971-2 : \$220

* For full contents and more information, visit: www.routledge.com/9781032479712

Fatigue of Materials and Structures

Physics and Data Science



Edited by **Qingyuan Wang** Sichuan University, China, **Shun-Peng Zhu** University of Electronic Science and Technology of China, China, **José Correia** University of Porto, Portugal, **Abílio De Jesus** University of Porto, Portugal, **Grzegorz Lesiuk** Wroclaw University of Science and Technology, Poland

Series: Structural Damage, Fatigue and Fracture

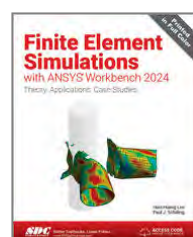
Failure mechanisms and modeling in engineering materials and structures are critical for managing aging structures, and directly affect their sustainability. Key theories and methods of fatigue failure are discussed in detail. Fatigue damage accumulation, crack initiation and crack growth analysis are presented with a focus on mechanical understanding and risk management for design, maintenance, and operation. Some recent advancements are included, such as fatigue of additive manufactured metals and advanced materials, with data analytics and AI, which could potentially transform fatigue analysis and reliability design.

CRC Press
May 2025 : 494pp
Hb: 978-1-032-49755-6 : \$220
eBook: 978-1-003-40512-2

* For full contents and more information, visit: www.routledge.com/9781032497556

Finite Element Simulations with ANSYS Workbench 2024

Theory, Applications, Case Studies



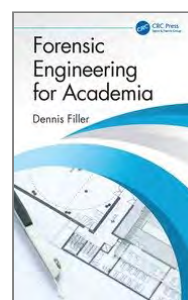
Huei-Huang Lee, **Paul J. Schilling**

Finite Element Simulations with ANSYS Workbench 2024 is a comprehensive and easy to understand workbook. Printed in full color, it utilizes rich graphics and step-by-step instructions to guide you through learning how to perform finite element simulations using ANSYS Workbench. This book is designed to be used mainly as a textbook for undergraduate and graduate students.

SDC Publications
May 2025 : 600pp
Pb: 978-1-630-57723-0 : \$97.99

* For full contents and more information, visit: www.routledge.com/9781630577230

Forensic Engineering for Academia



Dennis Filler

Most engineering curricula lacks forensic engineering content, particularly the role of science in investigation and assessment, engineering failures and cause and effect analysis, and jurisprudence as it relates to engineering. Forensic Engineering for Academia address these and other important aspects of forensic engineering education.

CRC Press
November 2025 : 168pp
Hb: 978-1-041-03320-2 : \$110

* For full contents and more information, visit: www.routledge.com/9781041033202

2ND EDITION

FRP-Strengthened Metallic Structures



Xiao-Ling Zhao Hong Kong Polytechnic University, Hong Kong, **Lili Hu** Shanghai Jiao Tong University, China

FRP offers a high strength to weight ratio, excellent resistance to corrosion and environmental degradation, cost effectiveness and durability. This new edition is overhauled throughout, to capture the latest world-wide research for a comprehensive treatment of the behavior and design of FRP-strengthened metallic structures. It gives a new chapter on enhancement of dynamic performance under large deformation cyclic loading, impact and blast loading, and provides new material on CNT modified epoxy, shear and torsion, CFRP-strengthening, and fatigue design, strengthening and connections.

CRC Press
September 2025 : 288pp
Hb: 978-1-032-59521-4 : \$120

* For full contents and more information, visit: www.routledge.com/9781032595214

Granular Lunar Soils



Edited by **Masami Nakagawa** Colorado School of Mines, USA

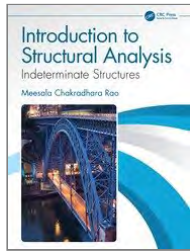
Granular Lunar Soils outlines the unique characteristics and challenges of lunar soils and dust, while offering insights into the behaviour of an extreme type of granular material. Bringing together key experts on the subject, this book is a gateway to ground-breaking work in further understanding lunar regolith, the lunar environment, and utilization of lunar materials.

CRC Press
October 2025 : 288pp
Hb: 978-1-032-43007-2 : \$220

* For full contents and more information, visit: www.routledge.com/9781032430072

Introduction to Structural Analysis

Indeterminate Structures



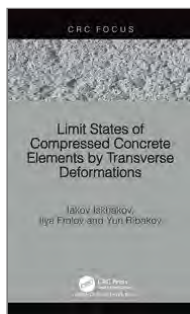
Meesala Chakradhara Rao

This textbook provides a comprehensive analysis of indeterminate structures by both force and displacement methods including the basics, their usage in the analysis of beams, rigid joint and pin joint plane frames. Major coverage includes analysis of beams, rigid joint plane frames, and pin joint plane frames by various force and displacement methods followed by analysis of multi-storey frames via approximate methods, influence lines for indeterminate structures and two hinged arches. Each chapter contains introduction, methodology, necessary derivations/equations, and examples. This book is aimed at undergraduate and senior undergraduate students in structural and civil engineering.

CRC Press
October 2025 : 400pp
Pb: 978-1-032-88910-8 : \$140
Hb: 978-1-032-91378-0 : \$350

* For full contents and more information, visit: www.routledge.com/9781032889108

Limit States of Compressed Concrete Elements by Transverse Deformations



Iakov Iskhakov Ariel University, Israel, **Ilya Frolov** , **Yuri Ribakov** Ariel University, Israel

The book deals with experimental and theoretical investigations, forming a basis for design of effective compressed concrete elements by using minimum empirical coefficients. It is shown that transverse deformations can be used as an additional ultimate limit state for such elements. The proposed approach allows also achieving high accuracy of compressed concrete elements design for high strength concrete elements and their more effective performance.

CRC Press
June 2025 : 118pp
Hb: 978-1-032-73891-8 : \$160

* For full contents and more information, visit: www.routledge.com/9781032738918

Machining Simulation Using SOLIDWORKS CAM 2025



Kuang-Hua Chang

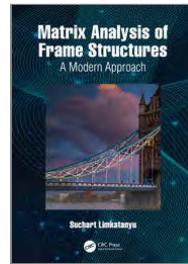
This book will teach you all the important concepts and steps used to conduct machining simulations using SOLIDWORKS CAM. SOLIDWORKS CAM is a parametric, feature-based machining simulation software offered as an add-in to SOLIDWORKS. It integrates design and manufacturing in one application, connecting design and manufacturing teams through a common software tool that facilitates product design using 3D solid models. This book should serve well for self-learners. A self-learner should have basic physics and mathematics background, preferably a bachelor or associate degree in science or engineering.

SDC Publications
August 2025 : 300pp
Pb: 978-1-630-57724-7 : \$80

* For full contents and more information, visit: www.routledge.com/9781630577247

Matrix Analysis of Frame Structures

A Modern Approach



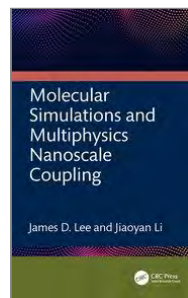
Suchart Limkatanyu

Advancing computer technology has created new opportunities for sophisticated assessment and analysis of structural performance, especially using matrix and finite element methods. This textbook for senior undergraduates and graduate students covers the fundamentals required in any approach to structural analysis, strong form, equilibrium, and compatibility, and with an introduction to virtual work principles to express equilibrium and compatibility conditions of a frame structure, making use of Tonti diagrams. It then sets out in more detail the matrix approach to structural analysis, including construction of the master stiffness matrix.

CRC Press
August 2025 : 280pp
Hb: 978-1-032-97792-8 : \$170

* For full contents and more information, visit: www.routledge.com/9781032977928

Molecular Simulations and Multiphysics Nanoscale Coupling



James D. Lee George Washington University, USA, **Jiaoyan Li** University at Buffalo, USA

This focuses on the theoretical foundations and numerical methods for the studying the behavior of materials and the coupling of mechanical, thermal, and electromagnetic fields at the nanoscale. It covers the Principle of Objectivity, the coupling of mechanics, thermal science, and electromagnetics, it presents Sequential and Concurrent Multiscale Modeling and CGMD to apply multiscale modeling to the behaviors of materials at nanoscale. It applies analytical and numerical simulation to fracture mechanics at the microscopic level. It suits advanced undergraduate and graduate engineering courses for solid mechanics, fluid mechanics, material science, and chemical engineering.

CRC Press
August 2025 : 200pp
Hb: 978-1-032-55678-9 : \$125

* For full contents and more information, visit: www.routledge.com/9781032556789

Motion Simulation and Mechanism Design with SOLIDWORKS Motion 2025



Edited by **Kuang-Hua Chang**

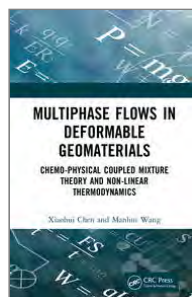
Motion Simulation and Mechanism Design with SOLIDWORKS Motion 2025 is written to help you become familiar with SOLIDWORKS Motion, an add-on module of the SOLIDWORKS software family. This book covers the basic concepts and frequently used commands required to advance readers from a novice to intermediate level in using SOLIDWORKS Motion.

SDC Publications
July 2025 : 200pp
Pb: 978-1-630-57713-1 : \$84

* For full contents and more information, visit: www.routledge.com/9781630577131

Multiphase Flows in Deformable Geomaterials

Chemo-physical Coupled Mixture Theory and Nonlinear Thermodynamics



Xiaohui Chen University of Leeds, UK, **Manhui Wang** University of Liverpool, UK

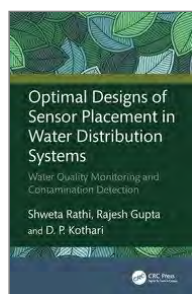
Multiscale coupling of multiphase flow and multicomponents within a deformable porous medium is complex and interdisciplinary. Chemo-physical coupled mixture theory and non-linear thermodynamics processes can be used to derive multi-phase transport equations and mechanics. This addresses challenges in existing multiscale coupling theory, and brings together physics and chemistry within the realm of thermodynamics. This book is particularly addressed to geotechnical and geoenvironmental engineering. It covers hydro-mechanical coupling, unsaturated hydro-mechanical-chemical coupling, thermo-hydro-mechanical coupling and thermo-hydrmechanical-chemical coupling.

CRC Press
July 2025 : 128pp
Hb: 978-0-367-34306-4 : \$220

* For full contents and more information, visit: www.routledge.com/9780367343064

Optimal Designs of Sensor Placement in Water Distribution Systems

Water Quality Monitoring and Contamination Detection



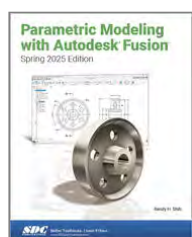
Shweta Rathi Assistant Prof, Civil Eng, NIT, Kurukshetra, **Rajesh Gupta** Professor, HAG, Civil Eng Dep, Nagpur, **D. P. Kothari**

The dual purpose of regular monitoring and contaminant event detection in the water distribution systems (WDSs) can be achieved through sensors that can monitor general water quality constituents such as pH, residual chlorine, conductivity, temperature etc. This book details different sensor placement parameters considered for contamination detection and regular/routine water quality monitoring in WDSs and their evaluations. It covers Genetic Algorithm based methodology selecting specified number of optimal sensor locations using combined weighted objectives. Applications to different pressure deficient systems and intermittent systems are explained as part of case study in India.

CRC Press
September 2025 : 328pp
Hb: 978-1-032-71398-4 : \$160

* For full contents and more information, visit: www.routledge.com/9781032713984

Parametric Modeling with Autodesk Fusion (Spring 2025 Edition)



Randy Shih

Parametric Modeling with Autodesk Fusion contains a series of fourteen tutorial style lessons designed to introduce Autodesk Fusion, solid modeling and parametric modeling techniques and concepts. This book introduces Autodesk Fusion on a step-by-step basis, starting with constructing basic shapes, all the way through to the creation of assembly drawings and 3D printing your own designs. This book takes a hands on, exercise intensive approach to all the important parametric modeling techniques and concepts. Each lesson introduces a new set of commands and concepts, building on previous lessons.

SDC Publications
May 2025 : 432pp
Pb: 978-1-630-57729-2 : \$92

* For full contents and more information, visit: www.routledge.com/9781630577292

2ND EDITION

Plasticity

Fundamentals and Applications



P.M. Dixit, **U.S. Dixit**

This book covers the fundamentals of the elastic-plastic deformation including stress, strain, constitutive relations, fracture, anisotropy and contact problems along with discussion of updated Lagrangian and Eulerian formulations. Second edition includes new material on Thermal effects in Plasticity and an introduction to crystal plasticity with review of all the chapters including more solved examples and solutions manual. This textbook is aimed at senior undergraduate and graduate students in mechanics and mechanical engineering.

CRC Press
June 2025 : 644pp
Hb: 978-1-032-38399-6 : \$210
eBook: 978-1-003-34487-2

* For full contents and more information, visit: www.routledge.com/9781032383996

2ND EDITION

Principles of Reinforced Concrete Design



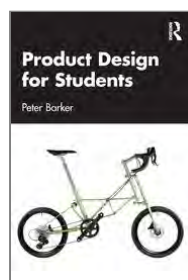
Mete A. Sozen Purdue University, West Lafayette, Indiana, USA, **Toshikatsu Ichinose** Nagoya Institute of Technology, Japan, **Santiago Pujol** Purdue University, West Lafayette, Illinois, USA

This new edition presents a mixture of fundamentals along with practical methods and provides the basic concepts required for designing reinforced concrete (RC) structures, emphasizing principles based on mechanics, experience, and experimentation, while encouraging practitioners to consult their local building codes. This new edition includes updated material on slabs, ranging from pragmatic recommendations to detailed solutions based on mechanics and geometry. New examples, illustrations, and exercises have also been added to aid instructors and students. SI units have also been added to help broaden the reach of the book's coverage.

CRC Press
October 2025 : 366pp
Hb: 978-1-032-82682-0 : \$140

* For full contents and more information, visit: www.routledge.com/9781032826820

Product Design for Students



Peter Barker University of West of England, UK

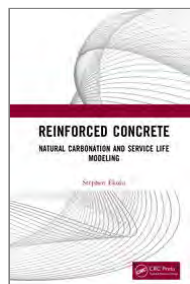
This covers the concepts and processes of professional product design through its life from the design concept and design for manufacture, with concept generation techniques, design process methodologies, the use of design thinking, user centred design and co-design, sustainable production, materials and manufacturing process selection, quality control, design for recycling, marketing and distribution. With case studies from transport design, consumer product design and service design, and the rudiments of calculation to 'feasibility study' level and 'stress testing' product design innovations. For year one undergraduate, Further Education, T level and A level students.

Routledge
October 2025 : 256pp
Pb: 978-1-032-63118-9 : \$42.99
Hb: 978-1-032-63120-2 : \$115

* For full contents and more information, visit: www.routledge.com/9781032631189

Reinforced Concrete

Natural Carbonation and Service Life Modeling



Stephen Ekelu Nelson Mandela University, South Africa

Carbonation and corrosion of reinforced concrete structures is the most widespread durability problem affecting service life and it underscores the need to develop quantitative engineering methods. This book promulgates Natural Carbonation Prediction (NCP) model comprising experiments, data mining and analyses, along with mathematical formulations and refinements. It initially delves into fundamental concepts on corrosion of reinforced concrete before employing approaches to service life design based on the applicative and practical stochastic methods supported by independent data. This book is aimed at graduate students and researchers in civil engineering and concrete technology.

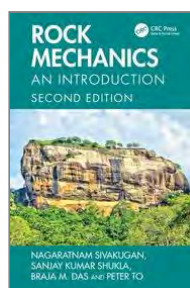
CRC Press
October 2025 : 128pp
Hb: 978-1-041-08350-4 : \$99.99

* For full contents and more information, visit: www.routledge.com/9781041083504

2ND EDITION

Rock Mechanics

An Introduction



Nagaratnam Sivakugan James Cook University, Queensland, Australia, **Sanjay Kumar Shukla** Edith Cowan University, Western Australia, **Braja M. Das**, **Peter To**

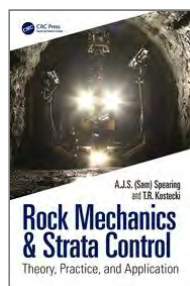
Rock mechanics is a multidisciplinary specialised subject in mining, geological engineering, mining, tunnelling, as well as geotechnical engineering. This textbook is primarily for students at graduate level who are facing careers as professional geotechnical engineers. It introduces rock mechanics fundamentals in a simple way with a strong practical bias, assuming no prior knowledge in the subject, and can also suit undergraduates and civil, mining, petroleum, and geological engineering professionals. This new edition brings in a completely new chapter on tunnelling as well as more on numerical analysis and software, and sections on slope failure mechanisms and petroleum geology.

CRC Press
October 2025 : 256pp
Hb: 978-1-032-71468-4 : \$125

* For full contents and more information, visit: www.routledge.com/9781032714684

Rock Mechanics & Strata Control

Theory, Practice, and Application



A.J.S. (Sam) Spearing Great Basin College, Elko, Nevada, **T.R. (Todd Ray) Kostecki**

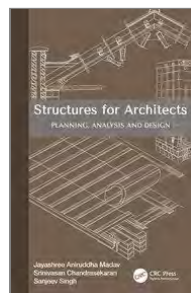
Rock Mechanics & Strata Control: Theory, Practice, and Application serves as a handbook that examines many of the fundamental and practical aspects of rock mechanics and strata control needed to help ensure safe and effective surface and underground mining. Clearly written and comprehensive in scope, the book includes numerous worked examples to elaborate on how to interpret and use the rock mechanics and support principles presented. It also includes fundamental coverage of major aspects of the topic that students and practitioners would find useful.

CRC Press
September 2025 : 472pp
Hb: 978-1-032-70378-7 : \$140

* For full contents and more information, visit: www.routledge.com/9781032703787

Structures for Architects

Planning, Analysis and Design



Jayashree Aniruddha Madav, **Srinivasan Chandrasekaran** University of Naples Federico II, Italy, **Sanjeev Singh**

Structures for Architects: Planning, Analysis and Design explains the basics of structural systems to help architects conceive the structural form and analyze and design in a comprehensive manner. The objective is not to explain the structural analysis and design of complex systems in detail, but to explain analysis and design of structural members in a simple and elementary approach. Presenting basic concepts in a simple manner, the book deals with the presentation of structural systems used in the construction of public buildings.

CRC Press
August 2025 : 232pp
Hb: 978-1-032-94698-6 : \$140

* For full contents and more information, visit: www.routledge.com/9781032946986

Temperature Development in Early Age Concrete Elements

Fundamentals, Prediction and Control



Yunus Ballim

Series: Modern Concrete Technology

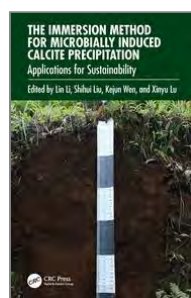
This shows how to predict time-temperature profiles in large concrete elements, resulting from the heat generated by the hydration of cement during the early stages of concrete construction. It explores the concrete materials and environmental parameters that are likely to influence the evolution and flow of heat and related temperature development, and computational finite-difference modelling of temperature development in concrete, together with a number of case-studies offering a rational approach to predicting temperature development in concrete, and adjustments of design and construction approaches to give improved serviceability and durability.

CRC Press
September 2025 : 184pp
Hb: 978-1-032-74922-8 : \$160

* For full contents and more information, visit: www.routledge.com/9781032749228

The Immersion Method for Microbially Induced Calcite Precipitation:

Applications for Sustainability



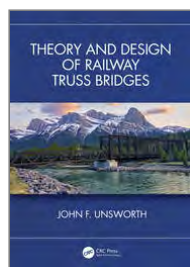
Edited by Lin Li, Shihui Liu, Kejun Wen, Xinyu Lu

The Immersion Method for Microbially Induced Calcite Precipitation: Applications for Sustainability comprehensively explores the synergy between microbiology and engineering, focusing on MICP and its applications in material improvement and environmental remediation. Highlighting the immersion method, the book elucidates MICP's ability to enhance mechanical properties uniformly throughout treated materials, offering a sustainable alternative for various engineering challenges.

CRC Press
July 2025 : 408pp
Hb: 978-1-032-85739-8 : \$140

* For full contents and more information, visit: www.routledge.com/9781032857398

Theory and Design of Railway Truss Bridges



John F. Unsworth Canadian Pacific Railway, Calgary, Canada

Railroad bridges are a critical component of the infrastructure and economy of many countries, and many of these bridges are nearing the end of their useful service life. Theory and Design of Railway Truss Bridges provides comprehensive coupled information regarding the structural analysis and design of steel railway truss spans. Most books cover either analysis or design of structures, but none cover both the analysis and design of railway trusses.

CRC Press
June 2025 : 658pp
Hb: 978-1-032-73740-9 : \$200
eBook: 978-1-003-46997-1

* For full contents and more information, visit: www.routledge.com/9781032737409

Transforming Healthcare Infrastructure



David S.K. Ting , Jacqueline A. Stagner University of Windsor, Canada

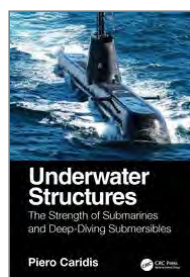
In recent years, unprecedented demographic aging has placed considerable strain on outdated healthcare systems, exacerbating existing challenges and creating new ones. Geriatric care, in particular, necessitates a multidisciplinary approach involving architects and engineers alongside healthcare professionals. Emerging technologies such as artificial intelligence, digital healthcare, nanotechnology, and additive manufacturing offer promising avenues for systematic improvements in healthcare delivery.

CRC Press
September 2025 : 336pp
Hb: 978-1-032-84559-3 : \$120

* For full contents and more information, visit: www.routledge.com/9781032845593

Underwater Structures

The Strength of Submarines and Deep-Diving Submersibles.



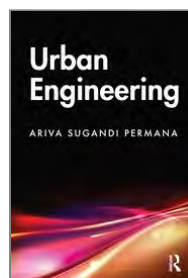
Piero Caridis

Underwater Structures provides the necessary background theory of shell structures for the geometries encountered in submarine pressure hulls. Both analysis and design issues are considered, using analytical as well as numerical approaches. Classical thin-walled structures theory is implemented, and both elastic stability and collapse are considered for all types of structural geometries presented. These include ring-stiffened cylindrical shells, spheres, hemispherical shells, truncated cones, and torispherical end-closures.

CRC Press
May 2025 : 500pp
Hb: 978-1-032-78306-2 : \$150
eBook: 978-1-003-48915-3

* For full contents and more information, visit: www.routledge.com/9781032783062

Urban Engineering



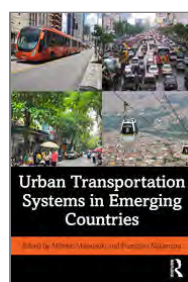
Ariva Sugandi Permana

Urban engineers apply engineering, science, and good management to the complex problems of infrastructure, services, buildings, environment and land-use generally encountered in cities. Good practice is sustainable. This supports a range of undergraduate courses in civil and environmental engineering, urban planning, and related areas. It is broad and inclusive, and takes a modular approach, where each theme is discussed comprehensively from the macro to the micro level.

Routledge
August 2025 : 752pp
Pb: 978-1-032-65801-8 : \$100
Hb: 978-1-032-66460-6 : \$250

* For full contents and more information, visit: www.routledge.com/9781032658018

Urban Transportation Systems in Emerging Countries



Edited by **Mihoko Matsuyuki , Fumihiko Nakamura**

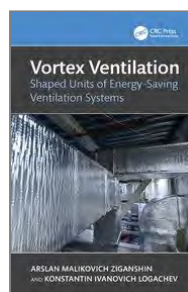
Transportation in emerging economies involves unique modes, interacting with urban planning, technology, social equity, and environmental sustainability. This book with case studies from Asia and South America shows complex networks evolving through modern technology and infrastructure development, and interacting with urban fabrics and traditional societies. Major transformations are being powered by new technologies such as autonomous driving and ride-hailing apps, as well as policy innovations like transit-oriented development, while inadequate transportation management often contributes to increasing traffic congestion.

Routledge
September 2025 : 248pp
Hb: 978-1-032-72615-1 : \$120

* For full contents and more information, visit: www.routledge.com/9781032726151

Vortex Ventilation

Shaped Units of Energy-Saving Ventilation Systems



Arslan Malikovich Ziganshin , Konstantin Ivanovich Logachev Belgorod State Technological University, Russia

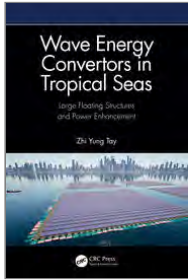
Vortex Ventilation: Shaped Units of Energy-Saving Ventilation Systems presents the methodology for conducting numerical and experimental studies of separated flows in various elements of ventilation systems, which can serve as examples for conducting similar studies for undergraduate and graduate students. The dependencies obtained as a result of the research presented in the book can be used by designers when developing projects for ventilation systems with reduced energy consumption and cost.

CRC Press
August 2025 : 314pp
Hb: 978-1-041-05812-0 : \$140

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Wave Energy Convertors in Tropical Seas

Large Floating Structures and Power Enhancement



Zhi Yung Tay

Tay provides a comprehensive description of the state of the art for recent conceptual designs on the integration of wave energy convertor (WEC) systems with floating structures in tropical seas, discusses the unique environmental challenges, and provides a guide for readers to develop WECs that are optimized for both wave patterns and the structures to which they are attached. The combination of presented case studies, discussion of the challenges of tropical seas, and design optimization parameters make this book invaluable to researchers and industry players working on the concepts of power enhancement and integrated WECs on floating structures.

CRC Press

July 2025 : 330pp

Hb: 978-1-032-48200-2 : \$120

* For full contents and more information, visit: www.routledge.com/9781032482002

Wood and Wood-Based Materials for Building

A Compendium for Civil Engineers and Architects



Edited by **Peter Niemz** ETH Zürich, Switzerland, **Dick Sandberg** Chaired Professor of Wood Science & Engineering, Luleå University of Technology, Sweden

Wood and wood-based materials are increasingly being used in the construction of large and multi-storey buildings. This gives an overview of the important physical-mechanical properties of the main wood species and typical wood-based materials, in relation to moisture, elasticity and creep, and strength properties, and with the application of design guidelines such as Eurocode 5. It also covers wood protection, fire behaviour and bonding as well as the non-destructive monitoring of timber structures. This guide is both accessible enough and technical enough to suit both architects and civil engineers, and also vocational students.

CRC Press

October 2025 : 432pp

Pb: 978-1-032-53360-5 : \$69.95

Hb: 978-1-032-53431-2 : \$130

* For full contents and more information, visit: www.routledge.com/9781032533605

Accessible Remote Sensing

Interdisciplinary Approach and Applications



Jing Kang TSE and Graduate School of Advanced Science and Engineering (IDEC), **Ming Zhang** School of Architecture, The University of Texas, USA., **Takahiro Tanaka** Graduate School of Advanced Science and Engineering, Hiroshima University, Japan.

Kang, Zhang, and Tanaka's comprehensive reference work take an interdisciplinary approach to explain the principles of remote sensing, data characteristics and parameters, and data processing tools; describe the many applications of remote sensing; and explore future trends related to this process. This book is an invaluable resource for graduate students in several disciplines including urban planning, agriculture, oceanography, and more; for researchers and scientists in multiple disciplines; and for commercial and governmental practitioners working in multiple fields.

CRC Press
December 2025 : 192pp
Hb: 978-1-032-45183-1 : \$115

* For full contents and more information, visit: www.routledge.com/9781032451831

Advancements in Cybersecurity

Next-Generation Systems and Applications



Edited by **Agbotiname Lucky Imoize** Department of Electrical and Electronics Engineering, Faculty of Engineering, University of Lagos, **Oleksandr Kuznetsov**, **Oleksandr Lemeshko**, **Oleksandra Yermenko**

This book offers a comprehensive exploration of cutting-edge research and developments in the field of cybersecurity. It presents a curated collection of chapters that reflect the latest in empirical data approximation, malware recognition, information security technologies, and beyond. This book is designed to serve as an essential resource for researchers, practitioners, policymakers and engineers in the fields of ICT, next-generation computing and IT security including cryptography, AI/ML/DL, cyber resilience, network security, threat modeling and risk assessment, digital forensics, secure software development, hardware security, human-centric security.

CRC Press
June 2025 : 548pp
Hb: 978-1-032-90099-5 : \$160

* For full contents and more information, visit: www.routledge.com/9781032900995

Advances in Artificial Intelligence for Healthcare Applications



Edited by **Anoop V.S Thiagarajar** School of Management (Autonomous), Madurai, India., **Suhasini Verma** Manipal University Jaipur, **Usharani Hareesh Govindarajan** Dr. Pillai Experience Designs

Series: Future Generation Information Systems

The text discusses the theoretical foundations, the emergence, and the application areas of artificial intelligence in the healthcare domain in an easy-to-understand manner that would be highly helpful for researchers, academicians, and industry professionals. It further covers artificial intelligence-assisted drug discovery, natural language processing for intelligent healthcare, and artificial intelligence for precision medicine. It is primarily written for senior undergraduates, graduate students, and academic researchers in the fields of electrical engineering, electronics and communications engineering, computer science and engineering, and biomedical engineering.

CRC Press
June 2025 : 306pp
Hb: 978-1-032-82187-0 : \$170
eBook: 978-1-003-50338-5

* For full contents and more information, visit: www.routledge.com/9781032821870

Advances in Hardware Design for Security and Trust



Edited by **Ranga Vemuri**, **John Emmert**

Series: Computer Hardware Security and Correctness

This book covers the entire spectrum of hardware design including integrated circuits, embedded systems, and design automation tools. It also captures recent advances in various attack and defense methods. Researchers and industry practitioners would benefit from the tutorial style exposition to the topics along with advanced research results and emerging directions.

CRC Press
August 2025 : 392pp
Hb: 978-1-032-84042-0 : \$170

* For full contents and more information, visit: www.routledge.com/9781032840420

Advances in Science, Engineering and Technology



Edited by **Tasneem Ahmed**, **Shrish Bajpai**, **Mohammad Faisal** Integral University, Lucknow, India., **Suman Lata Tripathi** LPU, India

The objective of the conference was to provide a common platform for innovative academicians and industrial experts working in the fields of sciences, engineering, and information technology. It provided a platform for knowledge exchange and the development of new ideas.

CRC Press
May 2025 : 602pp
Pb: 978-1-041-07648-3 : \$66.99
Hb: 978-1-041-07647-6 : \$220
eBook: 978-1-003-64154-4

* For full contents and more information, visit: www.routledge.com/9781041076483

Advances in State and Parameter Estimation

Theory and Practice



Jitendra R. Raol Ramaiah Inst of Tech, India, **Parimala P.** Ramaiah Inst of Tech, India, **Reshma V.** Ramaiah Inst of Tech, India, **Sara M. George** Ramaiah Inst of Tech, India

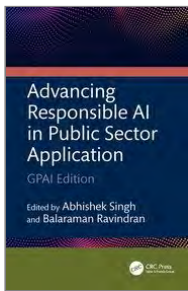
This book deals with basics of parameter estimation and state estimation as the fundamental building blocks of mathematical modelling activity in the broader field of control theory. All the methods are validated using MATLAB® based implementations with realistically simulated data for general dynamic systems, as well as for aircraft parameter estimation. This book includes several illustrative examples and chapter-end exercises. This book is aimed at researchers and graduate students in systems and control, signal processing, estimation theory, engineering mathematics, and aerospace engineering.

CRC Press
May 2025 : 354pp
Hb: 978-1-032-65486-7 : \$200
eBook: 978-1-003-62021-1

* For full contents and more information, visit: www.routledge.com/9781032654867

Advancing Responsible AI in Public Sector Application

GPAI Edition



Edited by **Abhishek Singh** MeitY, Government of India, Electronics Niketan, New Delhi, **Balaraman Ravindran** IIT Madras, Chennai, India

Responsible use of AI in public sector applications requires engagement with various technical and non-technical areas such as human rights, inclusion, diversity, innovation, and economic growth. The book covers topics spanning the technological socio-economic spectrum including potential of AI/ML technologies to address social and political inequities, privacy enhancing technologies for datasets, friction less data sharing and data stewardship models, regional/geographical inequities in extraction and so forth.

CRC Press
September 2025 : 256pp
Hb: 978-1-032-70393-0 : \$130

* For full contents and more information, visit: www.routledge.com/9781032703930

AI and Fintech

Improving the Financial Landscape



Edited by **Jaheer Mukthar K. P.** Kristu Jayanti College Autonomous, Bengaluru, India, **Rosario Mercedes Huerta-Soto**, **Vishal Jain** Sharda University, Greater Noida, India, **Edwin Hernan Ramirez-Asis** Universidad Nacional Santiago Antúnez de Mayolo, Peru

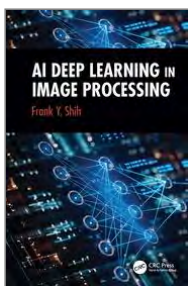
Series: *Computational Intelligence Techniques*

This book explores the transformative intersection of AI and Fintech. It encompasses an in-depth analysis of how AI is reshaping the financial industry, revolutionizing traditional practices, and paving the way for innovative solutions. It provides understanding of the relationship between AI and Fintech, offering insights into the current state, future potential, challenges, and ethical considerations within this dynamic landscape. It addresses critical ethical considerations surrounding AI and Fintech, fostering a dialogue on responsible AI integration and data privacy. This book is aimed at researchers and professionals in computer engineering, AI, and fintech.

CRC Press
August 2025 : 344pp
Hb: 978-1-032-82517-5 : \$160

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AI Deep Learning in Image Processing



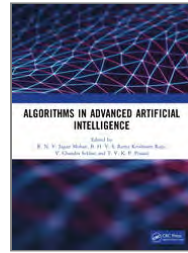
Frank Y. Shih New Jersey Institute of Technology, Newark, NJ, USA

Image processing plays a crucial role in various fields, including digital multimedia, automated vision detection and inspection, and pattern recognition. This book aims to provide a comprehensive overview of the mechanisms and techniques involved, with a particular focus on the application of advanced AI deep learning technologies in image processing. It is designed for students, researchers, and professionals seeking to enhance their knowledge, gain practical insights, and explore the evolving role of image processing in modern technology.

CRC Press
October 2025 : 736pp
Hb: 978-1-032-75530-4 : \$180

* For full contents and more information, visit: www.routledge.com/9781032755304

Algorithms in Advanced Artificial Intelligence



Edited by **R. N. V. Jagan Mohan** Sagi Rama Krishnam Raju Engineering College, China Amiram, Bhimavaram-534204, **B. H. V. S. Rama Krishnam Raju**, **V. Chandra Sekhar**, **T. V. K. P. Prasad**

This is a collection of papers on emerging issues, challenges, and new methods in Artificial Intelligence, Machine Learning, Deep Learning, Cloud Computing, Federated Learning, Internet of Things, and Blockchain technology. It addresses the growing attention to advanced technologies due to their ability to provide "paranormal solutions" to problems associated with classical Artificial Intelligence frameworks. The authors address various issues in ICT, including Artificial Intelligence, Machine Learning, Deep Learning, Data Science, Big Data Analytics, Vision, Internet of Things, Security and Privacy aspects in AI, and Blockchain and Digital Twin Integrated Applications in AI.

CRC Press
May 2025 : 786pp
Pb: 978-1-041-07646-9 : \$66.99
Hb: 978-1-041-07645-2 : \$220
eBook: 978-1-003-64153-7

* For full contents and more information, visit: www.routledge.com/9781041076469

Applied Artificial Intelligence and Machine Learning Techniques for Engineering Applications



Edited by **Ravichander Janapati** SR University, India, **Usha Desai** SR University, India, **Steven L. Fernandes**, **Rakesh Sengupta**, **Shubham Tayal**

Series: *Materials, Devices, and Circuits*

This book presents various machine learning applications in the field of engineering with a focus on deep learning-based machine learning approaches. It examines the relationship between three different multidisciplinary engineering branches: Biomedical Engineering, Signal Processing, and Computer Science. The book will be a great help to researchers and academics working in the field of biomedical signaling and/ or human machine interface.

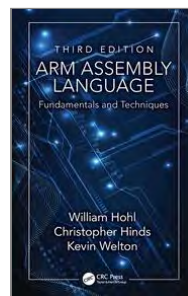
CRC Press
August 2025 : 208pp
Hb: 978-1-032-75324-9 : \$130

* For full contents and more information, visit: www.routledge.com/9781032753249

3RD EDITION

ARM Assembly Language

Fundamentals and Techniques



William Hohl Consultant, Austin, Texas, USA, **Christopher Hinds** ARM, Inc., Austin, Texas, USA, **Kevin Welton**

This new edition of ARM Assembly Language explains in clear terms how Arm processors are programmed at the most fundamental level. While earlier editions covered much older architectures, the third edition moves entirely into the Cortex-M space, using the Arm v8-M instruction set to illustrate how assembly code for the most modern Arm processors is written. Even if you are writing in JavaScript, Python, C++, C#, or Rust, these high-level programming languages require a compiler or interpreter to transform the code into machine executable instructions, so software engineers as well as hardware engineers benefit from knowing how the underlying processor functions.

CRC Press
August 2025 : 368pp
Hb: 978-1-032-95181-2 : \$84.99

* For full contents and more information, visit: www.routledge.com/9781032951812

Artificial Intelligence and Human Rights, Democracy, and the Rule of Law



Edited by **Pushan Kumar Dutta**, **Bhupinder Singh** Sharda University, G. Noida, India, **Vishal Jain**, **Christian Kaunert** Office CG19B, Dublin City University, **Komal Vig** Sharda University, G. Noida, India

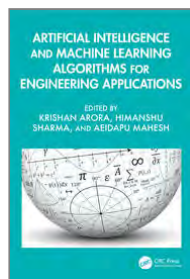
Series: Computational Intelligence Techniques

This book introduces a comprehensive model for evaluating the effects of Artificial Intelligence (AI) on human rights, democracy, and the rule of law and an innovative framework that merges Rights Impact Assessments (HRIAs) practices with AI-focused algorithmic impact assessment approaches. The book is divided into three subthemes: Understanding AI, its Concepts and Implications; Challenges and Solutions in AI Systems; and AI Applications, Compliance Issues, and Future Prospects. This book is aimed at graduate students and researchers in artificial intelligence, computer science, cybersecurity, and human right studies.

CRC Press
October 2025 : 432pp
Hb: 978-1-032-79663-5 : \$190

* For full contents and more information, visit: www.routledge.com/9781032796635

Artificial Intelligence and Machine Learning Algorithms for Engineering Applications



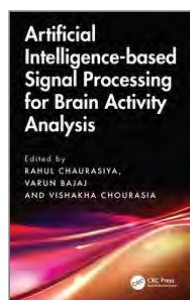
Edited by **Krishan Arora** LPU, India, **Himanshu Sharma** G.H. Raisoni College of Engineering and Management, India, **Aeidapu Mahesh** Sardar Vallabhbhai National Institute of Technology, India

The book explains essential artificial intelligence and machine learning algorithms, such as decision trees, neural networks, support vector machines, and reinforcement learning, with practical examples and code snippets for diverse engineering applications. It covers topics such as quality control and inspection with computer vision, image segmentation in manufacturing, and environmental data analysis. It is primarily written for senior undergraduates, graduate students, and academic researchers in the fields of electrical engineering, electronics and communications engineering, computer science and engineering, manufacturing engineering, and environmental engineering.

CRC Press
September 2025 : 328pp
Hb: 978-1-032-90052-0 : \$160

* For full contents and more information, visit: www.routledge.com/9781032900520

Artificial Intelligence-based Signal Processing for Brain Activity Analysis



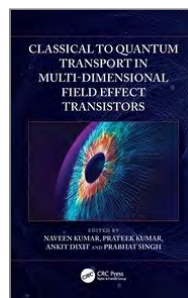
Edited by **Rahul Chaurasiya**, **Varun Bajaj**, **Vishakha Chourasia**

Artificial Intelligence-based Signal Processing for Brain Activity Analysis is an indispensable resource for addressing the pressing challenges in medicine, detection of brain related disorders, brain-computer interfacing, and neuromarketing. It delves into contemporary AI, ML, and signal processing approaches for analysis of brain activity. The text is primarily written for senior undergraduate students, graduate students, industry professionals, researchers, and academicians working in the field of AI, ML, signal processing techniques, biomedical signal processing, brain signal analysis, and brain activity analysis.

CRC Press
November 2025 : 424pp
Hb: 978-1-032-89672-4 : \$180

* For full contents and more information, visit: www.routledge.com/9781032896724

Classical to Quantum Transport in Multi-Dimensional Field Effect Transistors



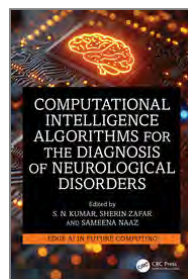
Edited by **Naveen Kumar**, **Prateek Kumar**, **Ankit Dixit**, **Prabhat Singh**

This book covers the recent advancements in the transport models of various cutting edge technology semiconductor devices for sensing, circuits, in-memory or neuromorphic computing. The book introduces a unique interdisciplinary approach, blending physics, engineering, and material science, to give a holistic view of FET operation from both classical and quantum perspectives, catering to a broad audience of students, researchers, and professionals.

CRC Press
October 2025 : 392pp
Hb: 978-1-032-89579-6 : \$160

* For full contents and more information, visit: www.routledge.com/9781032895796

Computational Intelligence Algorithms for the Diagnosis of Neurological Disorders



Edited by **S. N. Kumar**, **Sherin Zafar** Jamia Hamdard, India, **Sameena Naaz** Jamia Hamdard

Series: Edge AI in Future Computing

This book delves into the transformative potential of artificial intelligence (AI) and machine learning (ML) as game-changers in diagnosing and managing of neurodisorder conditions. It covers a wide array of methodologies, algorithms, and applications in depth. This book aims to spark a conversation and foster collaboration among researchers, clinicians, and technologists and will assist radiologists and neurologists in making precise diagnoses with enhanced accuracy.

CRC Press
August 2025 : 348pp
Hb: 978-1-032-85890-6 : \$160

* For full contents and more information, visit: www.routledge.com/9781032858906

6TH EDITION

Computer Organization, Design, and Architecture



Sajjan G. Shiva University of Memphis, Tennessee, USA

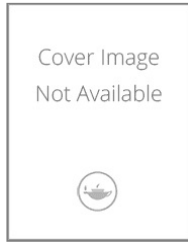
This unique and classroom-proven text provides a hands-on introduction to the design of computer systems. It depicts, step by step, the design and programming of a simple but complete hypothetical computer, followed by detailed architectural features of existing computer systems as enhancements to the structure of the simple computer. This treatment integrates the four categories of digital systems architecture: logic design, computer organization, computer hardware, and computer system architecture. The book covers the topics suggested by the recent IEEE/ACM curriculum for 'computer architecture and organization.

CRC Press
May 2025 : 807pp
Pb: 978-1-032-80514-6 : \$66.99
Hb: 978-1-032-80512-2 : \$110
eBook: 978-1-003-49720-2

* For full contents and more information, visit: www.routledge.com/9781032805146

Control for Fractional-Order Systems and Fractional-Order Control

Theories and Applications



Xinyao Li , Xiaolei Li , Changyun Wen Nanyang Technological University, Singapore

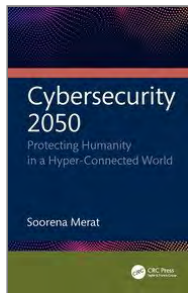
This book provides systematic guidance and theoretical basis for control theories and applications of fractional-order control systems. It describes the background, mathematical preliminaries, and recent progress with related illustrated examples, and proposes suggested future trends. This book is an invaluable reference for advanced undergraduate and graduate students and researchers in the fields of control science and engineering, fractional-order control schemes, control for fractional-order systems, and related topics. To understand this book, readers should have a knowledge of basic linear and nonlinear control theory.

CRC Press
October 2025 : 200pp
Hb: 978-1-041-02639-6 : \$120

* For full contents and more information, visit: www.routledge.com/9781041026396

Cybersecurity 2050

Protecting Humanity in a Hyper-Connected World



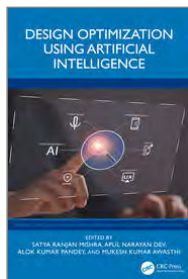
Soorena Merat

This book explores the critical intersection of human behavior, cybersecurity, and the transformative potential of quantum technologies. It delves into the vulnerabilities and resilience of human intelligence in the face of cyber threats, examining how cognitive biases, social dynamics, and mental health can be exploited in the digital age. It is intended for computer engineers, policymakers, and regulatory experts interested in the implications of mental health on cybersecurity laws and regulations. It will be of interest to professionals and researchers that are looking for a comprehensive understanding of the evolving landscape, including quantum computing and algorithm design.

CRC Press
September 2025 : 216pp
Pb: 978-1-041-07635-3 : \$69.99
Hb: 978-1-041-07636-0 : \$175

* For full contents and more information, visit: www.routledge.com/9781041076353

Design Optimization Using Artificial Intelligence



Edited by **Satya Ranjan Mishra** Siksha 'O' Anusandhan Deemed to be University, Odisha, India, **Apul Narayan Dev** Siksha 'O' Anusandhan Deemed to be University, Odisha, India, **Alok Kumar Pandey** Graphic Era (Deemed to be University) Dehradun, Uttarakhand, India, **Mukesh Kumar Awasthi** Department of Mathematics, Babasaheb Bhimrao Ambedkar University, Lucknow, India.

Series: Artificial Intelligence and Machine Learning for Intelligent Engineering Systems

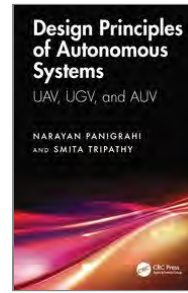
This book serves as an insightful resource for understanding the transformative role of Artificial Intelligence (AI) in optimizing design processes across a variety of fields. It explores foundational concepts, advanced methodologies, and real-world applications, offering a comprehensive guide to leveraging AI for innovative design solutions. It also examines algorithmic advancements, machine learning techniques, and optimization strategies that enhance design efficiency and accuracy.

CRC Press
June 2025 : 298pp
Hb: 978-1-032-96494-2 : \$160
eBook: 978-1-003-58971-6

* For full contents and more information, visit: www.routledge.com/9781032964942

Design Principles of Autonomous Systems

UAV, UGV, and AUV



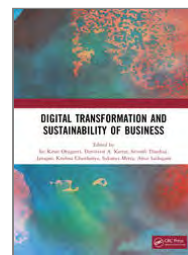
Narayan Panigrahi CAIR, Bangalore, India, **Smita Tripathy** Aeronautical Development Agency, India

This book explains unmanned systems including unmanned aerial vehicles (UAV), autonomous under water vehicles (AUV) and unmanned ground vehicles (UGV). It also details their basic design, components/sub-components, sensors, employed payloads, and communication systems. It discusses generic applications of these unmanned systems including specific missions for which they are employed. Other topics like swarm of drone, anti-drone system, and some algorithms used in navigation and communication of the drone are also discussed.

CRC Press
September 2025 : 288pp
Hb: 978-1-032-45267-8 : \$140

* For full contents and more information, visit: www.routledge.com/9781032452678

Digital Transformation and Sustainability of Business



Edited by **Sai Kiran Oruganti , Dimitrios Karras , Srinesh Thakur , Janapati Krishna Chaithanya , Sukanya Metta , Amit Lathigara**

It explores the integration of digital technologies into business models, offering innovative approaches for sustainable growth. This comprehensive guide delves into case studies and strategic frameworks that align digital transformation with environmental and economic sustainability. It presents actionable insights on overcoming challenges, leveraging technology for efficiency, and fostering a competitive edge. Designed for industry leaders, researchers, and policymakers, the book provides evidence-based strategies supported by real-world applications, making it an essential resource for those looking to drive meaningful change in today's evolving business landscape.

CRC Press
April 2025 : 898pp
Pb: 978-1-032-99829-9 : \$61.99
Hb: 978-1-032-99828-2 : \$220
eBook: 978-1-003-60618-5

* For full contents and more information, visit: www.routledge.com/9781032998299

Digital Twins for Smart Cities and Urban Planning

From Virtual to Reality



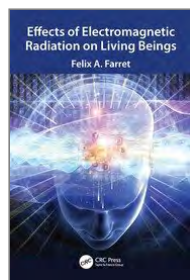
Edited by **Mohammad Saif Wajid** TECNOLÓGICO DE MONTERREY, MEXICO, **Hugo Terashima-Marín** , **Aasim Zafar , Mohd Anas Wajid , Bharat Bhushan Sharda** University, India

This book discusses the concept of the digital twin, which has the potential to change how systems are managed and created. It also discusses the metaverse as a new technology with literary roots, cross-platform avatars, and artificial intelligence-related cybersecurity risks. The book is an excellent resource for practitioners and scholars in manufacturing, operations research, and communications who are thinking about digitising their assets and related services. It is also a helpful resource for graduate students and academics looking to better understand pioneering Digital Twins technologies.

CRC Press
May 2025 : 280pp
Hb: 978-1-032-83631-7 : \$170
eBook: 978-1-003-51033-8

* For full contents and more information, visit: www.routledge.com/9781032836317

Effects of Electromagnetic Radiation on Living Beings



Felix A. Farret Federal University of Santa Maria, Brazil

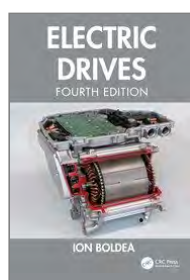
The objective of this book is to show in detail how electromagnetic waves existing in the environment can affect the electrochemical currents present in the brains and bodies of living beings that serve to communicate with their internal organs as well as with other living beings. It equips readers with insights into the various effects of electromagnetic waves in daily life, which promotes awareness of their environment and its different influences and how they impact people.

CRC Press
May 2025 : 186pp
Pb: 978-1-032-99416-1 : **\$66.99**
Hb: 978-1-032-99417-8 : **\$120**
eBook: 978-1-003-60403-7

* For full contents and more information, visit: www.routledge.com/9781032994161

4TH EDITION

Electric Drives



Ion Boldea University Politehnica Timisoara, Romania

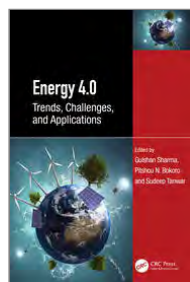
Electric Drives, now at 4th edition, provides a practical guide in understanding the fundamental principles and recent new knowledge of electric motion (in motoring) and electric energy flow (in generating) digital control via power electronics for energy savings and increased productivity in practically all industries, from intelligent watches, phones, to robots, electric transport, industrial processes, modern distributed electric power systems with ever more renewable energy penetration.

CRC Press
September 2025 : 880pp
Hb: 978-1-032-78286-7 : **\$160**

* For full contents and more information, visit: www.routledge.com/9781032782867

Energy 4.0

Trends, Challenges, and Applications



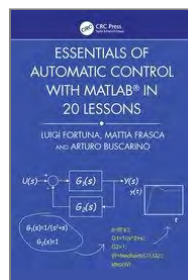
Edited by **Gulshan Sharma**, **Pitshou N. Bokoro**,
Sudeep Tanwar Nirma University, Ahmednagar, India

The reference text focuses on the global energy crisis, and the role of the fourth industrial revolution (4IR) technologies in solving this energy crisis in a cost-effective and efficient manner. It further explains renewable energy systems, grid integration techniques, micro/nano grids, hydroelectricity, and smart irrigation systems. The book covers high-voltage direct current systems, grounding and safety, protection, and power quality. It is primarily written for senior undergraduates, graduate students, and academic researchers in the fields of electrical engineering, electronics and communications engineering, energy, environmental engineering, computer science, and engineering.

CRC Press
June 2025 : 294pp
Hb: 978-1-032-74451-3 : **\$170**
eBook: 978-1-003-53782-3

* For full contents and more information, visit: www.routledge.com/9781032744513

Essentials of Automatic Control with MATLAB in 20 Lessons



Luigi Fortuna University of Catania, Italy, **Mattia Frasca** University of Catania, Italy, **Arturo Buscarino** University of Catania, Italy.

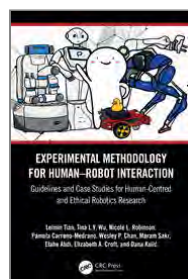
This book is designed to explain the fundamental principles of automatic control through 20 lessons, each incorporating worked examples and MATLAB®-based exercises to help readers effectively understand and apply the proposed methods. It offers a concise and accessible resource for learning automatic control, blending simplicity with clarity. Drawing on decades of teaching experience, the authors aim to provide an approachable introduction to the core concepts of the discipline, encouraging further exploration through independent study.

CRC Press
August 2025 : 280pp
Pb: 978-1-032-78308-6 : **\$66.99**
Hb: 978-1-032-78303-1 : **\$125**

* For full contents and more information, visit: www.routledge.com/9781032783086

Experimental Methodology for Human–Robot Interaction

Guidelines and Case Studies for Human-Centred and Ethical Robotics Research



Leimin Tian Monash University, **Tina L.Y. Wu** Monash University, **Nicole L. Robinson** Monash University, **Pamela Carreno-Medrano** Monash University, **Wesley P. Chan** Monash University, **Maram Sakr** Monash University, **Elahe Abdi** Monash University, **Elizabeth A. Croft** University of Victoria, **Dana Kulić** Monash University

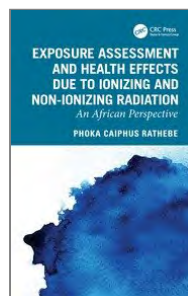
This book is a vital resource for both students new to the field and experienced researchers and practitioners. The book's practical focus and clear elucidation of relevant case studies, from its introduction to the HRI experimental study life cycle through to advanced methods emerging in the field, ensures that this will greatly benefit progress in the field with human-centred and ethical experimental methodology.

CRC Press
June 2025 : 332pp
Hb: 978-1-032-69361-3 : **\$200**
eBook: 978-1-032-69368-2

* For full contents and more information, visit: www.routledge.com/9781032693613

Exposure Assessment and Health Effects Due to Ionizing and Non-Ionizing Radiation

An African Perspective



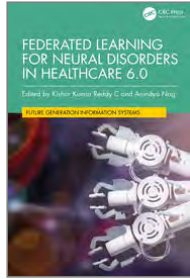
Phoka Caiphus Rathebe

This book describes and outlines exposure scenarios of ionizing and non-ionizing radiation exposure in occupational and residential settings within the African continent where technological developments and mining activities are the main sources of radiation exposure. To better understand these exposure scenarios, this book focusses on all exposure aspects of both ionizing and non-ionizing radiation in an African continent. This book is aimed at graduate students and researchers in bioengineering and environmental health, and radiobiology.

CRC Press
July 2025 : 120pp
Hb: 978-1-032-81254-0 : **\$120**

* For full contents and more information, visit: www.routledge.com/9781032812540

Federated Learning for Neural Disorders in Healthcare 6.0



Edited by **Kishor Kumar Reddy** C Stanley Col of Eng and Tech for Women, India, **Anindya Nag** Northern University of Business and Technology Khulna, Bangladesh

Series: *Future Generation Information Systems*

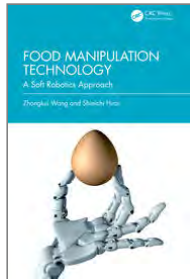
This reference text offers a relevant and thorough examination of the overlap between neuroscience and federated learning. It explores the complexities of utilizing federated learning algorithms for MRI data analysis, demonstrating how to improve the accuracy and efficiency of diagnostic procedures. The book covers topics such as the prediction and diagnosis of Alzheimer's disease using neural networks and ensuring data privacy and security in federated learning for neural disorders. It is primarily written for graduate students and academic researchers in electrical engineering, electronics, and communication engineering, computer science and engineering, and biomedical engineering.

CRC Press
May 2025 : 414pp
Hb: 978-1-032-96887-2 : \$220
eBook: 978-1-003-59108-5

* For full contents and more information, visit: www.routledge.com/9781032968872

Food Manipulation Technology

A Soft Robotics Approach



Zhongkui Wang, Shinichi Hirai

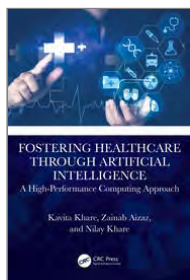
Wang and Hirai draw on their extensive experience to introduce recent technological advances in soft robotics for food manipulation and discuss their practical applications in the food preparation industry. They also describe food modelling and categorization for the purpose of robotic handling. This book is an essential read for both food technology practitioners and graduate students who are interested in food manipulation and its related technologies. It gives readers the theoretical background knowledge and practical understanding to apply this cutting-edge technology in real-world settings.

CRC Press
June 2025 : 216pp
Hb: 978-1-032-44493-2 : \$160
eBook: 978-1-003-37243-1

* For full contents and more information, visit: www.routledge.com/9781032444932

Fostering Healthcare through Artificial Intelligence

A High-Performance Computing Approach



Kavita Khare Maulana Azad National Institute Of Engineering, India, **Zainab Aizaz** Maulana Azad National Institute of Technology, **Nilay Khare** Maulana Azad National Institute of Technology

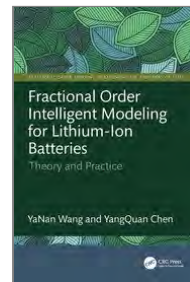
In this book, readers can explore the transformative power of Artificial Intelligence in reshaping modern healthcare. The book dives deep into how cutting-edge technologies are revolutionizing diagnostics, patient care, and medical research. From the predictive analytics that anticipate disease outbreaks to intelligent systems that enhance clinical decision-making, this book reveals how AI technologies are playing a transformative role in healthcare domain. Designed for healthcare professionals and AI enthusiasts, this book presents real-world applications, ethical considerations, and visionary insights from researchers and industry.

CRC Press
October 2025 : 328pp
Hb: 978-1-032-82118-4 : \$160

* For full contents and more information, visit: www.routledge.com/9781032821184

Fractional Order Intelligent Modeling for Lithium-Ion Batteries

Theory and Practice



YaNan Wang, YangQuan Chen University of California Merced, USA

Series: *Fractional Order Thinking in Exploring the Frontiers of STEM*

This book focuses on fractional order (non-integer order) modeling (FOM) techniques coupled with deep neural network-based intelligent modeling methods for lithium-ion batteries (LIBs) and battery management systems (BMS) in general. It provides the first one-stop resource on FOM for LIBs with case studies using real operational data sets. This title will serve as an invaluable resource for researchers and advanced students in the fields of transportation, energy storage, and power systems, as well as those studying electric vehicles, control theory, machine learning, and fractional calculus-based modeling.

CRC Press
October 2025 : 160pp
Hb: 978-1-041-13269-1 : \$110

* For full contents and more information, visit: www.routledge.com/9781041132691

Historical Evolution of Artificial Intelligence

From the Mathematics and Calculations of Ancient Civilizations to Modern Machine Learning



Abbas Tcharkhtchi, Hamid Reza Vanaei, Sofiane Khelladi

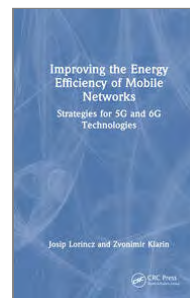
This book provides an overview of AI's historical development, while understanding the cultural and scientific foundations that make today's AI possible. Through easy-to-understand explanations of complex ideas, and a focus on both technological advances and ethical considerations, it provides an understanding of AI's past, present, and future. This book is written for a broad audience, including both general readers and academic audiences who are interested in the history, development, and ethical implications of AI. It is particularly suited for students, researchers, and professionals in fields such as computer science, AI, mathematics, history of technology, and digital ethics.

CRC Press
November 2025 : 376pp
Pb: 978-1-041-01198-9 : \$74.99
Hb: 978-1-041-01199-6 : \$210

* For full contents and more information, visit: www.routledge.com/9781041011989

Improving the Energy Efficiency of Mobile Networks

Strategies for 5G and 6G Technologies



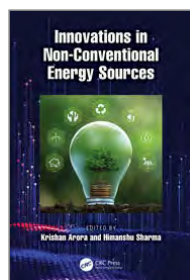
Josip Lorincz, Zvonimir Klarin

This book provides analysis of the problem of high energy consumption of mobile networks and describes methods for improving the energy efficiency of mobile networks. It explores new technologies and strategies that will enable mobile networks to operate with less energy and become more sustainable while not compromising service quality. This book is ideal for researchers, industry professionals and scholars who want to gain a deeper understanding of the excessive mobile network energy consumption and contribute to the development of energy-efficient, sustainable mobile networks.

CRC Press
August 2025 : 152pp
Hb: 978-1-041-01660-1 : \$120

* For full contents and more information, visit: www.routledge.com/9781041016601

Innovations in Non-Conventional Energy Sources



Edited by **Krishan Arora** LPU, Punjab, India, **Himanshu Sharma**

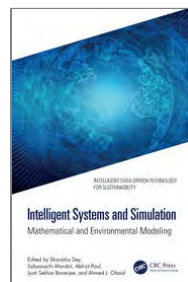
This book focuses on exploring and showcasing advancements, breakthroughs, and emerging technologies in the field of energy generation and utilization, particularly those related to non-conventional or alternative energy sources. It delves into various non-conventional energy sources such as solar, wind, geothermal, tidal, biomass, etc., and aims to provide in-depth insights into the technologies associated with these sources.

CRC Press
October 2025 : 296pp
Hb: 978-1-032-89394-5 : \$160

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Intelligent Systems and Simulation

Mathematical and Environmental Modeling



Edited by **Sharadia Dey** St. Xavier's Col., India, **Sabyasachi Mondal** Amity Uni, Kolkata, **Abhijit Paul** Amity Uni, India, **Jyoti Sekhar Banerjee** BIT, Kolkata, **Ahmed J. Obaid** Univ of Kufa

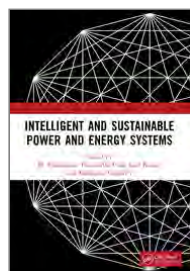
Series: *Intelligent Data-Driven Technology for Sustainability*

The book covers a wide range of topics such as mathematical modeling, computational methods, simulation techniques in engineering, and their applications in environmental sciences. It begins with an introduction to the fundamental concepts and principles of mathematical modeling with subsequent sections delving into various simulation techniques, including numerical methods, statistical modeling, and bio-mathematical modeling. It also explores the application of these techniques in addressing complex environmental problems. This book is aimed at researchers and graduate students in computer engineering, applied mathematics and applied ecology.

CRC Press
June 2025 : 310pp
Hb: 978-1-032-79981-0 : \$160
eBook: 978-1-003-63841-4

* For full contents and more information, visit: www.routledge.com/9781032799810

Intelligent and Sustainable Power and Energy Systems



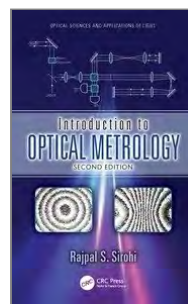
Edited by **M. Premkumar**, **Pasumarthi Usha**, **Sujit Kumar**, **Manikanta Gopiseti**

"Intelligent and Sustainable Power and Energy Systems" delves into the critical advancements shaping the future of global energy. This compilation presents cutting-edge research and innovative solutions addressing the urgent need to transition towards environmentally responsible and technologically sophisticated energy infrastructures. This work offers a comprehensive overview of the latest developments, providing essential insights for researchers, engineers, and policymakers striving to build a resilient and sustainable energy future. This book is a vital resource for navigating the complex challenges and opportunities in the evolving landscape of power and energy systems.

CRC Press
July 2025 : 328pp
Pb: 978-1-041-10314-1 : \$66.99
Hb: 978-1-041-10313-4 : \$220

* For full contents and more information, visit: www.routledge.com/9781041103141

Introduction to Optical Metrology



Rajpal S. Sirohi Austin, Texas, USA

Series: *Optical Sciences and Applications of Light*

This book describes both theory and practice of optical techniques to measure various parameters encountered routinely in science and engineering. It examines the theory and practice of various measurement methodologies utilizing both the corpuscular and the wave nature of light. The primary audience for this book is undergraduate and graduate students who specialize in optics. It will also be useful to researchers and professionals working on optical testing and fiber optic- and MEMS-based measurements. A solutions manual and figure slides are available for adopting professors.

CRC Press
August 2025 : 592pp
Hb: 978-1-032-87279-7 : \$170

* For full contents and more information, visit: www.routledge.com/9781032872797

Intelligent Computing Techniques and Applications



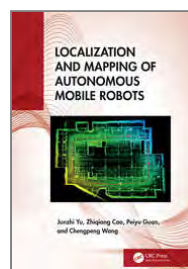
Edited by **Tusharkanta Samal**, **Ambarish Panda**, **Manas Ranjan Kabat**, **Ali Ismail Awad**, **Suvendra Kumar Jayasingh**, **Deepak K Tosh**

This Taylor & Francis, CRC Press volume contains the papers presented at the International Conference on Emerging Trends in Intelligent Computing Techniques (ICETICT – 2024) held during 27th and 28th December 2024 organized by DRIEMS University, Tangi, Cuttack, Odisha, India.

CRC Press
August 2025 : 333pp
Pb: 978-1-041-11085-9 : \$60.99
Hb: 978-1-041-11083-5 : \$60.99

* For full contents and more information, visit: www.routledge.com/9781041110859

Localization and Mapping of Autonomous Mobile Robots



Junzhi Yu, **Zhiqiang Cao**, **Peiyu Guan**, **Chengpeng Wang**

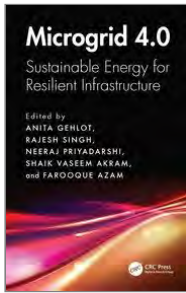
Localization and mapping play a critical role in the autonomous task execution of mobile robots. This book covers the theoretical and technological aspects of robot localization and mapping, including visual localization and mapping, visual relocalization, LiDAR localization and mapping, and place recognition. It will be of great interest to students and professionals alike in the field of robotics or artificial intelligence. It will also be a great reference for engineers or technicians who deal with the development of robot localization.

CRC Press
September 2025 : 224pp
Hb: 978-1-032-91704-7 : \$84.99

* For full contents and more information, visit: www.routledge.com/9781032917047

Microgrid 4.0

Sustainable Energy for Resilient Infrastructure



Edited by **Anita Gehlot**, **Rajesh Singh** Uttaranchal University, India, **Neeraj Priyadarshi** Aarhus University, Herning, Denmark, **Shaik Vaseem Akram**, **Farooque Azam** REVA University, India

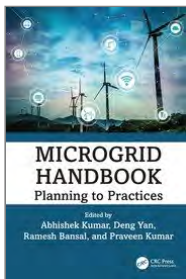
The reference text discusses the latest optimization techniques for Microgrid 4.0, including convex optimization, metaheuristic optimization, and machine learning-based optimization. It covers the latest power electronics technologies for microgrid 4.0, including DC-DC converters, DC-AC inverters, and solid-state transformers. It is primarily written for senior undergraduates, graduate students, and academic researchers in the fields of electrical engineering, electronics and communications engineering, computer science and engineering, environmental engineering, and energy engineering.

CRC Press
September 2025 : 360pp
Hb: 978-1-032-84484-8 : \$160

* For full contents and more information, visit: www.routledge.com/9781032844848

Microgrid Handbook

Planning to Practices



Edited by **Abhishek Kumar** Zhejiang University, China, **Deng Yan** Zhejiang University, China, **Ramesh Bansal** University of Sharjah, UAE, **Praveen Kumar** IIT Guwahati, India

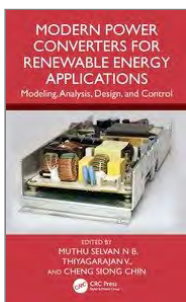
This book focusses on planning to practice aspects of microgrids. It covers basics, power electronics converters topologies, storage systems technologies, and control aspects. It further discusses control algorithms for sizing, scheduling, operation and control, energy management and control architecture followed by power quality, reliability, stability, and conditioning issues. Operation and control, communication architectures and protocols, cybersecurity, & infrastructure requirements for IoT integration are included as well. This book aims at researchers, professionals, and graduate students in power engineering/electronics, renewable energy integration, and distributed generation.

CRC Press
August 2025 : 704pp
Hb: 978-1-032-11337-1 : \$220

* For full contents and more information, visit: www.routledge.com/9781032113371

Modern Power Converters for Renewable Energy Applications

Modeling, Analysis, Design, and Control



Edited by **Muthu Selvan N B**, **Thiyagarajan V.**, **Cheng Siong Chin** Newcastle University, Singapore.

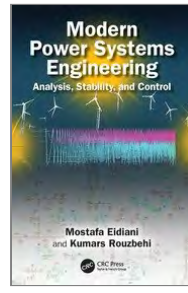
Modern Power Converters for Renewable Energy Applications offers a comprehensive guide to the modeling, analysis, design, and control of these critical technologies, tailored for solar PV, wind energy, and energy storage applications. Key topics include grid synchronization, power quality improvement, and compliance with international standards, equipping readers to handle the complexities of modern power grids. The book also explores the integration of energy storage systems, emphasizing their role in stabilizing renewable outputs and enhancing system flexibility.

CRC Press
September 2025 : 656pp
Hb: 978-1-032-80451-4 : \$130

* For full contents and more information, visit: www.routledge.com/9781032804514

Modern Power Systems Engineering

Analysis, Stability, and Control



Mostafa Eidiani, **Kumars Rouzbehi**

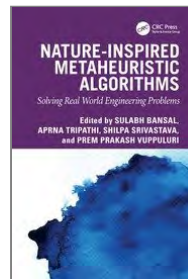
This book sets itself apart by incorporating real-world case studies from diverse power grids, like those in the US, UK, Iran and Spain. By directly referencing industry-standard software (DlgSILENT, ETAP, or PSSE) and going beyond theoretical explanations, it effectively bridges the gap between academic knowledge and industry practice. Readers will gain the essential skills and software proficiency required to thrive in power companies, consulting firms, research centers, and similar environments. Furthermore, the book serves as a valuable resource for students pursuing further education, providing a deep understanding of complex power systems and their analysis methods

CRC Press
October 2025 : 312pp
Pb: 978-1-032-96804-9 : \$66.99
Hb: 978-1-032-96803-2 : \$160

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Nature-inspired Metaheuristic Algorithms

Solving Real World Engineering Problems



Edited by **Sulabh Bansal** Manipal Uni, Jaipur, India, **Apna Tripathi** Manipal University, Jaipur, India, **Shilpa Srivastava** Christ Deemed to be University, Delhi NCR, India, **Prem Prakash Vuppuluri** D.E.I. Dayalbagh, India

The text comprehensively provides practical guidance for implementing nature-inspired algorithms and metaheuristics in real-life scenarios to solve complex optimization problems. It will further demonstrate how nature-inspired metaheuristic algorithms have the potential to contribute to multiple United Nations sustainable development goals such as climate action, clean energy, and sustainable cities.

CRC Press
June 2025 : 402pp
Hb: 978-1-032-77087-1 : \$220
eBook: 978-1-003-61285-8

* For full contents and more information, visit: www.routledge.com/9781032770871

Next-Generation Artificial Intelligence Driven Smart and Renewable Energy



Edited by **Provas Kumar Roy** Kalyani Govt. Engineering College, **Sunanda Hazra** Budge Budge Institute of Technology, India, **Chandan Paul** DR B C ROY Engineering College, India

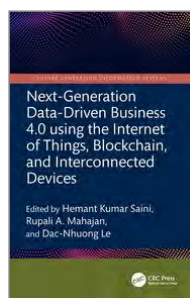
Series: Intelligent Data-Driven Systems and Artificial Intelligence

Dynamic intersection of Renewable Energy incorporated smart energy and AI aiming to unravel the potential synergies between these two fields for a sustainable future. Renewable energy is crucial to preserve the environment. However, the design and development of renewable energy systems remains a challenge. Advanced optimization techniques/AI/ML plays a crucial role in implementing the latest innovative research in the field of renewable energy integrated electrical systems. This book provides practical challenges encountered, solutions and future scope to be adopted in the fields of renewable energy.

CRC Press
July 2025 : 214pp
Hb: 978-1-032-76156-5 : \$120

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Next-Generation Data-Driven Business 4.0 using the Internet of Things, Blockchain, and Interconnected Devices



Edited by **Hemant Kumar Saini**, **Rupali A. Mahajan**
Vishwakarma Institute of Information Technology, Pune,
Dac-Nhuong Le Haiphong University, Vietnam

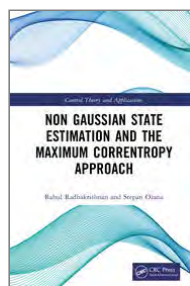
Series: *Future Generation Information Systems*

This reference text presents industrial and real-case scenarios of the various businesses from the edge points to the interior manufacturing units where the data is smartly generated using the Internet of Things and processed. It further discusses topics such as virtual data security, protocols for next-generation transactions, the framework of Web 4.0, and the Internet of Things in cloud grids and eco-energy. It is primarily written for graduate students and academic researchers in the fields of electrical engineering, electronics, and communication engineering, computer science and engineering, information technology, and business management.

CRC Press
October 2025 : 408pp
Hb: 978-1-032-94106-6 : \$180

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Non Gaussian State Estimation and the Maximum Correntropy Approach



Rahul Radhakrishnan, **Stepan Ozana**

Series: *Control Theory and Applications*

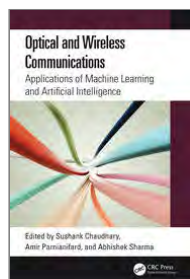
This monograph aims to present the recent advances in state estimation, in terms of relaxing the conventional assumption that probability densities remain Gaussian. The book explains how MCC is integrated into the conventional Bayesian estimation framework and their implementation to real-life problems.

CRC Press
November 2025 : 208pp
Hb: 978-1-032-58197-2 : \$220

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Optical and Wireless Communications

Applications of Machine Learning and Artificial Intelligence



Edited by **Sushank Chaudhary**, **Amir Parnianifard**,
Abhishek Sharma

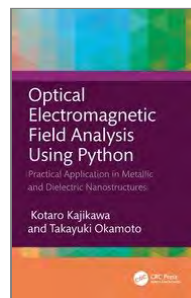
This edited volume consolidates the fragmented information on the application of machine learning and artificial intelligence to optical and wireless systems and presents it in a cohesive and organized manner to enable professionals and researchers to access and comprehend the latest advances. The book's focus on the potential impact of practical applications of machine learning and artificial intelligence in optical and wireless communication systems on various industries makes it a unique and vital resource benefits professionals and researchers in the fields of electrical and computer engineering, telecommunications, and computer science.

CRC Press
May 2025 : 258pp
Hb: 978-1-032-75124-5 : \$110
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Optical Electromagnetic Field Analysis Using Python

Practical Application in Metallic and Dielectric Nanostructures



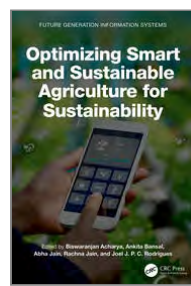
Kotaro Kajikawa, **Takayuki Okamoto**

In this book, Kajikawa and Okamoto explain how to use Python to calculate and visualize the optical response of microscopic structures and systems. Throughout, the authors provide varied examples to instruct readers in the application of theoretical knowledge to real-world scenarios. This book is invaluable for researchers and postgraduate students working in the fields of optics and photonics. Additionally, the contents are useful not only for those conducting electromagnetic field analysis but also those simulating physical, chemical, and biological phenomena.

CRC Press
July 2025 : 264pp
Hb: 978-1-032-41351-8 : \$160

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Optimizing Smart and Sustainable Agriculture for Sustainability



Edited by **Biswaranjan Acharya** School of Computer Engineering, KIIT, Bhubaneswar, Odisha, India, **Ankita Bansal** NETAJI SUBHAS UNIVERSITY OF TECHNOLOGY, Delhi, India, **Abha Jain** Shaheed Rajguru College of Applied Sciences for Women, India, **Rachna Jain** Bharati Vidyapeeth CoE, Delhi, **Joel J. P. C. Rodrigues** Instituto de Telecomunicações, Portugal

Series: *Future Generation Information Systems*

This reference text addresses the importance of smart crop management for increasing yield and presents a framework for smart monitoring and regulation of crop observation. It further comprehensively covers important topics such as spatial decision support systems for precision farming, swarm intelligence in the optimal management of aquaculture farms, and intelligent harvesting algorithms for improving productivity. It is primarily written for graduate students and academic researchers in the fields of electrical engineering, electronics and communication engineering, computer science and engineering, agricultural science, and information technology.

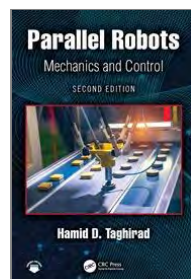
CRC Press
July 2025 : 284pp
Hb: 978-1-032-65794-3 : \$160
eBook: 978-1-003-62839-2

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2ND EDITION

Parallel Robots

Mechanics and Control



Hamid D. Taghirad K.N. Toosi University of Technology, Tehran, Iran

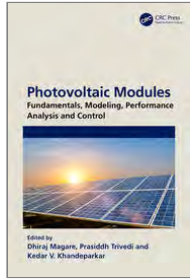
In today's rapidly evolving industrial landscape, robotics has become essential for meeting the demands of large-scale production. Parallel robots, with their closed-loop kinematic structures, offer unmatched precision, rigidity, and load-bearing capabilities, making them indispensable for tasks requiring high accuracy and efficiency. This book explores the unique advantages of parallel robots, providing a comprehensive resource for engineers, researchers, and students interested in mastering their design, analysis, and control.

CRC Press
September 2025 : 612pp
Pb: 978-1-032-96666-3 : \$89.99
Hb: 978-1-032-96209-2 : \$220

* For full contents and more information, visit: www.routledge.com/9781032966663

Photovoltaic Modules

Fundamentals, Modeling, Performance Analysis and Control



Edited by **Dhiraj Magare** Ramrao Adik Institute of Technology Nerul, India, **Prasiddh Trivedi** D Y Patil deemed to be University, India, **Kedar V. Khandeparkar**

The book provides a comprehensive review of developments in all aspects of solar photovoltaic technology in a single volume. It discusses Maximum power point tracking (MPPT) control for achieving Maximum possible power, robust control to maintain stable operation under varying internal as well as the ambient environment, inverter control for constant frequency operation, and automating the maintenance of photovoltaic solar plants. It will serve as an ideal reference text for senior undergraduate, graduate students, and academic researchers in the fields including electrical engineering, electronics and communications engineering, environmental engineering, and renewable energy.

CRC Press
August 2025 : 408pp
Hb: 978-1-032-39304-9 : \$180

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Power System Protection with Artificial Intelligence Applications



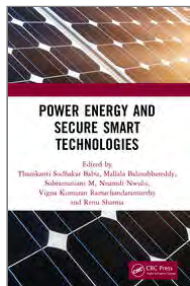
Jigneshkumar P. Desai Ganpat University, India, **Ankurkumar Pramodbhai Desai** GDIC Degree Engineering College, India, **Paresh Kumar Nayak** ISM Dhanbad, India

This book provides a complete guide to digital power system protection, emphasizing cutting-edge technologies such as digital relays, intelligent electronic devices (IEDs), artificial intelligence (AI), signal processing, and substation automation. It bridges the gap between theory and practice, offering insights into hardware implementation and real-world applications. Protection strategies for transformers, motors, generators, transmission lines, and inverter-fed systems are discussed in detail with Industry relay hardware implementation, with a focus on renewable energy integration and modern industry practices.

CRC Press
September 2025 : 392pp
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Power Energy and Secure Smart Technologies



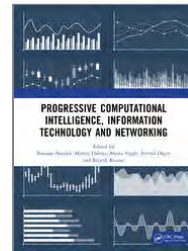
Edited by **Thanikanti Sudhakar Babu**, **Mallala Balasubbareddy**, **Subramaniam M**, **Nnamdi Nwulu**, **Vigna Kumaran Ramachandaramurthy**, **Renu Sharma**

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CRC Press
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Progressive Computational Intelligence, Information Technology and Networking



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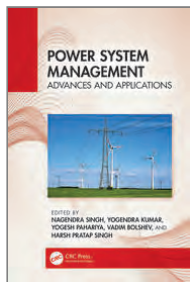
Progressive Computational Intelligence, Information Technology and Networking presents a rich and diverse collection of cutting-edge research, real-world applications, and innovative methodologies spanning across multiple domains of computer science, artificial intelligence

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Power System Management

Advances and Applications



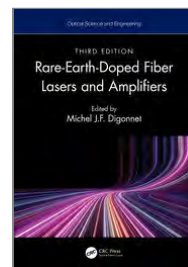
Edited by **Nagendra Singh**, **Yogendra Kumar**, **Yogesh Pahariya**, **Vadim Bolshev**, **Harsh Pratap Singh**

This book showcases the cutting-edge technologies used in electrical power systems, especially in electrical transmission, and distribution automation systems. It discusses grid-connected renewable energy system operation and control, and reactive and active power control by STATCOM using PSO. The text further explains the use of fiber optics in power system protection systems and the application of advanced sensors for monitoring power system devices. It is primarily written for senior undergraduates, graduate students, and academic researchers in the fields including electrical engineering, electronics and communications engineering, computer science, and engineering.

CRC Press
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Hb: 978-1-032-85025-2 : \$160
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Rare-Earth-Doped Fiber Lasers and Amplifiers



Edited by **Michel J.F. Digonnet**

Series: *Optical Science and Engineering*

This book covers main fiber lasers and amplifier devices based on rare-earth-doped silica and fluoroaluminate fibers. It describes the erbium-doped fiber amplifier and its role as foundational in optical communication systems. This new edition is fully revised including new material on visible fluoride fiber lasers, single-frequency fiber lasers, broadband fiber sources, Q-switch fiber lasers, and rare-earth doped infrared-transmitting glass fibers. Three brand new chapters include high-power Yb-doped fiber lasers, Tm-doped mode-locked fiber lasers at 2μm, and Ho-doped mode-locked fiber lasers.

CRC Press
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2ND EDITION

Real-Time Embedded Systems with Open-Source Operating Systems



Ivan Cibrario Bertolotti National Research Council of Italy, Institute of Electronics, Computer and Telecommunication Engineering, Turin, Italy, **Gabriele Manduchi** National Research Council of Italy (Institute of Ionized Gases), University of Padova

This book aims to provide readers with hands-on knowledge about real-time operating systems and their possible application in the embedded systems domain to streamline, simplify, and make software development more efficient, without requiring any significant previous experience with them. A thorough presentation of operating system-based programming techniques is especially important because they enjoy an ever-increasing popularity in the embedded systems domain but are often misunderstood, because they still lack comprehensive support in the scientific and technical literature.

CRC Press
November 2025 : 488pp
Pb: 978-1-032-97651-8 : \$66.99
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Recent Trends in Engineering, Science and Technology



Edited by **Jyoti Sekhar Banerjee**, **Siddhartha Bhattacharyya**, **Debashis De**, **Jiinia Datta**, **Panagiotis Sarigiannidis**, **Jan Platos**, **Muhammad Mujtaba Asad**

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AIEST is a leading conference focused on providing a platform to researchers, scholars, engineers, scientists and industrial professionals to gather knowledge and bridge the gap between academia and its industrial aspects, around the world.

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Recent Trends in VLSI and Semiconductor Packaging



Edited by **T. Vasudeva Reddy**, **K. Madhava Rao**

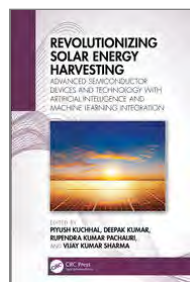
The Conference aimed to provide a platform for researchers, academicians, industry experts, and practitioners to exchange ideas, present research findings, and discuss emerging trends and challenges in the specified fields. It sought to foster collaboration, innovation, and knowledge dissemination by bringing together experts and stakeholders from diverse backgrounds to address key issues and explore new research directions.

CRC Press
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Revolutionizing Solar Energy Harvesting

Advanced Semiconductor Devices and Technology with Artificial Intelligence and Machine Learning Integration



Edited by **Piyush Kuchhal**, **Deepak Kumar**, **Rupendra Kumar Pachauri**, **Vijay Kumar Sharma**

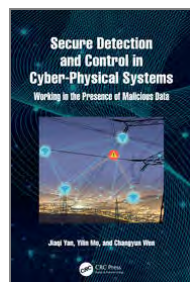
This book provides insights into emerging semiconductor device technology, challenges, and solutions for harnessing solar power to produce sustainable energy and meet the escalating demand for electricity generation. The book is intended for researchers and professionals in the field of nano materials and semiconductor devices for harnessing solar power codeign issues, as well as UG/PG students within Electronics or Electrical Engineering programs. The book provides a good understanding of device physics, operation of photovoltaic cells, challenges, optimization and solutions in its fabrication technology to the Researchers/Students community.

CRC Press
October 2025 : 320pp
Hb: 978-1-032-85714-5 : \$140

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Secure Detection and Control in Cyber-Physical Systems

Working in the Presence of Malicious Data



Jiaqi Yan Institute of Science Tokyo, Japan, **Yilin Mo** Tsinghua University, Beijing, China, **Changyun Wen** Nanyang Technological University, Singapore

In this pioneering reference work, Yan, Mo, and Wen explain secure detection and control algorithms for cyber-physical systems; describe their history and development, recent advances, and future trends; and provide practical examples to illustrate the topic. This book is vital for researchers and engineers who are researching and working in the fields of cyber-physical systems, secure detection, control theory, and related topics. It is also hugely beneficial for students in the fields of information technology, control systems, or power systems. Readers should have a basic understanding of linear algebra, convex optimization, and stochastic processes.

CRC Press
August 2025 : 122pp
Hb: 978-1-032-52922-6 : \$140

* For full contents and more information, visit: www.routledge.com/9781032529226

Self-Commissioning Wireless Power Transfer

A New Control Paradigm



Yun Yang Nanyang Technological University, Singapore

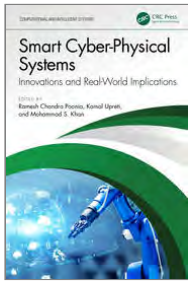
This accessible guide describes the design and implementation of new front-end monitoring and control strategies for wireless power transfer (WPT). The new control paradigm moves all receiver-side controllers to the transmitter side to enable multiple advantages over conventional designs. Researchers working on WPT technologies within academia and industry will benefit immensely from the discussions within this book, as will graduate students aiming to increase their knowledge on control schemes for power converters at the transmitter sides and primary-side control for transmitter-side inverters.

CRC Press
November 2025 : 144pp
Hb: 978-1-032-73781-2 : \$120

* For full contents and more information, visit: www.routledge.com/9781032737812

Smart Cyber-Physical Systems

Innovations and Real-World Implications



Edited by **Ramesh Chandra Poonia** CHRIST (Deemed to be University), NCR, India, **Kamal Upreti** IEC, Ghaziabad, **Mohammad S Khan**

Series: *Computational and Intelligent Systems*

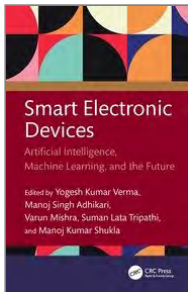
Smart Cyber-Physical Systems (SCPS) are revolutionizing the interaction between the physical and digital realms, driving innovation across diverse fields. This book provides an extensive overview of cutting-edge SCPS technologies, highlighting their applications, challenges, and transformative potential. Designed for researchers, professionals, and students, it offers foundational insights and advanced applications in urban planning, healthcare, transportation, finance, and cybersecurity. It also bridges the gap between theory and practice through real-world case studies and in-depth analysis, showcasing how SCPS addresses critical global challenges.

CRC Press
September 2025 : 432pp
Hb: 978-1-032-89293-1 : \$200

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Smart Electronic Devices

Artificial Intelligence, Machine Learning, and the Future



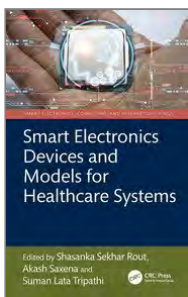
Edited by **Yogesh Kumar Verma** Lovely Professional University, Jalandhar, Punjab, **Manoj Singh Adhikari** Lovely Professional University, Jalandhar, India, **Varun Mishra** Graphic Era University, India, **Suman Lata Tripathi** LPU, India, **Manoj Kumar Shukla** Symbiosis Institute of Technology Pune, Symbiosis International University, India

The book analyzes the use of smart medical devices that use artificial intelligence and machine learning to analyze medical images, detect diseases, and assist in diagnosis. It further focuses on real-world applications of artificial intelligence and machine learning in smart electronic devices, demonstrating how these technologies are being used in various industries, such as healthcare, automotive, finance, and consumer electronics.

CRC Press
September 2025 : 368pp
Hb: 978-1-032-85406-9 : \$160

* For full contents and more information, visit: www.routledge.com/9781032854069

Smart Electronics Devices and Models for Healthcare Systems



Edited by **Shasanka Sekhar Rout**, **Akash Saxena**, **Suman Lata Tripathi** LPU, India

Series: *Smart Electronics, Computing, and Internet of Things*

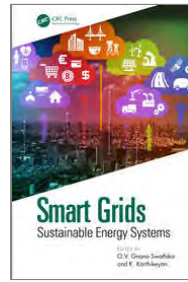
In light of recent environmental catastrophes and the COVID-19 pandemic, healthcare has received rehabilitated focus and consideration from researchers across disciplines. This text offers a comprehensive exploration of the intersection between technology and healthcare, providing insights into the design, implementation, and impact of smart electronic devices and models in modern healthcare systems. The text is primarily written for senior undergraduates, graduate students, and academic researchers in the fields of electrical engineering, electronics and communications engineering, computer science and engineering, and biomedical engineering.

CRC Press
November 2025 : 336pp
Hb: 978-1-032-90883-0 : \$170

* For full contents and more information, visit: www.routledge.com/9781032908830

Smart Grids

Sustainable Energy Systems



Edited by **O.V. Gnana Swathika** VIT Chennai, Chennai, India., **K. Karthikeyan** Larsen and Toubro, Chennai, India.

This reference text presents a threat to IoT Security and their Mitigation Strategies in Smart Grid. It further discusses aspects of adaptive demand response management, multiport converter topology and voltage stability in smart grid. Internet of Things-based prioritized load management technique for PV battery-powered buildings is illustrated. Importance of Zero energy buildings, sustainable farming and E-vehicles are discussed. Case Studies on Optimal DG Planning are presented.

CRC Press
August 2025 : 432pp
Hb: 978-1-032-77494-7 : \$200

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Smart Sensors

Design, Challenges, and Applications



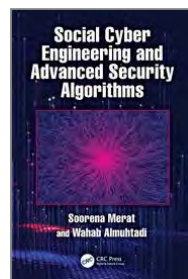
Edited by **Manoj Kumar Shukla** Symbiosis Institute of Technology Pune, Symbiosis International University, India, **Praveen Kumar Malik** Lovely Professional University, India., **Anuj Jain** Lovely Professional University, India, **Neeraj Kumar Mishra** NIMS University Jaipur, India

The reference text comprehensively discusses micro-electromechanical systems and nanoelectromechanical systems-based design of smart sensors, fabrication techniques for smart sensors, and smart wearable stress monitoring devices for autistic children. It covers applications of smart sensors in diverse areas including medical, agricultural, space, automobiles, manufacturing, security, and surveillance. It is primarily written for senior undergraduates, graduate students, and academic researchers in the fields of electrical engineering, electronics and communications engineering, sensor technology, nanoscience, and nanotechnology.

CRC Press
July 2025 : 320pp
Hb: 978-1-032-74663-0 : \$160
eBook: 978-1-003-63388-4

* For full contents and more information, visit: www.routledge.com/9781032746630

Social Cyber Engineering and Advanced Security Algorithms



Soorena Merat, **Wahab Almuhtadi**

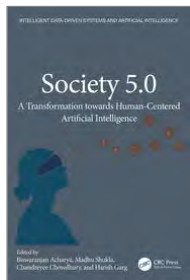
This book delves into the dynamic interplay between algorithm design, quantum computing, human behavior, and the evolving landscape of cybersecurity regulation. It highlights the evolution in cybersecurity driven by breakthroughs in algorithmic development, it emphasizes the role of quantum computing in revolutionizing factorization approaches. This book will be of interest to computer scientists, engineers, and professionals working on algorithm design that are interested in understanding the intricate connection between mental health studies and the future of algorithms and the implications for cybersecurity laws.

CRC Press
May 2025 : 382pp
Hb: 978-1-032-81644-9 : \$160
eBook: 978-1-003-50069-8

* For full contents and more information, visit: www.routledge.com/9781032816449

Society 5.0

A Transformation towards Human-Centered Artificial Intelligence



Edited by **Biswaranjan Acharya** School of Computer Engineering, KIIT, Bhubaneswar, Odisha, India, **Madhu Shukla** Marwadi University, India, **chandreyee chowdhury** Jadavpur University, **Harish Garg**

Series: Intelligent Data-Driven Systems and Artificial Intelligence

The book will help the readers in the field of the Internet of Things, and especially its convergence with artificial intelligence, which has given rise to the new paradigm of artificial intelligence of things (AIoT). It covers important concepts such as intelligent space and human-centered robotics and its effect on human wellbeing, and human-centered aviation automation. The text is primarily written for senior undergraduate, graduate students, and academic researchers in diverse fields including electrical engineering, electronics and communications engineering, computer science and engineering, and information technology.

CRC Press

August 2025 : 392pp

Hb: 978-1-032-66759-1 : \$160

* For full contents and more information, visit: www.routledge.com/9781032667591

Soft Robotics for Medical and Healthcare Applications



Edited by **Shaik Himam Saheb**, **Tharakeshwar Appala**, **Mohammad S Khan**

Series: Computational and Intelligent Systems

Soft robotics is an emerging field that involves the development and application of robots and robotic systems made from soft and flexible materials. Soft Robotics for Medical and Healthcare Applications discusses the use of soft robotics in minimally invasive vascular surgery, for clubfoot, and filariasis leg. The text is primarily written for senior undergraduates, graduate students, and academic researchers in the fields including electrical engineering, electronics and communications engineering, computer engineering, and biomedical engineering.

CRC Press

May 2025 : 260pp

Hb: 978-1-032-88767-8 : \$170

eBook: 978-1-003-53961-2

* For full contents and more information, visit: www.routledge.com/9781032887678

Sustainable Cities

Paradigm of Digitalization



Edited by **O.V. Gnana Swathika** VIT Chennai, Chennai, India., **K. Karthikeyan** Larsen and Toubro, Chennai, India.

This book discusses concepts such as sustainable and smart ecosystems, climate change mitigation and adaptation, recycling and waste reduction involving collection, treatment, and recycling of wastewater. It further presents the case studies and applications of big data, machine learning, and artificial intelligence. It is primarily written for senior undergraduates, graduate students, and academic researchers in the fields of electrical engineering, electronics and communications engineering, environmental engineering, and computer engineering.

CRC Press

October 2025 : 464pp

Hb: 978-1-032-86118-0 : \$180

* For full contents and more information, visit: www.routledge.com/9781032861180

Sustainable Electronics

The Future Ahead



Edited by **Farkhanda Ana** DEPARTMENT OF ECE, SOET, BGSB UNIVERSITY, INDIA, **Sandeep Arya** University of Jammu, India, **Haider Mehraj** BGSB University, India

The reference text focuses on the principles of designing sustainable electronics, including considerations for reducing the environmental impact of electronics during the design phase. It covers topics such as product life cycle assessment, eco-design, and green materials selection. The book discusses the development and use of sustainable materials in electronics, such as biodegradable and renewable materials. It is primarily written for senior undergraduates, graduate students, and academic researchers in the fields of electrical engineering, electronics and communications engineering, energy, environmental engineering, and electronic materials and devices.

CRC Press

July 2025 : 364pp

Hb: 978-1-032-74484-1 : \$200

* For full contents and more information, visit: www.routledge.com/9781032744841

Sustainable Materials and Technologies in VLSI and Information Processing



Edited by **Shashi Kant Dargar**, **Shilpi Birla**, **Abha Dargar**, **Avtar Singh**, **D. Ganeshaperumal**

The conference aimed to converge advancements in semiconductor technology with sustainable practices, addressing the critical need for eco-consciousness in the field of Very Large Scale Integration (VLSI) and Information Processing. The primary purpose of the conference was to explore innovative materials, manufacturing processes, and design methodologies that minimize environmental impact while optimizing performance and functionality in electronic devices. Key features of the conference included interdisciplinary discussions on sustainable materials such as biodegradable polymers, low-power semiconductor materials, and recyclable electronic components.

CRC Press

May 2025 : 534pp

Pb: 978-1-041-07651-3 : \$69.99

Hb: 978-1-041-07649-0 : \$220

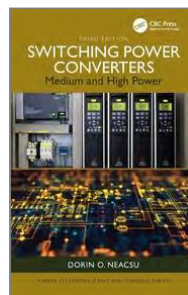
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3RD EDITION

Switching Power Converters

Medium and High Power



Dorin O. Neacsu Woburn, Massachusetts, USA

Series: Power Electronics and Applications Series

The Third Edition of Switching Power Converters goes beyond the design and analysis of conventional power converter circuits to discuss the actual use of industrial technology, covering facets of implementation otherwise overlooked by theoretical textbooks. This edition uniquely presents the historical and market evolution of each technology, allowing the Reader to follow trends. Power electronics represents a mature technology, with a variety of products concurrent on the market, designed and launched from the 1990s to 2020s.

CRC Press

August 2025 : 632pp

Hb: 978-1-032-97073-8 : \$180

* For full contents and more information, visit: www.routledge.com/9781032970738

Technology Developments in Computer Intelligence and their Applications in the era of Industry 5.0

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Edited by **Mukul Kumar Gupta** MJP Rohilkhand University, Bareilly, India, **Abhinav Sharma** UPES, Dehradun, India, **Vinay Rishiwal** MJP Rohilkhand University, India, **Meera C S** Advanced Remanufacturing and Technology Centre, A*STAR, Singapore

Series: *Smart Technologies for Engineers and Scientists*

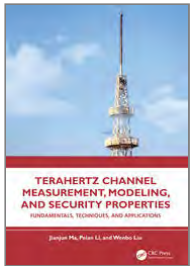
Smart technologies such as artificial intelligence, machine learning, and computer intelligence are shaping the future of Industry 5.0. This book delves into emerging technologies that integrate human-centric approaches with AI-driven automation, addressing key innovations in deep learning, augmented reality and IoT. Through real-world applications across industries such as healthcare, robotics, and automation, this comprehensive guide provides insights into how intelligent systems are revolutionizing efficiency, decision-making, and human-machine collaboration in the digital era.

CRC Press
November 2025 : 248pp
Hb: 978-1-032-94108-0 : \$120

* For full contents and more information, visit: www.routledge.com/9781032941080

Terahertz Channel Measurement, Modeling, and Security Properties

Fundamentals, Techniques, and Applications



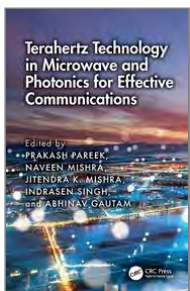
Edited by **Jianjun Ma**, **Peian Li**, **Wenbo Liu**

This book presents essential topics in terahertz communications, including channel measurement, modeling, and security properties, which helps us understand terahertz frequencies, their unique propagation characteristics, and the challenges they present. The chapters explore propagation mechanisms, multipath effects, and atmospheric impacts, delving into advanced measurement techniques such as time-domain and frequency-domain methods. The book will appeal to researchers, engineers, and students interested in terahertz communication technologies.

CRC Press
August 2025 : 618pp
Hb: 978-1-032-91703-0 : \$120

* For full contents and more information, visit: www.routledge.com/9781032917030

Terahertz Technology in Microwave and Photonics for Effective Communications



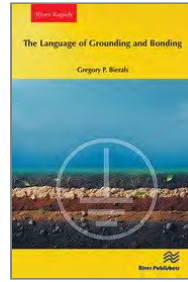
Edited by **Prakash Pareek**, **Naveen Mishra**, **Jitendra K. Mishra**, **Indrasen Singh**, **Abhinav Gautam**

This book explores the utilization of terahertz technology within the realms of microwave and photonics to advance the development of next-generation communication systems. It delves into various cutting-edge technologies such as the application of metamaterials to harness terahertz capabilities, intersatellite communication, next-generation optical fiber communication, and the utilization of metamaterial absorbers for secure communications. This book is intended for experts and professionals in fields of computer science, networking, telecommunications, and technology policy.

CRC Press
October 2025 : 376pp
Hb: 978-1-032-98522-0 : \$170

* For full contents and more information, visit: www.routledge.com/9781032985220

The Language of Grounding and Bonding



Gregory P. Biersals

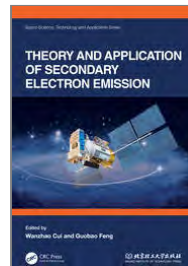
Series: *River Publishers Rapids Series in Electronic Materials, Circuits and Devices*

This book identifies and analyzes the important terms that apply to grounding and bonding electrical systems and equipment. These terms have many real-world applications in the design and installation of electrical systems, and the grounding and bonding of these systems are the heart of every electrical installation. In our analysis, we use real world applications with practical examples to further enhance the reader's understanding of this complex subject.

River Publishers
July 2025 : 56pp
Pb: 978-8-770-04808-8 : \$65

* For full contents and more information, visit: www.routledge.com/9788770048088

Theory and Application of Secondary Electron Emission



Edited by **Wanzhao Cui**, **Guobao Feng**

Series: *Space Science, Technology and Application Series*

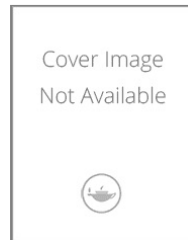
This book examines the physical mechanisms of secondary electrons and recent developments, focusing on the theory and applications of secondary electron emission and suppression technology. This title will be a valuable reference for researchers and students interested in the physical mechanisms of secondary electrons, SEM, accelerators, electrostatic discharge, and space multipactor.

CRC Press
July 2025 : 282pp
Hb: 978-1-032-66708-9 : \$160

* For full contents and more information, visit: www.routledge.com/9781032667089

Towards Unmanned Surface Vehicles

Methods and Practices



Cover Image
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Huarong Zheng, *Chenguang Liu*

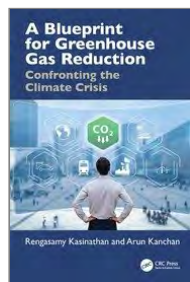
The book presents the latest overview, methodologies, design practices, and applications of unmanned surface vehicles (USVs). The authors introduce advanced theories and algorithms for the analysis and design of a maritime unmanned surface vehicle system, covering the sensing, path following, navigation, and control of the ocean surface environment. They demonstrate the architectural design, implementation, and field testing of USVs as well as key applications, such as hostile military scenarios, scientific oceanographic observation, and intelligent waterborne transportation. The book will appeal to researchers, graduate students, and engineers interested in USVs.

CRC Press
September 2025 : 208pp
Hb: 978-1-041-11559-5 : \$110

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A Blueprint for Greenhouse Gas Reduction

Confronting the Climate Crisis



Rengasamy Kasinathan, Arun Kanchan

A comprehensive book detailing greenhouse gas (GHG) emissions across a range of sources, sectors, and countries, with a particular emphasis on the United States and other developed nations. It presents an in-depth analysis covering the roles of industries, policymakers, and regulatory frameworks in contributing to and mitigating GHG emissions. The authors discuss emission measurement and monitoring methodologies, supported by real-life case studies illustrating how corporations, policymakers, and industry leaders can implement responsible decarbonization strategies. Additionally, it covers the critical verification aspect of enforcing climate policies and regulations.

CRC Press
September 2025 : 256pp
Hb: 978-1-032-76692-8 : \$120

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Advanced Treatment Technologies for the Removal of Microplastics in Wastewater



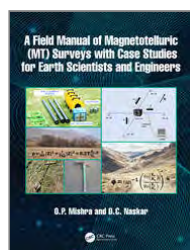
Edited by Izharul Haq, Maulin P. Shah Enviro Technology Limited, India

Advanced Treatment Technologies for the Removal of Microplastics in Wastewater presents the pervasive issue of microplastic pollution in wastewater, examining its origins in everyday activities and industrial processes and its spread through aquatic ecosystems. This book provides a deep dive into advanced treatment technologies include physico-chemical and biological methods, highlighting both the progress and challenges in effectively removing microplastics from wastewater. It also addresses the potential health risks posed by microplastic exposure, discussing how these particles act as carriers for toxic substances and their suspected links to health issues in humans and wildlife.

CRC Press
May 2025 : 310pp
Hb: 978-1-032-45947-9 : \$140
eBook: 978-1-003-37938-6

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A Field Manual of Magnetotelluric (MT) Surveys with Case Studies for Earth Scientists and Engineers



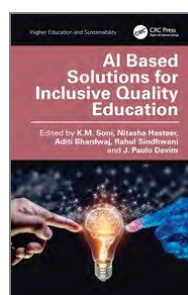
O. P. Mishra National Centre for Seismology, Ministry of Earth Sciences, New Delhi, India, **D. C. Naskar** National Centre for Seismology, Delhi, India

This book details both conventional and advanced geophysical techniques with description of physics involved into different methodologies of magnetotellurics (MT). It offers detailed discussions of the theory of EM and MT methods, the operation of specific instruments including the presentation of results and their interpretation in tabular format. The chapters describe conceptual background of MT geophysical methods along with the related instrumentation, sufficient illustrations and applicability of the individual methodology supported by successful case histories. This book is aimed at professionals, students and researchers in geophysics, geology, and other earth sciences.

CRC Press
August 2025 : 400pp
Hb: 978-1-032-81242-7 : \$230

* For full contents and more information, visit: www.routledge.com/9781032812427

AI Based Solutions for Inclusive Quality Education



Edited by K.M. Soni Amity University Uttar Pradesh, India, **Nitasha Hasteer** Amity University Uttar Pradesh, India, **Aditi Bhardwaj** Amity University, **Rahul Sindhwani**, **J. Paulo Davim** University of Aveiro, Portugal

Series: Higher Education and Sustainability

This book helps readers discover practical AI tools for diverse learning styles and abilities, fostering inclusivity in education and maximizing the individual potential of students and educators. It provides cutting-edge solutions designed to remove barriers due to accessibility and create an equitable classroom. Through practical applications and case studies, the book explores the power of AI in creating personalized learning pathways and methods of engagement in the classroom while emphasizing that the human touch, with empathy and critical thinking, remains central to the learning process. It addresses concerns about the ethical development and deployment of AI in education.

CRC Press
September 2025 : 184pp
Hb: 978-1-032-90978-3 : \$120

* For full contents and more information, visit: www.routledge.com/9781032909783

Adaptive Agro-Management for Environmental Sustainability



Edited by Sanjeev Kumar, Susmita Karmakar, Anita Rani, Ritu Singh

Series: Earth, Environment, and Sustainability

This book documents information on adaptive agro-management approaches ensuring environmental sustainability. It covers recent sustainable agro-techniques of farming used in developed, developing and under-developed countries such as carbon neutral farming, organic agriculture, use of slow-release fertilizers, nano-agriculture, crop residue management, biochar, vermicompost, agroforestry, climate smart agriculture, advanced water used technologies, microbial fertilizers, and ecological farming. This book is aimed at researchers and graduate students in environmental science, agriculture engineering and ecological engineering, and sustainable agriculture.

CRC Press
October 2025 : 232pp
Hb: 978-1-032-53880-8 : \$140

* For full contents and more information, visit: www.routledge.com/9781032538808

Beneficiation and Management of Technological Waste

Opportunities and Challenges



Anurag Bajpai, Arunabh Meshram, Krishanu Biswas Indian Institute of Technology Kanpur

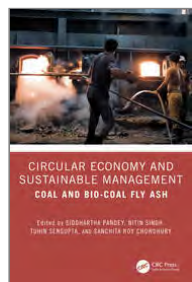
This book focuses on the present and future trends, technologies, as well as regulations for the reuse and recycling of technological waste globally from the perspective of environmental, social, and economic elements of the different connected systems. It also analyses specific technological waste producing materials and product streams in-depth and investigates the future of technological waste and its management considering better end-of-lifecycle designs, legislation, and sustainability perspectives. This book is aimed at graduate students and researchers in materials science and engineering, extractive metallurgy, sustainable and environmental engineering.

CRC Press
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Hb: 978-1-032-55538-6 : \$170
eBook: 978-1-003-61968-0

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Circular Economy and Sustainable Management

Coal and Bio-Coal Fly Ash



Edited by **Siddhartha Pandey**, **Nitin Kumar Singh**
Marwadi Education Foundation Group of Inst., India,
Tuhin Sengupta, **Sanchita Roy Chowdhury**

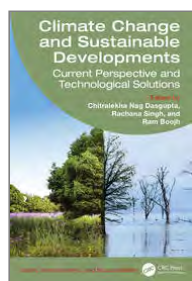
This book summarizes the conventional as well as emerging waste management approaches of fly ash, particularly with a sustainability dimension including applicability, scope, methods, and challenges of bio-coal production. It covers sustainability aspects of fly ash management and recent developments in methods, processes, and scope of bio-coal production as an alternative of conventional coal with its implications in industrial ecosystems. It focusses on climate change, sustainability, and circular economy aspects of fly ash management approaches. This book is aimed at researchers and graduate students in environmental and civil engineering, and clean technologies.

CRC Press
September 2025 : 352pp
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Climate Change and Sustainable Developments

Current Perspective and Technological Solutions



Edited by **Chitralekha Nag Dasgupta**, **Rachana Singh**,
Ram Boojh

Series: Earth, Environment, and Sustainability

This book focusses on climate change and sustainable scientific and technological solutions, covering topics on environmental pollution, extreme environments, greenhouse gases and global warming, effects of climate change on water resources and forest resources, depletion of fossil fuels and generation of renewable energy, human health, agriculture and food security as per the UNSDGs. It covers wastewater management, production of renewable energy carriers, and climate change policies developed by international bodies. This book is aimed at graduate students and researchers in environmental engineering, renewable energy, climate change, and sustainable development.

CRC Press
August 2025 : 336pp
Hb: 978-1-032-68980-7 : \$160

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Development and Application of National-Scale Dynamic Water Resources Assessment Model in China



Huan Liu, **Yangwen Jia**, **Jianhua Wang**, **Junkai Du**,
Cunwen Niu, **Peng Hu**, **Jiajia Liu**

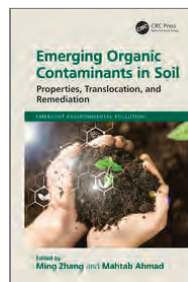
This detailed book introduces China's national dynamic water resources assessment model, presenting its construction, application scenarios, and modern modeling approach to replace traditional statistics-based methods. This work will serve as an essential reference for scholars and students in hydrology and water resources, as well as policy makers and engineers involved in water resources management and assessment.

CRC Press
September 2025 : 192pp
Hb: 978-1-041-08697-0 : \$110

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Emerging Organic Contaminants in Soil

Properties, Translocation, and Remediation



Edited by **Ming Zhang** China Jiliang University, **Mahtab Ahmad** Quaid-i-Azam University

Series: Emergent Environmental Pollution

Emerging Organic Contaminants (EOCs) are either newly identified or newly detected contaminants that are toxic or potentially hazardous to the ecosystem. Soil is one of the most important sinks of EOCs arising from industrial emissions, incidental discharge, wastewater irrigation, or atmospheric deposition. EOCs in soil may threaten the soil ecosystem's health and subsequently transfer to humans via food and water consumption. This book provides comprehensive knowledge on the behavior and translocation of EOCs in soil and introduces remediation methods and technologies. From fundamentals to future risks, it explains the importance of understanding EOCs.

CRC Press
October 2025 : 322pp
Hb: 978-1-032-83477-1 : \$160

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Environmental Bioavailability Handbook

Methods and Assessments



Xiaokai Zhang, **Mona Wells** Ronin Institute, USA

Series: Environmental Assessment and Management

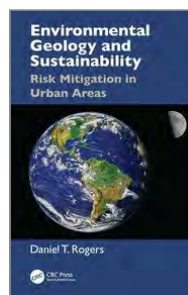
This practical guide on environmental bioavailability explains the importance of its use and includes specific methods for testing bioavailability of pollutants in water, soils, and sediments. Detailed methods and techniques are given to measure and assess bioavailability using biotic methods, abiotic methods, and modeling. A case study for each approach will help environmental researchers and practitioners understand the applications of bioavailability in the field and laboratory. It is also an excellent resource for students looking for a foundational text on environmental bioavailability.

CRC Press
November 2025 : 400pp
Hb: 978-1-032-40472-1 : \$220

* For full contents and more information, visit: www.routledge.com/9781032404721

Environmental Geology and Sustainability

Risk Mitigation in Urban Areas



Daniel T. Rogers Amsted Industries, Chicago, Illinois, USA

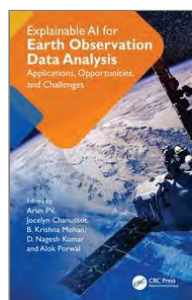
This book explains the role of geology as the basis of sustainability. It discusses how humans have altered natural balances and the unique dimensions that geology brings to understanding sustainability. Focused on humans' activities in shaping urban areas, this book helps readers identify natural geologic risks created, identify human actions that reduce or increase those risks, or create new risks with unintended negative environmental consequences. It provides sustainability-oriented solutions so that humans can live in harmony with nature.

CRC Press
June 2025 : 544pp
Hb: 978-1-032-73216-9 : \$160
eBook: 978-1-003-46315-3

* For full contents and more information, visit: www.routledge.com/9781032732169

Explainable AI for Earth Observation Data Analysis

Applications, Opportunities, and Challenges



Edited by **Arun PV** Indian Institute of Information Technology Sri City, **Jocelyn Chanussot**, **B Krishna Mohan** IIT Bombay, **D. Nagesh Kumar** Indian Institute of Science, Bangalore, India, **Alok Porwal** IIT Bombay

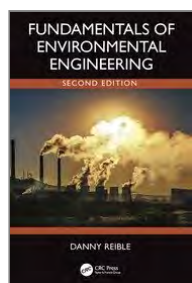
The role of AI is crucial in the domain of Earth Observation (EO) data analysis. Deep learning-based approaches have improved accuracy, but they have affected the reliability and transparency of EO data. It is critical to improve the explainability of EO data analysis algorithms and complex deep learning models to ensure the quality of spatial decisions. This book discusses the advancements in Explainable AI and investigates their suitability for EO data analyses offering best practices for implementing algorithms that facilitate big and efficient data processing. It lays the foundation of Explainable EO and helps readers build trustworthy, secure, and robust EO systems.

CRC Press
October 2025 : 320pp
Hb: 978-1-032-98096-6 : \$140

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2ND EDITION

Fundamentals of Environmental Engineering



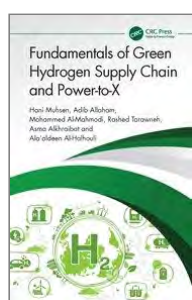
Edited by **Danny Reible** Texas Tech University

Numerous new technologies and approaches have been developed since the first publication of Fundamentals of Environmental Engineering. This newly revised and updated edition continues to have a focus on fundamental concepts, and on mass and energy material balances, but it eliminates some of the least-used concepts and allows space for new and more common aspects of environmental engineering practice. Expanding its use at the junior level, the author explains current environmental engineering issues including emerging contaminants and management of air, water, soil and sediment pollution.

CRC Press
July 2025 : 512pp
Hb: 978-1-138-05448-6 : \$150

* For full contents and more information, visit: www.routledge.com/9781138054486

Fundamentals of Green Hydrogen Supply Chain and Power-to-X



Edited by **Hani Muhsen** German Jordanian University, **Adib Allaham** Northumbria University, **Mohammed Al-Mahmoudi** German Jordanian University, **Rashed Tarawneh** German Jordanian University, **Asma Alkhraibat** German Jordanian University, **Ala'adeen Al-Halhouli** German Jordanian University

This book is an engaging introduction to green hydrogen and its role in changing the global energy landscape. It explains theoretical and practical aspects of green hydrogen supply chain including production, storage, transportation, and utilization, and explores the techno-economic aspects of each stage. Through hands-on examples, readers understand how green hydrogen can be used across various applications. It explains Power-to-X technologies, which enable the conversion of green hydrogen into eco-friendly fuels and chemical feedstocks. Designed for students and researchers, it simplifies complex concepts and provides a comprehensive understanding of green hydrogen's benefits.

CRC Press
August 2025 : 328pp
Hb: 978-1-041-07176-1 : \$120

* For full contents and more information, visit: www.routledge.com/9781041071761

G20 and Energy Security

Roadmap for Sustainable Development (Argentina to Italy)



Edited by **Richa Kothari** School of Environmental Sciences; Babasaheb Bhimrao Ambedkar University Lucknow - 226025, **Neeta Rani**, **Anita Singh** Central University of Haryana, India

Series: Earth, Environment, and Sustainability

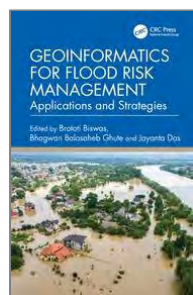
G20 is a group of twenty countries which are one of the biggest economies in the world and energy security as core area. This book covers acceleration of energy transition and low-carbon growth with emphasis on G20 countries. It covers inclusive energy transition with the use of renewable energy sources. Further coverage includes energy balances, production/consumption sectors, energy efficiency and data indicators, energy related environmental emissions, clean energy alternatives, and so forth. This book is aimed at Researchers and graduate students in energy security, sustainable development, and environment sustainability including professionals.

CRC Press
November 2025 : 424pp
Hb: 978-1-032-70397-8 : \$180

* For full contents and more information, visit: www.routledge.com/9781032703978

Geoinformatics for Flood Risk Management

Applications and Strategies



Edited by **Brototi Biswas**, **Bhagwan Ghute**, **Jayanta Das** Rampurhat College

This book presents a comprehensive coverage of the various types of floods, what causes them in different terrains, and the anthropogenic, geographical, hydro-geological, and geomorphological aspects of flood-prone areas. Geospatial techniques for flood mapping and monitoring, multi-criteria decision-making techniques for risk management, and machine learning algorithms for flood prediction mapping, susceptibility analysis, and monitoring are all integrated into the case studies provided in this book. The discussions on flood management strategies, including sustainable flood risk assessment through indigenous knowledge and local resources, empowers readers to make informed decisions.

CRC Press
October 2025 : 504pp
Hb: 978-1-032-87604-7 : \$220

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Geology of the Cauvery Basin in South India



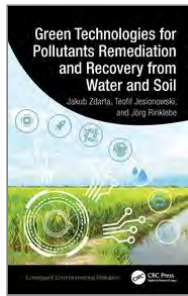
Edited by **Sreepat Jain** Adama Science and Technology University, Ethiopia, **Nivedita Chakraborty** Dept. of Geology, Kabi Jagadram Roy Government General Degree College, India

The Cauvery Basin is one of the most known and geologically important basins of India and it has been for decades, and still is, the focus of study for both national and international researchers. This book is an up-to-date multidisciplinary collection of studies addressing various aspects of the Cauvery Basin from topics on Stratigraphy, Sedimentation, and Climatic oscillations; Structure, Tectonics, and Hydrocarbon perspective, to Paleogeology, Paleobiogeography and Paleobiota. This comprehensive synthesis with recent studies and data will immensely help postgraduate students, researchers, and industry professionals interested in the geology of the Cauvery Basin.

CRC Press
June 2025 : 438pp
Hb: 978-1-032-71047-1 : \$160

* For full contents and more information, visit: www.routledge.com/9781032710471

Green Technologies for Pollutants Remediation and Recovery from Water and Soil



Edited by **Jakub Zdarta** Poznan University of Technology, Poland, **Teofil Jesionowski** Poznan University of Technology, Poland, **Jörg Rinklebe** University of Wuppertal

Series: *Emergent Environmental Pollution*

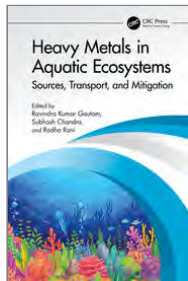
Green Technologies for Pollutants Remediation and Recovery from Water and Soil presents a comprehensive examination of sustainable and environmentally friendly methods for remediation and recovery from various types of pollutants in water bodies and in soil. It discusses diverse remediation and recovery technologies, from classic adsorption and membrane technologies to the most promising green technologies such as biocatalysts and microorganisms for obtaining value-added products for practical use. Through many case studies and best practices, the book explores current achievements and challenges and indicates future directions for global and cross-border collaboration.

CRC Press
September 2025 : 336pp
Hb: 978-1-032-88121-8 : \$170

* For full contents and more information, visit: www.routledge.com/9781032881218

Heavy Metals in Aquatic Ecosystems

Sources, Transport, and Mitigation



Edited by **Ravindra Kumar Gautam** University of Allahabad, India, **Subhash Chandra** University of Lucknow, **Radha Rani**

Heavy metals are hazardous environmental pollutants and are becoming one of the most serious environmental problems because of their persistence, toxicity, non-biodegradability, and ability to be incorporated into the food chain. This book provides state-of-the-art techniques and technologies for the assessment and remediation of heavy metal ions from aquatic ecosystems. It discusses sources, fate, transport, health risk assessment, and remediation of heavy metals and the current methods for source identification and tracking. An excellent reference for both professionals and students, this book is the first of its kind to highlight the toxicity of heavy metals.

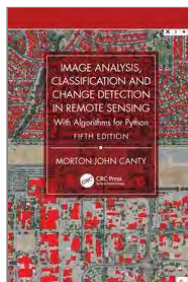
CRC Press
October 2025 : 392pp
Hb: 978-1-041-05274-6 : \$150

* For full contents and more information, visit: www.routledge.com/9781041052746

5TH EDITION

Image Analysis, Classification and Change Detection in Remote Sensing

With Algorithms for Python



Morton John Canty Juelich Research Center, Germany

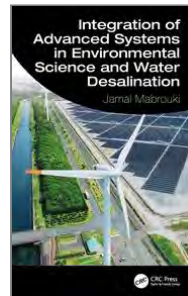
The fifth edition of this core textbook in advanced remote sensing continues to maintain its emphasis on statistically motivated, data-driven techniques for remote sensing image analysis. The theoretical substance remains essentially the same, with new material on convolutional neural networks, transfer learning, image segmentation, random forests, and an extended implementation of sequential change detection with radar satellites. As the tools which apply the algorithms to real remote sensing data have evolved substantially with time, this edition replaces the now obsolete Python 2 with Python 3 and takes advantage of the high-level packages that are based on it.

CRC Press
June 2025 : 532pp
Hb: 978-1-032-82168-9 : \$160

eBook: 978-1-003-50328-6

* For full contents and more information, visit: www.routledge.com/9781032821689

Integration of Advanced Systems in Environmental Science and Water Desalination



Edited by **Jamal Mabrouki**

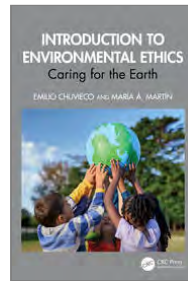
Integration of Advanced Systems in Environmental Science and Water Desalination explores cutting-edge technologies revolutionizing environmental monitoring and desalination processes. The book bridges the gap between research and real-world applications, offering insights into machine learning, IoT-based sensor networks, remote sensing, and advanced materials that enhance efficiency and sustainability.

CRC Press
October 2025 : 488pp
Hb: 978-1-041-08859-2 : \$210

* For full contents and more information, visit: www.routledge.com/9781041088592

Introduction to Environmental Ethics

Caring for the Earth



Emilio Chuvieco Universidad de Alcala, Alcala de Henares, Spain, **Maria A. Martin** RJCU, Spain

A comprehensive introductory textbook that integrates environmental ethics with social and religious perspectives, this cross-disciplinary approach helps students understand the depth and breadth of environmental issues in a globally relevant way. Environmental problems are explained by ecological, social, ethical, and religious dimensions that inspire environmental conservation. It underlines the reasons why intrinsic values of nature, and those who inhabit it, must be taken into consideration when making decisions that affect them. This book is also intended for those interested in understanding the environmental debate which is a critical component of environmental management.

CRC Press
June 2025 : 178pp
Pb: 978-1-032-90054-4 : \$56.99
Hb: 978-1-032-90049-0 : \$140

eBook: 978-1-003-54597-2

* For full contents and more information, visit: www.routledge.com/9781032900544

3RD EDITION

Introduction to Mathematical Techniques Used in GIS



Gordon Ye Pacific Gas and Electric Company, San Ramon, CA, USA, **Peter Dale**

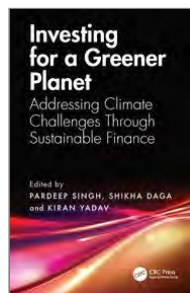
GIS technology and applications have advanced as fast as computing technology to enhance business analytics, predictive modeling, virtual reality, and artificial intelligence. The third edition addresses these new topics of interest to students and practitioners who are using geographic information systems but have a limited mathematical background. Thoroughly updated and reorganized to focus more on applications and problem solving by mathematical techniques, this book explains the basic architecture of computing as it relates to GIS, includes new application examples of selected mathematical methods, and introduces 3D modeling, machine learning, and more.

CRC Press
August 2025 : 392pp
Hb: 978-1-032-73472-9 : \$140

* For full contents and more information, visit: www.routledge.com/9781032734729

Investing for a Greener Planet

Addressing Climate Challenges Through Sustainable Finance



Edited by **Pardeep Singh** PGDAV college, University of Delhi New Delhi, India., **Shikha Daga**, **Kiran Yadav**

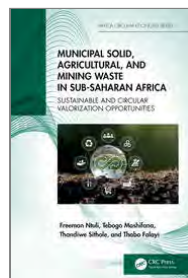
This title highlights the pertinent issue of climate change and its management using sustainable sources of finance. The book provides a comprehensive overview of sustainable development and its management using green finance, green energy, green transport, and green infrastructure, as well as the policies and innovations that can be implemented at both the micro and macro levels. This book is aimed at graduate students, researchers and professionals in environmental sciences, sustainable finance, climate change and circular economy including policymakers.

CRC Press
September 2025 : 320pp
Hb: 978-1-032-73752-2 : \$140

* For full contents and more information, visit: www.routledge.com/9781032737522

Municipal Solid, Agricultural, and Mining Waste in Sub-Saharan Africa

Sustainable and Circular Valorization Opportunities



Freeman Ntuli Botswana Univ of Sci and Tech, **Tebogo Mashifana** Univ Johannesburg, South Africa, **Thandiwe Sithole** Univ Johannesburg, South Africa, **Thabo Falayi** Namibia Univ of Science and Technology

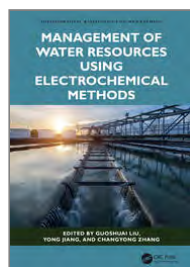
Series: *Africa Circular Economy Series*

The book seeks to cover the application of the principles of the circular economy within the context of the processing and waste management industry in Sub Saharan Africa. It includes topics related to the circular economy in relation to the sustainable use of resources in the mining, process industry and waste management sectors and looks at how some of the resources from these sectors which are currently treated as "waste" can be converted into secondary resources that can help drive economic development. This book is aimed at researchers and graduate students in environmental and chemical engineering, and waste treatment.

CRC Press
June 2025 : 174pp
Hb: 978-1-032-42842-0 : \$125
eBook: 978-1-003-37785-6

* For full contents and more information, visit: www.routledge.com/9781032428420

Management of Water Resources Using Electrochemical Methods



Edited by **Guoshuai Liu** Jiangnan University, **Yong Jiang** FAJU, **Changyong Zhang** University of Science and Technology

Series: *Environmental Assessment and Management*

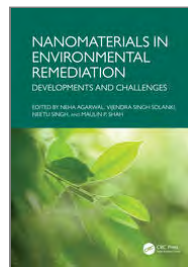
This book encompasses various approaches to electrochemical water treatment, emphasizing a well-structured framework within the nexus of electrochemistry, water, and energy. It addresses the urgent challenges of water scarcity and pollution and offers practical insights and operational guidance on removing pollutants and preserving water resources through water purification. Applications and real-life case studies support the innovative nature of electrochemical processes as a sustainable and efficient alternative. The user-friendly approach makes this book accessible to a broad audience, being a specialist seeking advanced techniques or a concerned citizen.

CRC Press
June 2025 : 306pp
Hb: 978-1-032-84945-4 : \$200

* For full contents and more information, visit: www.routledge.com/9781032849454

Nanomaterials in Environmental Remediation

Developments and Challenges



Edited by **Neha Agarwal** NKM, India, **Vijendra Singh Solanki** IPS Academy, Indore, **Neetu Singh** Government College, India, **Maulin P. Shah** Enviro Technology Limited, India

Environmental contamination poses a significant threat to ecosystems and human health. Nanomaterials, with their unique properties and versatility, have emerged as promising tools for environmental remediation. This book collates recent studies and new developments in effective environmental remediation and delves into photocatalytic applications of nanomaterials, using 3D-printed materials for the remediation of the environment, along with a deep analysis of the potential environmental risks, challenges, and the responsible use of nanomaterials. The authors also cover the prospective application and advantages of engineered nanomaterials and continuous potential of nanotechnology.

CRC Press
May 2025 : 428pp
Hb: 978-1-032-77649-1 : \$220
eBook: 978-1-003-48418-9

* For full contents and more information, visit: www.routledge.com/9781032776491

Membrane Technology for Sustainability

Applications in Gas and Water Treatment



Rizwan Nasir University of Jeddah, Mecca, **Danial Qadir** Teesside University, **Hafiz Abdul Mannan** Uni. of the Punjab

Series: *Sustainable Engineering and Science*

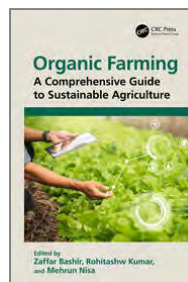
This book is a comprehensive assessment of the pivotal role that membrane technology plays in addressing ongoing environmental and sustainability challenges. It covers various aspects of membrane technology with a focus on gas separation and water treatment membranes, and explains their principles, design, and applications. Readers interested in sustainable engineering learn about membrane materials, fabrication techniques, performance optimization, system integration, along with the capabilities and limitations of membranes. The book presents real-world case studies and success stories highlighting the practical implementation of membrane technologies in various industries.

CRC Press
October 2025 : 200pp
Hb: 978-1-032-87599-6 : \$130

* For full contents and more information, visit: www.routledge.com/9781032875996

Organic Farming

A Comprehensive Guide to Sustainable Agriculture



Edited by **Zaffar Bashir**, **Rohitashw Kumar** SKUAST-Kashmir, India, **Mehrun Nisa**

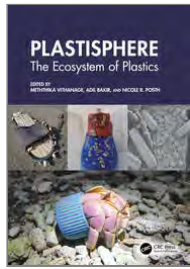
As the demand for healthy and sustainable food options increases, organic farming is becoming a viable alternative to conventional farming practices that traditionally rely heavily on synthetic inputs. Organic Farming: A Comprehensive Guide to Sustainable Agriculture examines a wide range of topics related to organic farming, including soil health, organic fertilizers, biodiversity, biotechnological interventions, microbial inoculants and biostimulants, genome editing, as well as certification and marketing.

CRC Press
May 2025 : 450pp
Hb: 978-1-032-79313-9 : \$150
eBook: 978-1-003-49146-0

* For full contents and more information, visit: www.routledge.com/9781032793139

Plastisphere

The Ecosystem of Plastics



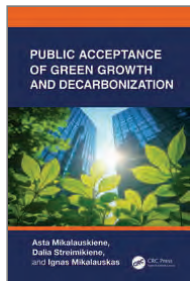
Edited by Meththika Vithanage University of Sri Jayewardenep, Sri Lanka., **Adil Bakir Cefas**, UK, **Nicole R. Posth** University of Copenhagen, Denmark

The plastisphere provides a unique man-made habitat for organisms and microbial communities. Investigating the interactions and functions of these organisms helps us understand how fouling communities can settle on these novel platforms and be moved beyond their natural ranges as well as their contribution to nutrient cycling and biogeochemical processes. This book examines the plastisphere and reveals a secret world of microbes that have adapted to live on plastic surfaces. It explains the ecological effects of plastic pollution, human health concerns, microbial ecology, mitigation techniques, and advocates sustainable solutions.

CRC Press
June 2025 : 384pp
Hb: 978-1-032-71780-7 : \$160

* For full contents and more information, visit: www.routledge.com/9781032717807

Public Acceptance of Green Growth and Decarbonization



Asta Mikalauskiene, Dalia Streimikiene, Ignas Mikalauskas Vilnius University, Lithuania

This book explores the crucial role of public acceptance in advancing green growth, decarbonization, and rapid advancements of renewable energy technologies. It shows that public acceptance is as critical as technological innovation, given the significant infrastructure, land use, and behavioral changes required for a successful transition toward a carbon-neutral society and provides theoretical frameworks tested in real-life case studies. The main drivers and barriers of technology are analyzed in conjunction with the central role of public acceptance. Policies and measures needed to promote behavioral changes are discussed, along with successful strategies and failures.

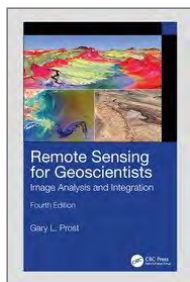
CRC Press
September 2025 : 374pp
Hb: 978-1-041-05836-6 : \$160

* For full contents and more information, visit: www.routledge.com/9781041058366

4TH EDITION

Remote Sensing for Geoscientists

Image Analysis and Integration



Gary L. Prost

The fourth edition of the bestselling Remote Sensing for Geoscientists: Image Analysis and Integration expands the scope of remote sensing to cover image systems that did not exist 10 years ago when the third edition was published. It is thoroughly updated and provides examples of new capabilities using Google Earth® and various apps. It describes the latest remote sensing systems and sensors, provides examples of imagery, and explains how to analyze and integrate remote sensing images in projects that require superior results. Lavishly illustrated, it serves as a how-to guide for those using remote sensing in Earth Sciences for mapping and monitoring.

CRC Press
June 2025 : 690pp
Hb: 978-1-041-02006-6 : \$230
eBook: 978-1-003-61731-0

* For full contents and more information, visit: www.routledge.com/9781041020066

Remote Sensing of Land Cover and Land Use Changes in South and Southeast Asia, Two Volume Set



Edited by Krishna Prasad Vadrevu Univ. Maryland College Park, **Christopher Justice** Univ. of Maryland, **Garik Gutman** NASA Headquarters

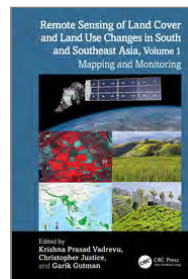
Despite the vast amount of research on Land Cover and Land Use Change (LCLUC) worldwide, data and insights from South and Southeast Asia remain limited. This comprehensive two-volume handbook bridges that gap by synthesizing groundbreaking research from NASA's LCLUC program-funded scientists in collaboration with leading regional scientists across South and Southeast Asia. Designed to serve researchers, professionals, and students in land use, environmental science, geography, and remote sensing, this 2-volume set provides an interdisciplinary perspective on the ecological, climatic, and environmental implications of LCLUC.

CRC Press
July 2025 : 696pp
Hb: 978-1-032-49961-1 : \$350

* For full contents and more information, visit: www.routledge.com/9781032499611

Remote Sensing of Land Cover and Land Use Changes in South and Southeast Asia, Volume 1

Mapping and Monitoring



Edited by Krishna Prasad Vadrevu Univ. Maryland College Park, **Christopher Justice** Univ. of Maryland, **Garik Gutman** NASA Headquarters

South and Southeast Asian countries are experiencing rapid Land Cover and Land Use Changes (LCLUC) due to urbanization, agricultural expansion, deforestation, and infrastructure development. These changes have far-reaching consequences for biodiversity, water resources, food security, and climate regulation, underscoring the urgent need for effective monitoring and management strategies. Remote sensing data is essential for mapping and monitoring these changes. Volume 1 provides case studies on urban expansion, deforestation, and agricultural intensification and features contributions from the NASA Research Initiative and experts from different countries.

CRC Press
July 2025 : 386pp
Hb: 978-1-032-49964-2 : \$220

* For full contents and more information, visit: www.routledge.com/9781032499642

Remote Sensing of Land Cover and Land Use Changes in South and Southeast Asia, Volume 2

Impacts on the Environment



Edited by Krishna Prasad Vadrevu Univ. Maryland College Park, **Christopher Justice** Univ. of Maryland, **Garik Gutman** NASA Headquarters

South and Southeast Asian countries are experiencing rapid land cover and land-use changes (LCLUC) driven by urbanization, agricultural expansion, deforestation, and infrastructure development. Remote sensing data plays a crucial role in providing diverse information essential for assessing land-use patterns, quantifying changes, and evaluating both environmental and societal impacts. Volume 2 of this set explores the complex and dynamic interactions between land use and the environment in the region. With contributions from NASA and local experts, the book highlights the transformative power of remote sensing and ML while calling all stakeholders to action.

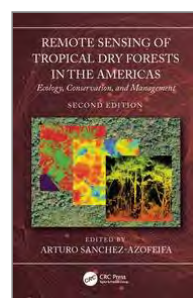
CRC Press
July 2025 : 330pp
Hb: 978-1-032-49966-6 : \$220

* For full contents and more information, visit: www.routledge.com/9781032499666

2ND EDITION

Remote Sensing of Tropical Dry Forests in the Americas

Ecology, Conservation, and Management



Edited by **Arturo Sanchez-Azofeifa** University of Alberta, Edmonton, Canada

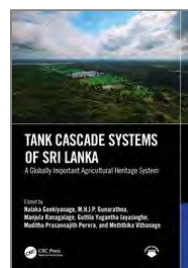
This second edition focuses on Tropical Dry Forests (TDF) in the Americas and provides a comprehensive overview of new studies conducted in the last decade, giving new insights into the most endangered ecosystem in the tropics. Written by experts in remote sensing, ecosystem services, and ecology, the book concentrates on four thematic areas such as LiDAR remote sensing, remote sensing and ecology, quantification of ecosystem services, and TDF ecology. The case studies presented in this edition provide information on how emerging technologies can be applied to analyze biophysical properties and the status of TDFs across different regions in Mexico, Costa Rica, Brazil, and Bolivia.

CRC Press
July 2025 : 362pp
Hb: 978-1-032-51865-7 : \$170

* For full contents and more information, visit: www.routledge.com/9781032518657

Tank Cascade Systems of Sri Lanka

A Globally Important Agricultural Heritage System



Edited by **Nalaka Geekiyana**, **M.H.J.P. Gunarathna** Rajarata University of Sri Lanka, **Manjula Ranagalage** Rajarata University of Sri Lanka, **Guttilla Yugantha Jayasinghe**, **Muditha Prasannajith Perera** Dept. of Geography, University of Peradeniya, **Meththika Vithanage** University of Sri Jayewardenep, Sri Lanka.

The Tank Cascade System (TCS) of Sri Lanka is a connected series of tanks organized within a micro-catchment of a dry zone landscape for storing, conveying, and utilizing water from a temporary stream. FAO and the UN internationally recognize it as a Globally Important Agricultural Heritage System for food security and sustainable development in a changing climate. This edited volume offers a comprehensive and holistic coverage of the entire scope of cascade systems including their origins, governance, and integration with agriculture, biodiversity, cultural linkages, associated livelihoods, degradation causes, restoration efforts, gender perspectives, and disaster resilience.

CRC Press
May 2025 : 556pp
Hb: 978-1-032-84990-4 : \$250
eBook: 978-1-003-51601-9

* For full contents and more information, visit: www.routledge.com/9781032849904

Smart Sensing with Digital Twins

Methane Emission Source Determination with sUAS



Edited by **Derek Hollenbeck**, **YangQuan Chen** University of California Merced, USA

This book explores the innovative use of small unmanned aircraft systems (sUAS)—commonly known as drones—for methane emissions monitoring (i.e., detection, localization, and quantification) by introducing smart sensing frameworks and digital twin technology. With practical tools and field-tested examples, this book serves as both an introductory guide and advanced reference to environmental monitoring, and is particularly valuable to researchers, students, engineers, and environmental professionals in engineering, environmental studies, and technology.

CRC Press
October 2025 : 232pp
Hb: 978-1-041-13229-5 : \$110

* For full contents and more information, visit: www.routledge.com/9781041132295

Technopreneurship and Sustainability

Innovation, Challenges, and Opportunities



Edited by **Rajender Kumar** Manav Rachna International Institute of Research and Studies, **Rahul Sindhwani**, **Raman Kumar** Guru Nanak Dev Engineering College, India, **Punj Lata Singh**, **J. Paulo Davim** University of Aveiro, Portugal

Series: *Higher Education and Sustainability*

Technopreneurship is an advanced version of entrepreneurship that incorporates cutting-edge technologies, from AI to big data, into entrepreneurial activities and leads to innovative solutions to problems that previous solutions have failed to sustain in the long term. This book explains the fundamentals of developing and establishing a one-person business or a large organization. It covers all aspects of an entrepreneurial journey, guiding readers from the startup stage, growing a business, sustainability, and clarifies the role of technopreneurship as a tool to enhance sustainability in today's entrepreneurial ventures.

CRC Press
June 2025 : 202pp
Hb: 978-1-032-88350-2 : \$160
eBook: 978-1-003-53733-5

* For full contents and more information, visit: www.routledge.com/9781032883502

Sustainable Biotechnological Remedial Frameworks for the Rejuvenation of Heavily Polluted Environments



Edited by **Naveen Dwivedi** IIMT University, U.P., India, **Shubha Dwivedi** IIMT University, UP, India, **Lucas Meili** Universidade Federal de Alagoas, Brazil

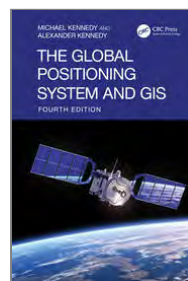
This book discusses advanced research in mitigation of heavily polluted environments through a sustainable biotechnological remedial framework along with their role in betterment of conventional treatment methods. It includes sustainable biotechnology-based approach to rejuvenate the heavily polluted environment highlighting the technical, scientific, regulatory, safety, and societal impacts. It discusses sustainable solutions and contemporary challenges of bioremediation of environmental pollutants using biotechnology-based interventions. This book is aimed at graduate students and researchers in waste management, environmental engineering, biotechnology and clean technologies.

CRC Press
October 2025 : 496pp
Hb: 978-1-032-68945-6 : \$200

* For full contents and more information, visit: www.routledge.com/9781032689456

4TH EDITION

The Global Positioning System and GIS



Michael Kennedy University of Kentucky, Lexington, USA, **Alexander Kennedy**

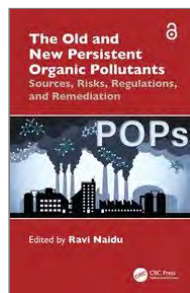
The fourth edition of a bestseller continues to provide a concise and practical knowledge on using the Global Positioning System (GPS) as a method of data input to a Geographic Information System (GIS). As both GIS representations of the Earth in 3D become more precise and GPS services allow for greater accuracy, the information presented in the book has been augmented considerably. With a myriad GPS receiving devices and multiple GIS platforms to choose from, this book guides students and users through methods that are proven to build a highly accurate geographical database, including altitude, and understand how GNSS interoperate with 3D Earth scans obtained from LiDAR.

CRC Press
September 2025 : 408pp
Hb: 978-0-367-50606-3 : \$140

* For full contents and more information, visit: www.routledge.com/9780367506063

The Old and New Persistent Organic Pollutants

Sources, Risks, Regulations, and Remediation



Edited by **Ravi Naidu** Global Institute for Environmental Research, CRC CARE, University of Newcastle, Callaghan, Australia

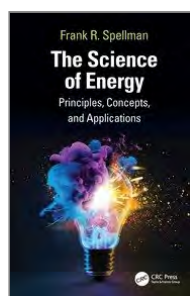
Our understanding of Persistent Organic Pollutants (POPs), their exposure pathways, and their impact on the environment and human health is constantly evolving and the list of new and emerging POPs is constantly changing. This book provides a comprehensive coverage of new and old hazardous chemicals, their physical and chemical properties, their breakdown products, their fate in the environment, and the environmental and human risk impact. It discusses global policies based on United Nations' FAO frameworks, explains the severity of contamination, and raises awareness on the assessment and remediation of contaminated sites in developed and developing countries.

CRC Press
August 2025 : 464pp
Hb: 978-1-032-87014-4 : \$170

* For full contents and more information, visit: www.routledge.com/9781032870144

The Science of Energy

Principles, Concepts, and Applications



Frank R. Spellman Spellman Environmental Consultants, Norfolk, Virginia, USA

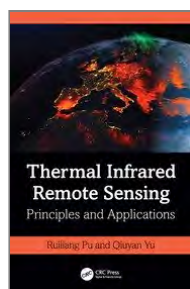
The Science of Energy: Principles, Concepts, and Applications fills a crucial gap by exploring the science behind today's energy revolution and the environmental impacts of various energy sources. It explains the technologies that produce, store, and use energy, with a focus on sustainability, environmental health, and safety. Designed for students and professionals alike, the book simplifies key energy principles—covering both traditional and emerging technologies. It also examines the role of AI in energy production and sustainability, offering a practical, accessible guide to understanding modern energy systems.

CRC Press
August 2025 : 352pp
Hb: 978-1-032-99677-6 : \$160

* For full contents and more information, visit: www.routledge.com/9781032996776

Thermal Infrared Remote Sensing

Principles and Applications



Ruiliang Pu University of South Florida, **Qiuyan Yu** Exponent Inc.

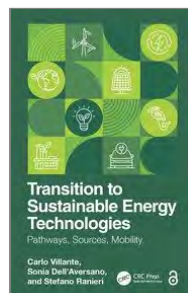
This book introduces concepts, theories, principles, and applications of Thermal Infrared (TIR) imaging spectral techniques and TIR remote sensing. It introduces in detail algorithms, techniques, and methods for processing and analyzing TIR data, including radiometric calibration and atmospheric correction in TIR region, retrieving land surface emissivity and temperature (LST) from various TIR data, and downscaling LST and TIR radiance spatiotemporally. Focusing on TIR-RS application orientation, this book introduces state-of-the-art techniques and methods applied in areas such as hydrology, biomass burning, urban thermal environment, and other areas of interest.

CRC Press
September 2025 : 352pp
Hb: 978-1-032-23180-8 : \$220

* For full contents and more information, visit: www.routledge.com/9781032231808

Transition to Sustainable Energy Technologies

Pathways, Sources, Mobility



Carlo Villante University of L'Aquila, **Sonia Dell'Aversano**, **Stefano Ranieri**

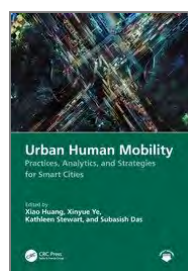
This book explains the challenges related to global energy transition, focusing on decarbonization, renewable technologies, and sustainable mobility. It offers a comprehensive exploration of integrated socio-economic, environmental, and technological perspectives and provides actionable solutions and practical pathways for transitioning to sustainable energy systems. Designed to be used in short academic courses, this textbook is an excellent foundational text for upper-level undergraduate and graduate students in engineering and environmental science. It is also a great resource for professionals and policy makers involved in energy projects.

CRC Press
August 2025 : 402pp
Hb: 978-1-041-05046-9 : \$140

* For full contents and more information, visit: www.routledge.com/9781041050469

Urban Human Mobility

Practices, Analytics, and Strategies for Smart Cities



Edited by **Xiao Huang**, **Xinyue Ye**, **Kathleen Stewart**, **Subasish Das** Texas State University

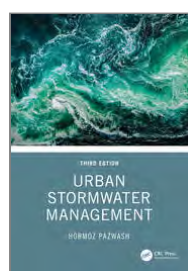
This comprehensive handbook covers human mobility within urban contexts, integrating academic theories with pragmatic insights and offering a detailed analysis of the diverse facets of human mobility and its substantial impact on the urban landscape, economy, and societal structures. It explains key fundamental concepts, methods, and models, presenting an in-depth exploration of predictive analytics, clustering patterns, advanced trajectory embedding techniques, AI, ML, GIS, IoT, and smart city innovations. The authors include case studies and examples of urban mobility in practice, making the content relatable and practical for educators, students, researchers, and practitioners.

CRC Press
July 2025 : 376pp
Hb: 978-1-032-82162-7 : \$200

* For full contents and more information, visit: www.routledge.com/9781032821627

3RD EDITION

Urban Stormwater Management



Hormoz Pazwash Boswell Engineering, South Hackensack, New Jersey, USA

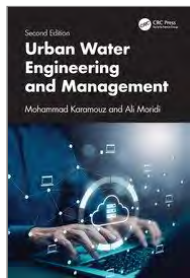
Urban Storm Water Management, Third Edition covers the design, installation, and maintenance of storm water management systems, addresses the impact of urban development on runoff and infiltration, and focuses on storm water management relative to flooding and water pollution. Recognizing that urbanization increases and accelerates runoff, reduces infiltration, and deteriorates water quality, the author proposes storm water runoff as a resource that can be conserved for reuse.

CRC Press
August 2025 : 608pp
Hb: 978-1-032-60672-9 : \$160

* For full contents and more information, visit: www.routledge.com/9781032606729

2ND EDITION

Urban Water Engineering and Management



Mohammad Karamouz Polytechnic Institute of New York University, Brooklyn, USA, **Ali Moridi** Tarbiat Modarres University, Tehran, Iran

Integrating the latest developments in urban water hydrology and management, *Urban Water Engineering and Management* takes a system approach to urban water hydrology, engineering, planning and management, supplying examples and case studies, and highlighting pressing issues such as urban water governance, and disaster management on urban areas.

CRC Press

September 2025 : 736pp

Hb: 978-1-032-90755-0 : \$160

* For full contents and more information, visit: www.routledge.com/9781032907550

Vermicomposting and Other Zoocomposting Systems for Solid Waste Valorization

Concepts, Designs, and Applications



Pratiksha Patnaik, **Tabassum Abbasi**, **S.A. Abbasi**
Pondicherry University, India

This groundbreaking book explores the science and innovation behind zoocomposting—composting facilitated by animals such as earthworms, black soldier flies, and termites. It presents the high-rate vermicomposting (HRVC) paradigm, a revolutionary approach that enables the rapid conversion of phytowaste, even toxic and recalcitrant plant materials, into potent organic fertilizers without the need for pre-composting or manure supplementation. The book details the design and performance of advanced vermireactors, the transformative effects of vermicomposting on plant growth, and the potential of BSF and termites in waste degradation.

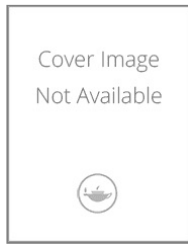
CRC Press

October 2025 : 400pp

Hb: 978-0-367-35513-5 : \$160

* For full contents and more information, visit: www.routledge.com/9780367355135

3D Digital Design in Ergonomics and Human Factors



Tihomir Dovramadjiev

Series: Human Factors in Design, Engineering, and Computing

3D Digital Design in Ergonomics and Human Factors is the definitive guide to understanding how 3D software impacts the practice of ergonomics and human factors and how it can be utilized successfully in a variety of different settings. It covers interdisciplinary areas including ergonomics and human factors, 3D digital design, sustainable digital human anatomical design through open-source software (OSS) and advanced technologies in design and assists any reader to increase their personal qualities and competence in the field.

CRC Press

September 2025 : 240pp

Hb: 978-1-032-50315-8 : \$120

* For full contents and more information, visit: www.routledge.com/9781032503158

50 Ways to Fool Your User

How to Make Everyday Products and Systems Work for Us



Peter Vink Delft University of Technology, The Netherlands, **Alan Hedge**

Written with humor and professional insight, 50 Ways to Fool Your User: How to Make Everyday Products and Systems Work for Us invites readers to question the quirks of modern life while imagining how things could work better for everyone. Across 50 chapters, scientific explanations are paired with snappy anecdotes. Each chapter concludes with actionable takeaways. This book is for professionals and academics interested in human factors, ergonomics and designing with the human in mind, but also interesting for every layman. It will appeal to designers, engineers and systems operators.

CRC Press

July 2025 : 152pp

Pb: 978-1-041-06641-5 : \$24.99

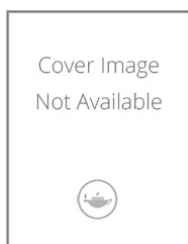
Hb: 978-1-041-06783-2 : \$62.99

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4TH EDITION

A First Course in Quality Engineering

Integrating Statistical and Management Methods of Quality, Fourth Edition



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The quality knowledge landscape is rapidly evolving alongside advancements in information technology and manufacturing methods. This convergence necessitates updated educational resources to equip future engineers and managers with the integrated expertise needed for implementing modern quality systems that span entire production ecosystems rather than operating in departmental silos. For an instructor, this premium textbook is a ready source of reference updated by experts in the field. For the student, it contains the latest material along with long-established tools. Lastly for the professional, this book remains a great training tool for corporate trainers.

CRC Press

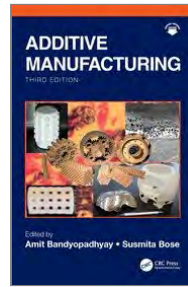
November 2025 : 528pp

Hb: 978-1-032-47851-7 : \$190

* For full contents and more information, visit: www.routledge.com/9781032478517

3RD EDITION

Additive Manufacturing



Edited by **Amit Bandyopadhyay** Washington State University, Pullman, USA, **Susmita Bose** Washington State University, Pullman, USA

The field of additive manufacturing is growing dynamically as the interest is persisting from manufacturing sector, including other sectors. Conceptually, additive manufacturing is a way to build parts without using any part-specific tooling or dies from the computer-aided design file of the part. 3rd edition of Additive Manufacturing highlights the applications in aerospace industries, biomedical devices, and construction industries with new material on additive manufacturing at the nano- and micro-scale including highlights, questions, and additional reading materials. This book is aims at Students and Researchers in Mechanical, Manufacturing, Materials, and Industrial engineering.

CRC Press

June 2025 : 302pp

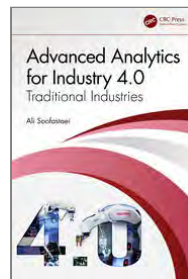
Hb: 978-1-032-38182-4 : \$170

eBook: 978-1-003-34386-8

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Advanced Analytics for Industry 4.0

Traditional Industries



Ali Soofastaei The University of Queensland, Australia

The evolution of modern technology has affected all the industry dimensions. Mother industries play a critical role in providing the precursor materials for other industries, and a small improvement in these can make a big change in other ones. This volume covers the analytics revolution in Industry 4.0 for the mother industries like mining, oil & gas, steel and so forth. It focusses on use of advanced analytics and artificial intelligence to improve the business decisions aimed to increase the quality and quantity of mother industries' products. It helps to design and implement their digital transformation strategies in these industries.

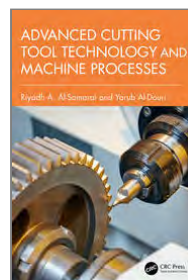
CRC Press

July 2025 : 358pp

Hb: 978-1-032-03344-0 : \$160

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Advanced Cutting Tool Technology and Machine Processes



Riyadh A. Al-Samarai University of Samarra, Iraq, **Yarub Al-Douri** Prof. Fellow of the European Academy of Sci., NANOCAT, Univ. of Malaya

This undergraduate-level textbook is dedicated to exploring the latest developments that enhance tool performance, lower costs, and boost productivity. The mission of this textbook is to provide readers with a thorough understanding of cutting-edge technologies and methods used in cutting tools and industrial processes. This textbook is ideal for undergraduate students in production, materials, industrial, mechatronics, marine, mechanical, and manufacturing engineering programs, and is also useful for graduate programs related to higher-level machining topics, as well as professional engineers and technicians.

CRC Press

September 2025 : 320pp

Hb: 978-1-032-99299-0 : \$120

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Advanced Manufacturing Technologies in Biomedical Science

Practical Applications, Case Studies, and Future Trends



Edited by **Jashanpreet Singh** Chandigarh University, India, **Hitesh Vasudev** LPU, India, **Chander Prakash** SVKM'S Narsee Monjee Institute of Management Studies, Mumbai, India, **Manpreet Singh**

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As healthcare challenges such as human aging and traffic accidents continue to increase exponentially, the biomedical sector faces a significant obstacle in arranging patient-specific biomedical products. Over the past two decades, printing quality and ease of production of advanced manufacturing have gained global attention, particularly in the development of scaffolds and implants.

CRC Press
September 2025 : 544pp
Hb: 978-1-032-84916-4 : \$160

* For full contents and more information, visit: www.routledge.com/9781032849164

AIoT Innovations in Digital Health

Emerging Trends, Challenges, and Solutions



Edited by **Inam Ullah Khan** Dept. of Electronic Engineering, SEAS, Isra Univ., **Salma El Hajjaji** Computer Science Dept., Faculty of Science, Ibn Zohr Univ., **Shashi Kant Gupta**, **Hameedur Rahman**, **Thiagarajan Yogamoorthi**, **Inam Ullah**, **Muhammad Adnan Khan**

Series: Artificial Intelligence in Smart Healthcare Systems

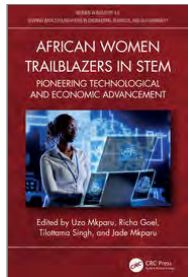
AI innovations in digital health offer unprecedented opportunities to facilitate human health and provide tools and techniques that reduce overall costs. This book discusses the use of AI to improve diagnostic accuracy, the use of remote diagnostic tools, medical robotics applications, drug discovery, technology-driven solutions, and more. Interested readers will include anyone working in or involved in smart healthcare research which includes, but is not limited to healthcare specialists, computer science engineers, electronics engineers, systems engineers, and pharmaceutical practitioners.

CRC Press
May 2025 : 172pp
Hb: 978-1-032-74441-4 : \$140
eBook: 978-1-003-46989-6

* For full contents and more information, visit: www.routledge.com/9781032744414

African Women Trailblazers in STEM

Pioneering Technological and Economic Advancement



Edited by **Uzo Mkpuru**, **Richa Goel** SCMS, Symbiosis International deemed University, IN, **Tilottama Singh** Assoc. Prof., Uttaranchal Inst. of Mgmt., Uttaranchal University, IN, **Jade Mkpuru**

Series: Women in Industry 4.0

Despite recent advancements, gender disparities in STEM disciplines remain a major concern worldwide, particularly in Africa. Africa possesses a vast pool of untapped STEM talent among women and this book aims to support women in entering and thriving in STEM careers, leading to a more diverse and dynamic workforce. This book can educate stakeholders and policymakers on the importance of funding programs that promote gender equality and women's participation in STEM fields. By offering evidence-based recommendations, the book can influence policy decisions aimed at creating more inclusive and supportive environments for women in STEM education and professions.

CRC Press
August 2025 : 232pp
Hb: 978-1-032-88861-3 : \$120

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Alcohol at Work

Tackling Workplace Drinking to Improve Wellbeing



Lauren Booker

Alcohol at Work: Tackling Workplace Drinking to Improve Wellbeing will guide health and safety professionals through the practical steps that they can take to mitigate risk and improve wellbeing, safeguarding and inclusivity. It explores key topics such as driving legislation, the use of alcohol testing, stressful jobs and designing and implementing an alcohol policy that uses practical examples that highlight common workplace scenarios. This book is an essential read for any professional in occupational health and safety, human resources, business and management, policy creation, insurance and corporate governance.

CRC Press
July 2025 : 186pp
Hb: 978-1-032-64598-8 : \$110

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AI and Gamification Technologies for Complex Work



Edited by **Philip M. Mangos**, **James C. Ferraro** University of Central Florida, USA

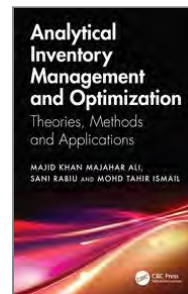
This book will pull back the curtain on how data science, AI, and ML contribute to adaptive training systems and the reader is encouraged to look further into the engines that drive adaptive training. This fascinating book is an ideal read for those in the fields of human factors engineering and psychology, artificial intelligence, military training and simulation, game development, data science, modeling and simulation and industrial and organizational psychology.

CRC Press
October 2025 : 248pp
Hb: 978-1-032-65076-0 : \$110

* For full contents and more information, visit: www.routledge.com/9781032650760

Analytical Inventory Management and Optimization

Theories, Methods and Applications



Majid Khan Majahar Ali Universiti Sains Malaysia, **Sani Rabi** Nigerian Defence Academy, Afaka, **Mohd Tahir Ismail** School of Mathematical Science, Universiti Sains Malaysia

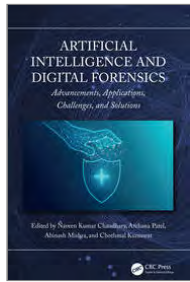
In this vital resource with discussion of and applicability to various industries, Ali, Rabi, and Ismail guide readers through the challenging environment of inventory management and enable them to successfully balance the demand and supply of items in stock, a critical task in any field. The comprehensive coverage makes the book a valuable reference for practitioners and students, particularly postgraduate and MBA students, who require such insights to improve business functions and make informed decisions.

CRC Press
June 2025 : 514pp
Hb: 978-1-032-86036-7 : \$140
eBook: 978-1-003-53486-0

* For full contents and more information, visit: www.routledge.com/9781032860367

Artificial Intelligence and Digital Forensics

Advancements, Applications, Challenges, and Solutions



Edited by **Naveen Kumar Chaudhary**, **Archana Patel**
National Forensic Sciences Univ, India, **Abinash Mishra**,
Chothmal Kumawat

Artificial Intelligence (AI) has revolutionized digital forensics, bringing previously unheard-of powers to this field. This book explores the advancements, applications, challenges, and solutions that AI brings to the realm of digital forensics. This book caters to industry professionals from diverse backgrounds, including engineering, data science, computer science, law enforcement, and legal experts, fostering a holistic understanding of the subject along with providing practical insights and real-world examples.

CRC Press
August 2025 : 256pp
Hb: 978-1-032-84468-8 : \$110

* For full contents and more information, visit: www.routledge.com/9781032844688

Big Data Management and Analytics

Concepts, Tools, and Applications



Rajesh Jugulum, **David Fogarty**, **Chris Heien**, **Surya Putchala**

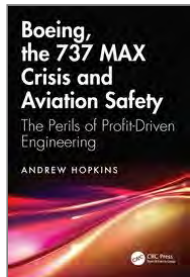
The book demonstrates how to manage, govern, and analyze big data and develop a competitive advantage for companies that use big data and analytics. It provides methods, tools, and concepts to manage and analyze big data to make good decisions. It goes on to describe how artificial intelligence and machine learning methods are depended on big data and how they can be more effective in a better managed environment. The book discusses how to treat big data as an asset and how to preserve and protect it just like any other corporate asset. Case studies are offered that highlight and ensures that the methodology and concepts can be implemented easily in day to day practices.

CRC Press
June 2025 : 186pp
Hb: 978-1-032-04040-0 : \$140
eBook: 978-1-003-19032-5

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Boeing, the 737 MAX Crisis and Aviation Safety

The Perils of Profit-Driven Engineering



Andrew Hopkins

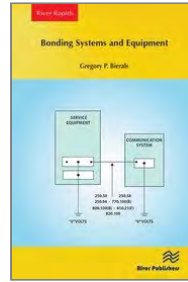
This title explores how the pursuit of profit compromised safety principles, neglected human factors, and led to critical design failures that no one at Boeing had a complete view of. It examines the specifics of the Boeing crisis and looks at it in a broader industrial and economic context. The book draws from the author's extensive research on other global industrial accidents, such as the Deepwater Horizon disaster. Boeing, the 737 MAX Crisis and Aviation Safety: The Perils of Profit-Driven Engineering is an essential read for professionals in the fields of human factors, safety, aeronautical/aerospace engineering, the law and corporate governance.

CRC Press
May 2025 : 92pp
Pb: 978-1-041-04131-3 : \$59.99
Hb: 978-1-041-04647-9 : \$150
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Bonding Systems and Equipment

Gregory P. Bierals



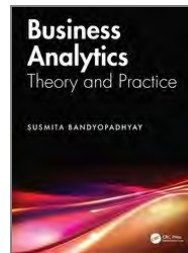
A complete analysis of the appropriate terms associated with proper bonding and grounding methods, as well as two examples of fault-current calculations will further enhance the understanding of these important topics. The book includes a 30-question quiz and an answer key.

River Publishers
May 2025 : 54pp
Pb: 978-8-770-04816-3 : \$75
eBook: 978-8-770-04817-0

* For full contents and more information, visit: www.routledge.com/9788770048163

Business Analytics

Theory and Practice



Susmita Bandyopadhyay Dept of Business
Administration, Univ. Burdwan, Golapbag, India

Business Analytics is an emerging area which encompasses various technical understanding, essential for both Engineering and Management fields of study. This book presents detailed theoretical study of Business Analytics including analytical methods from various aspects such as descriptive and predictive analytics, statistical distributions, multivariate statistical analysis, time series analysis, simulation concept, optimization theory, neural network concepts, various learning techniques, visualization techniques, and performance metrics. This book is aimed at senior undergraduate students in engineering and management including business analytics, and industrial engineering.

CRC Press
October 2025 : 400pp
Hb: 978-1-032-41557-4 : \$220

* For full contents and more information, visit: www.routledge.com/9781032415574

Climate Change Impacts on Workplace Health and Safety

Adaptations, Interventions and Responses



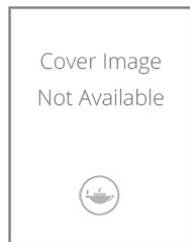
Edited by **Haruna Musa Moda**, **Amir Hossein Khoshakhlagh**, **Agnieszka Gruszecka-Kosowska**, **Ravi Rangarajan**, **Kishwar Ali**, **Fred Saleh**, **Michael Philips**

Climate change has become the primary serious human and environmental threat of the 21st century and, with associated variability, it presents enormous potential to affect workers' safety and health as well as the workplace in diverse forms. This book delivers comprehensive information regarding climate change adaptation measures and workplace health and safety intervention across diverse sectors.

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Designing Faultless Mechanical Products Based on Advanced Reliability Analysis



Seongwoo Woo Director, Reliability Association of Korea

Series: Advanced Research in Reliability and System Assurance Engineering

This book introduces and explains the parametric ALT (Accelerated Life Testing) methodology, as a new reliability methodology based on statistics, to help avoid recalls in the marketplace. Parametric ALT also can ensure whether the reliability target of the final design of the mechanical product is achieved. It meets market requirement, of higher performance, reduction on material costs, and promotes higher reliability. This book will include problems and case studies to help with reader comprehension.

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October 2025 : 480pp
Hb: 978-1-032-58657-1 : \$210

* For full contents and more information, visit: www.routledge.com/9781032586571

Emerging Trends in Industrial Engineering and Management



Edited by **Ajay Kumar** Professor, Department of Mechanical Engineering, School of Engineering and Technology, JECRC UNIVERSITY, JAIPUR, RAJASTHAN, INDIA, 303905, **Parveen Kumar** Rawal Inst. of Eng. and Tech., India, **Rakesh Kumar Phanden**, **Mario Schmidt**, **Ayon Chakraborty**

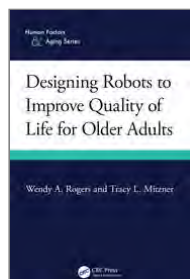
Series: Industrial and Manufacturing Systems and Technologies: Sustainable and Intelligent Perspectives

Emerging trends in Industrial Engineering and Management (IEM) refer to the new and transformative developments, practices, and technologies that are currently gaining prominence in the field of industrial engineering and management. Trends in Industrial Engineering and Management can encompass a wide range of topics such as utilization of Industry 4.0 strategies like Industrial Internet of Things, artificial Intelligence, theoretical, numerical, computational approaches to model the methods and process of IEM.

CRC Press
August 2025 : 400pp
Hb: 978-1-032-84404-6 : \$200

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Designing Robots to Improve Quality of Life for Older Adults



Wendy A. Rogers Khan Professor of Applied Health Sciences, University of Illinois Urbana-Champaign, **Tracy L. Mitzner**

Series: Human Factors and Aging Series

This book translates research on aging, human factors, and human-robot interaction into guidance that will be usable for practitioners who design robots for a range of applications. It offers a framework for human-robot interaction (HRI) with a focus on personal characteristics, robot functionality, task demands, and interaction context. The application of this HRI framework for older adults provides the basis for the book. This book is suitable for students at the undergraduate and graduate level as a supplementary textbook for courses in human factors, design for aging, and human-robot interaction.

CRC Press
August 2025 : 192pp
Hb: 978-1-032-63682-5 : \$110

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Empowering Women in STEM

Pioneering Paths to Shape the Future



Edited by **Sanya Mathura** Strategic Reliability Solutions Ltd.

Series: Empowering Women in STEM

Experience passion and energy as these authors share their unique stories directly with you. Empowering Women in STEM: Pioneering Paths to Shape the Future covers a wide range of topics, not limited to just STEM fields, including entrepreneurship, medical research, leadership, and non-profit organizations. Empowering Women in STEM: Pioneering Paths to Shape the Future aims to help readers discover their inherent inner strength and confidence to have a greater impact on society. It serves as a guide for individuals in STEM fields or allies who wish to support those in these fields by providing insight into the challenges they often encounter.

CRC Press
June 2025 : 256pp
Pb: 978-1-041-00639-8 : \$45.99
Hb: 978-1-041-00712-8 : \$110
eBook: 978-1-003-61125-7

* For full contents and more information, visit: www.routledge.com/9781041006398

Digital Product Design and Manufacturing



Edited by **Gheorghe Oancea** Transilvania University of Brasov, Romania, **Panagiotis Kyrtatsis** Uni of Western Macedonia, Greece

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Comprises state-of-art contributions in digital product design and manufacturing. Readers will be exposed to topics such as reverse engineering, additive manufacturing, circular economy, digital design and manufacturing automated tools, numerical simulations in manufacturing and use of artificial intelligence, as well as textile, clothing and footwear applications. The book is targeted at design engineers, researchers. It deals with both design automation tools and modern manufacturing topics.

CRC Press
August 2025 : 264pp
Hb: 978-1-032-83559-4 : \$170

* For full contents and more information, visit: www.routledge.com/9781032835594

Energy-Based Safety

A Scientific Approach to Preventing Serious Injuries and Fatalities (SIFs)



Matthew R. Hallowell

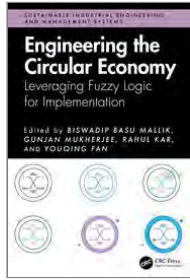
This book is a useful resource for those committed to saving lives and delivering change in workplace safety through new ways of injury prevention. Divided into two parts, it firstly explores the research behind EBS and investigates each principle with evidence, case studies, and practical insights from real-world implementation. The second part focuses on incorporating EBS into existing safety practices, from design and work planning to incident learning and performance measurement.

CRC Press
September 2025 : 208pp
Hb: 978-1-041-07633-9 : \$110

* For full contents and more information, visit: www.routledge.com/9781041076339

Engineering the Circular Economy

Leveraging Fuzzy Logic for Implementation



Edited by **Biswadip Basu Mallik** Institute of Engineering and Management, India, **Gunjan Mukherjee** Brainware University, India, **Rahul Kar** Kalyani Mahavidyalaya, India, **Youqing Fan**

Series: *Sustainable Industrial Engineering and Management Systems*

Implementing the circular economy necessitates innovative approaches capable of managing the complexity and uncertainty inherent in the shift from linear to circular systems. Fuzzy logic, a computational approach inspired by human reasoning, provides a framework for navigating these complexities. With its forward-thinking approach and focus on practical applications, this book is an essential resource for practitioners, researchers, engineers, scholars, and policymakers looking to promote innovation and sustainability in today's rapidly changing economic and environmental-conscious environment.

CRC Press

September 2025 : 272pp

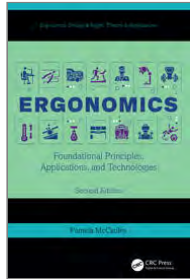
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2ND EDITION

Ergonomics

Foundational Principles, Applications, and Technologies, Second Edition



Pamela McCauley University of Central Florida, USA

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This new edition is written with a global view of the field of ergonomics as it applies to innovations, occupational, recreational, and design environments. The new edition updates the technology advances. All chapters are revised, with two chapters combined, and 2 new chapters added. Ancillary materials will include student manual, instructors manual, laboratory manual, a template for ergonomic analysis, a guide to design a research project, a collection of student projects, a summary of software, how to create a lab booklet, a list of international resources and societies, a tool-box for practitioners, and a complete of slides.

CRC Press

October 2025 : 368pp

Hb: 978-0-367-35948-5 : \$115

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Ergonomics and Diversity, Equity, and Inclusion

Theory and Practice



Bobbie Watts

This book investigates the symbiotic links between ergonomics and DEI and how workplaces can be improved through a better understanding of both. It reveals how to utilize DEI strategies to improve ergonomics and human factors efforts and how professionals can apply their expertise to improve DEI strategies. Ergonomics and Diversity, Equity and Inclusion will be a valuable reference for professionals in ergonomics and human factors, business and management, human resource management, industrial and systems engineering; mechanical engineering and computer science engineering and for those seeking for contemporary guidance to inform their DEI policy and practices.

CRC Press

June 2025 : 288pp

Hb: 978-1-032-65473-7 : \$160

eBook: 978-1-032-65898-8

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Excellence in Air Show Performers

Training for Resilient Safety



Manolis Karachalios

This book propels readers deeper into the exhilarating world of air show performances. Serving as a comprehensive sequel to its predecessor, *Air Show Performers: Safety, Risk Management, and Psychological Factors* (9781032556147), it builds upon the foundational insights of the first volume and offers a meticulous exploration of what distinguishes exceptional performances amidst the high-stakes environment of air shows. From dissecting pathways to excellence to unraveling intricacies of resilient safety strategies, it reveals key approaches to safety and good practice for air show performers. It weaves academic research with real-world experiences from seasoned professionals.

CRC Press

July 2025 : 480pp

Hb: 978-1-032-82405-5 : \$110

* For full contents and more information, visit: www.routledge.com/9781032824055

Exploring Research Through Co-Design

Multiple Perspectives for Collaborative Inquiry



Edited by **Daniele Busciantella-Ricci**, **Sofia Scatagliani**

The reader will gain a thorough understanding of RTC and how it can be utilized across multiple disciplines and settings. *Exploring Research Through Co-Design: Multiple Perspectives for Collaborative Inquiry* is an essential resource for researchers, academics, and students who are interested in leveraging co-design as a research strategy, including those in human factors and ergonomics fields, design thinking/engineering, social economy projects and other multidisciplinary tasks.

CRC Press

September 2025 : 464pp

Pb: 978-1-032-90004-9 : \$66.99

Hb: 978-1-032-90137-4 : \$210

* For full contents and more information, visit: www.routledge.com/9781032900049

Explosion Safety for Industries

Prevention and Protection



Estellito Rangel Junior

This book presents a set of preventative measures, rules, and standards to mitigate the risk of explosions by preventing potential explosive atmosphere formation. Coverage includes risks and hazards, equipment selection, earthing systems, static electricity and lightning protection. Readers will develop a thorough understanding of the science behind explosions and the methods and measures needed to prevent accidents irrespective of their industry. The book is the comprehensive guide for industrial explosion prevention and protection for safety engineers, specialists, and managers as well as physicists, chemists, mechanical engineers and electrical engineers.

CRC Press

September 2025 : 352pp

Hb: 978-1-032-79707-6 : \$110

* For full contents and more information, visit: www.routledge.com/9781032797076

2ND EDITION

Food Safety and Inspection

An Introduction, Second Edition



Madeleine Smith, Iain Ferris

The process of food inspection relies on an inspector's understanding of the intrinsic hazards associated with individual foods. Whereas spoilage can usually be determined through a simple organoleptic assessment, the judgment of whether a food is fit for human consumption requires an evaluation of health hazards, many of which may not be apparent through physical assessment. Instead, the inspector must analyse and integrate scientific and handling information to evaluate the potential health risk. Now fully updated and expanded in this second edition, *Food Safety and Inspection: An Introduction* focuses on food categories and describes common hazards associated with each.

CRC Press

September 2025 : 256pp

Pb: 978-1-032-59425-5 : \$68.99

Hb: 978-1-032-60690-3 : \$170

* For full contents and more information, visit: www.routledge.com/9781032594255

Geometrical Enhancements Based on Data-Driven Design Decisions



Edited by Sourabh Mandol, Mohit Hemanth Kumar

Alliance University, India, Akarsh Verma Indian Institute of Technology Roorkee, India, V. K. Singh Govind Ballabh Pant University of Agriculture and Technology, India

The text presents various design and modelling solutions for effective decision-making that are grounded on the basics of data analytics. It further discusses important topics such as sustainable design and data-driven design synthesis, product analytics and its role in sustainable development, and descriptive models for the geometrical evaluation of product features. It is primarily written for senior undergraduate, graduate students, and academic researchers in fields including industrial engineering, production engineering, manufacturing engineering, mechanical engineering, and aerospace engineering.

CRC Press

June 2025 : 210pp

Hb: 978-1-032-65500-0 : \$120

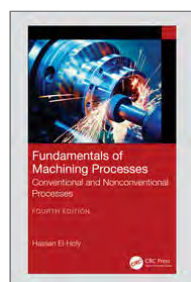
eBook: 978-1-003-62110-2

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4TH EDITION

Fundamentals of Machining Processes

Conventional and Nonconventional Processes



Hassan El-Hofy Egypt-Japan University of Science and Technology

The latest edition of this textbook continues to bring you the essential principles of machining through cutting, abrasion, erosion, and combined processes. This updated edition has been enhanced and expanded to provide a more comprehensive understanding of the subject matter. This is a needed textbook for undergraduate students in a variety of engineering programs, including production, materials technology, industrial, manufacturing, mechatronics, marine, and mechanical engineering. Graduate students specializing in advanced machining topics, and professional engineers and technicians working in production technology will also find this book a valuable resource.

CRC Press

October 2025 : 608pp

Hb: 978-1-032-97754-6 : \$160

* For full contents and more information, visit: www.routledge.com/9781032977546

Global Business Transformation

Innovation, Technology, and Sustainability



Edited by Richa Goel SCMS, Symbiosis International deemed University, IN, Chitra Krishnan, KDV Prasad, Payyazhi Jayashree, Grace McCarthy University of Wollongong, Australia

Many contemporary business models are based on the idea of a circular economy or sustainability. This book brings the discussion of global business transformation to the forefront and highlights the use of modern technology in aiding businesses to become more sustainable. Apart from being a valuable resource for researchers, students, and professionals involved in the corporate business, manufacturing and industrial engineering sectors, this book will also be of interest to those in fields related to economics, psychology, management, strategy, political science, government bodies, sociology, NGOs, and other industrial organizations.

CRC Press

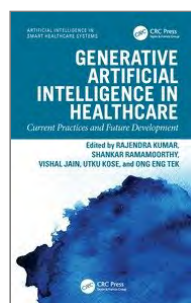
September 2025 : 320pp

Hb: 978-1-032-76949-3 : \$190

* For full contents and more information, visit: www.routledge.com/9781032769493

Generative Artificial Intelligence in Healthcare

Current Practices and Future Development



Edited by Rajendra Kumar Dept. of SCE, Sharda University, Shankar Ramamoorthy, Vishal Jain Sharda University, Greater Noida, India, Utaku Kose, Ong Eng Tek

Series: Artificial Intelligence in Smart Healthcare Systems

Generative Artificial Intelligence in Healthcare: Current Practices and Future Development starts by reviewing the past and then discussing the present of Generative AI-based systems and the potential challenges the future might bring. It then highlights the integration of Generative AI with IoT, and blockchain technologies along with offering case studies. The book explores how to integrate augmented and virtual reality into Generative AI-based healthcare and covers the development of an effective machine algorithm for Generative-based healthcare and the design and implementation of Generative Adversarial Networks (GANs) in healthcare systems.

CRC Press

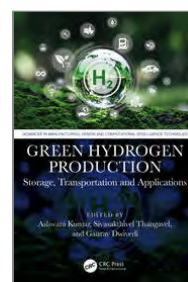
July 2025 : 352pp

Hb: 978-1-032-78484-7 : \$190

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Green Hydrogen Production

Storage, Transportation and Applications



Edited by Ashwani Kumar Technical Educational Department, UP, India, Sivasakthivel Thangavel GCET, India, Gaurav Dwivedi MANIT Bhopal, India

Series: Advances in Manufacturing, Design and Computational Intelligence Techniques

The text comprehensively explains different pathways for hydrogen production, storage and transportation technologies, safety issues, and various applications of hydrogen in different industries. It further covers hydrogen storage methods such as physical storage, chemical storage, and biological storage. The book also explains different transportation methods like pipeline transportation, compressed gas transportation, and liquid hydrogen transportation. It is primarily written for senior undergraduates, graduate students, and academic researchers in the fields of energy and industrial engineering, mechanical engineering, environmental engineering, and aerospace engineering.

CRC Press

October 2025 : 464pp

Hb: 978-1-032-87043-4 : \$200

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Green Manufacturing

Challenges and Applications



Edited by **Shanmugam Suresh Kumar** Kalasalingam Academy of Research and Education, India, **Sundaresan Thirumalai Kumaran** Kalasalingam University

The text begins by discussing the green technologies for modern manufacturing, innovative technologies for sustainable manufacturing, implementation, and analysis of clean energy. It further explains topics including lean manufacturing, additive manufacturing for sustainable design and production, properties and applications of renewable biocomposites, and nature-inspired biomaterials. It is primarily written for senior undergraduates, graduate students, and academic researchers in the fields of manufacturing engineering, production engineering, industrial engineering, mechanical engineering, and aerospace engineering.

CRC Press
July 2025 : 364pp
Hb: 978-1-032-74367-7 : \$180

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Green Technology and Smart Materials for Engineering Applications



Edited by **Jashanpreet Singh** Chandigarh University, India, **Hitesh Vasudev** LPU, India, **Ankit Sharma** Chitkara University, Punjab, **Murali Mohan Cheepu** Research Manager, Super-TIG Welding, Co., Republic of Korea

Series: *Innovations in Smart Manufacturing for Long-Term Development and Growth*

This book is intended to serve as a comprehensive reference guide for academics, researchers, scholars, and professionals working in the fields of manufacturing processing, material science, and environmental engineering. The primary objective of this book is to showcase sustainability by emphasizing the diverse array of green and smart materials utilized in various engineering applications. Through this publication, readers will gain valuable insights into the importance of incorporating environmentally friendly materials into their work, ultimately contributing to a more sustainable future.

CRC Press
July 2025 : 480pp
Hb: 978-1-032-84920-1 : \$180

* For full contents and more information, visit: www.routledge.com/9781032849201

Handbook of AI in Engineering Applications

Tools, Techniques, and Algorithms



Edited by **Ajay Kumar** Professor, Department of Mechanical Engineering, School of Engineering and Technology, JECRC UNIVERSITY, JAIPUR, RAJASTHAN, INDIA, 303905, **Sangeeta Rani**, **Krishna Dev Kumar**, **Manish Jain**

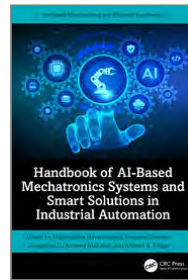
Series: *Advancements in Intelligent and Sustainable Technologies and Systems*

There is a need to categorize AI applications, tools, techniques, and algorithms based on their intended use in various design stages. This handbook explores various categories with compatible AI techniques, tools, and algorithms together in one place. This handbook fills the gap between R&D in AI and will benefit all stakeholders including industries, professionals, technologists, academics, research scholars, senior graduate students, government, and public healthcare professionals.

CRC Press
August 2025 : 336pp
Hb: 978-1-032-72315-0 : \$220

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Handbook of AI-Based Mechatronics Systems and Smart Solutions in Industrial Automation



Edited by **Pushpalatha Naveenkumar**, **Vandana Sharma**, **Gunapriya D.**, **Azween Abdullah** Taylors University, Malaysia, **Ahmed A. Elngar** Beni-Suef University, Egypt

Series: *Intelligent Manufacturing and Industrial Engineering*

This handbook focuses on system automation, predictive analysis, preventive analysis, and real-time decision-making systems for next-generation automation. It discusses the advancements of mechatronics systems using AI applications along with the global approach toward smart industrial automation and presents the impact of AI on today's work of autonomous and industrial automation. The book discusses future research potential and is beneficial to manufacturing, healthcare, and finance disputes, while it offers AI algorithms to analyze large amounts of data and identifies patterns, trends, and anomalies for accurate predictions and optimization processes.

CRC Press
September 2025 : 290pp
Hb: 978-1-032-61435-9 : \$220

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Handbook of AI-Driven Threat Detection and Prevention

A Holistic Approach to Security



Edited by **Pankaj Bhambri** GNDEC, Ludhiana, **A. Jose Anand** KCG College of Technology, India

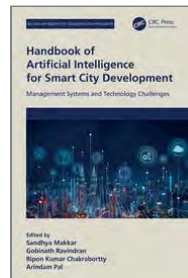
In today's digital age, companies need to adopt cutting-edge artificial intelligence solutions to effectively detect and counter potential threats. This handbook brings together a team of experts to discuss insights on proactive strategies, threat mitigation techniques, and comprehensive tactics for safeguarding sensitive data using AI technology. It is a valuable resource for security professionals, researchers, policymakers, and individuals interested in understanding the intersection of artificial intelligence and security. It equips readers with the knowledge and expertise to navigate the complex world of AI-driven threat detection and prevention.

CRC Press
June 2025 : 388pp
Hb: 978-1-032-85974-3 : \$220
eBook: 978-1-003-52102-0

* For full contents and more information, visit: www.routledge.com/9781032859743

Handbook of Artificial Intelligence for Smart City Development

Management Systems and Technology Challenges



Edited by **Sandhya Makkar** Sr. Lecturer (Data Analytics), College of Business, Tech. & Engr., Dept. of Computing, Sheffield Hallam Univ., UK, **Gobinath Ravindran**, **Ripon Kumar Chakraborty** Capability Systems Centre, SEIT, **Arindam Pal**

Series: *Big Data for Industry 4.0*

Handbook of Artificial Intelligence for Smart City Development: Management Systems and Technology Challenges covers the whole journey of the development of Smart Cities, from the foundations to the usage of technologies, including the challenges and issues that policymakers and technologists may face during the concept, development, management, and implementation stage. The book also covers sustainable strategies and safety measures and offers real-life cases, advancements in manufacturing approaches for Smart Cities which includes AI technologies such as big data analytics, blockchain, machine learning, and fault diagnostics.

CRC Press
June 2025 : 230pp
Hb: 978-1-041-09401-2 : \$220

* For full contents and more information, visit: www.routledge.com/9781041094012

2ND EDITION

Handbook of Construction Management

Scope, Schedule, and Cost Control, 2-Volume Set



Edited by **Abdul Razzak Rumane** Sijjeel General Commerce & Contracting Co., Kuwait

Series: Systems Innovation Book Series

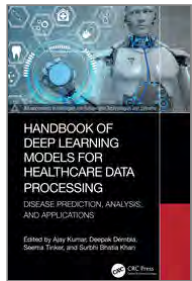
This 2-volume handbook covers the importance of quality management tools and construction management principles, procedures, concepts, methods, and tools. Due to the varied nature of construction management processes, the addition of certain topics, and for proper understanding of the information the new edition is divided into two volumes. Handbook of Construction Management: Scope, Schedule, and Cost Control, Second Edition, 2-Volume Set provides significant information and guidelines to construction and project management professionals involved in construction projects and construction-related industries.

CRC Press
August 2025 : 704pp
Hb: 978-1-041-07117-4 : \$400

* For full contents and more information, visit: www.routledge.com/9781041071174

Handbook of Deep Learning Models for Healthcare Data Processing

Disease Prediction, Analysis, and Applications



Edited by **Ajay Kumar** Prof, Dept. of Mech. Eng., School of Eng. and Tech., JECRC Univ., IN, **Deepak Dembla**, **Seema Tinker**, **Surbhi Bhatia** King Faisal University, Saudi Arabia.

Series: Advancements in Intelligent and Sustainable Technologies and Systems

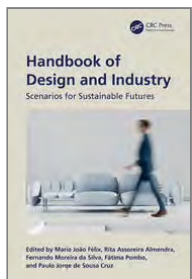
Deep learning has shown great potential in transforming various fields, including healthcare. With the abundance of healthcare data generated daily, there is a pressing need to develop efficient algorithms that can process and analyze this data to improve patient care and treatment outcomes. Written to be used as a comprehensive guide for healthcare professionals, researchers, and data analysts, this handbook is essential for those interested in using deep learning models to analyze and process healthcare data. It is also suitable for those with a basic understanding of machine learning and want to learn more about the latest advancements in deep learning in healthcare.

CRC Press
June 2025 : 310pp
Hb: 978-1-032-73939-7 : \$200
eBook: 978-1-003-46728-1

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Handbook of Design and Industry

Scenarios for Sustainable Futures



Edited by **Maria João Félix**, **Rita Assoreira Almendra**, **Fernando Moreira da Silva**, **Fátima Pombo**, **Paulo Jorge de Sousa Cruz**

This book consists of chapters that bring together researchers, academics, policy makers and designers with the objective of fostering and developing a focused vision that enhances innovation through design and industry for a better future. Design and Industry: Scenarios for Sustainable Futures is essential reading for researchers and academics in the fields and disciplines of ergonomics/human factors, occupational health and safety, industrial design, product design, industrial engineering, materials engineering, process engineering, computer engineering, communication designers, electronics and telecommunications engineering.

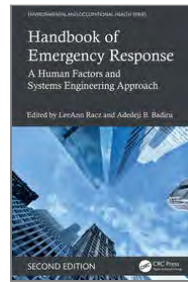
CRC Press
September 2025 : 504pp
Hb: 978-1-032-70101-1 : \$190

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2ND EDITION

Handbook of Emergency Response

A Human Factors and Systems Engineering Approach, Second Edition



Edited by **LeeAnn Racz**, **Adedeji B. Badiru** Air Force Institute of Technology, Dayton, Ohio, USA

Series: Environmental and Occupational Health Series

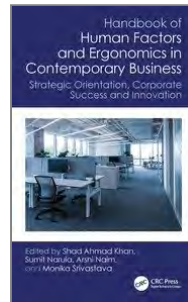
This fully updated second edition of Handbook of Emergency Response presents practical advice and guidelines on how to plan the coordinated execution of emergency response. It incorporates human factors and a systems engineering approach in emergency response project management. It provides cutting-edge research in developing a systematic structure for communication, cooperation, and coordination. This handbook is an ideal purchase for any student or practitioner of human factors, safety, systems engineering, events management, local or federal governance or those in the emergency services.

CRC Press
September 2025 : 540pp
Hb: 978-1-041-07348-2 : \$220

* For full contents and more information, visit: www.routledge.com/9781041073482

Handbook of Human Factors and Ergonomics in Contemporary Business

Strategic Orientation, Corporate Success and Innovation



Edited by **Shad Ahmad Khan**, **Sumit Narula**, **Arshi Naim** Al Samer King Khalid University, Saudi Arabia, **Monika Srivastava**

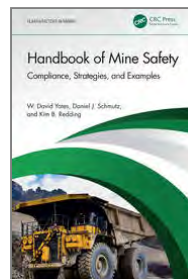
Handbook of Human Factors and Ergonomics in Contemporary Business highlights the symbiotic relationship between human-centric approaches and organizational success in 21st century business and corporate culture. It explores how integrating human factors and ergonomics strategically can fuel innovation, enhance performance, and deliver a competitive advantage. By promoting employee wellbeing to implementing ergonomic interventions for heightened productivity, the chapters offer invaluable insights into the role of human factors across differing business sectors. This handbook presents theoretical frameworks, empirical evidence, and real-world case studies.

CRC Press
July 2025 : 392pp
Hb: 978-1-032-87262-9 : \$220

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Handbook of Mine Safety

Compliance, Strategies, and Examples



W. David Yates EHF Manager, MacLean Power Systems, Pelham, Alabama, **Daniel J. Schmutz**, **Kim B. Redding**

Series: Human Factors in Mining

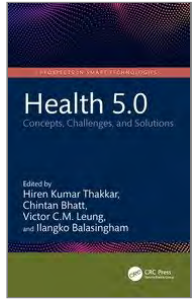
Handbook of Mine Safety provides essential guidance on safety for mining professionals. From navigating complex hazards to interpreting evolving standards, it offers indispensable insights tailored to the unique challenges of the mining sector. This book is a must-have resource for professionals in the fields of Occupational Health and Safety, Mining Engineering, Safety Engineering and Fire Safety. Whether you're a seasoned practitioner seeking to deepen your understanding or a newcomer looking to establish a solid foundation in mining safety, this book offers invaluable theory and guidance to enhance safety practices and mitigate risks in the world of mining operations.

CRC Press
September 2025 : 576pp
Hb: 978-1-032-82484-0 : \$290

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Health 5.0

Concepts, Challenges, and Solutions



Edited by **Hiren Kumar Thakkar , Chintan Bhatt , Victor C. M. Leung , Ilanko Balasingham**

Series: Prospects in Smart Technologies

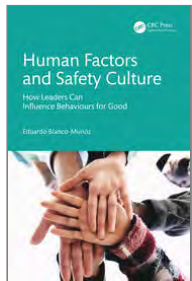
This book presents a detailed explanation of the concepts, taxonomy, and challenges in Healthcare 4.0 and provides frameworks and architectures for the adaptation and fusion of emerging technologies under Healthcare 5.0. This reference book offers an early opportunity to explore emerging technologies and understand current issues, problems, and concepts. The primary audience for this book incorporates academicians, researcher scholars, IoT developers, Cloud-Based health application designers, and medical practitioners who are engaged in providing healthcare services using recent technologies.

CRC Press
May 2025 : 270pp
Hb: 978-1-032-49247-6 : \$170
eBook: 978-1-003-39349-8

* For full contents and more information, visit: www.routledge.com/9781032492476

Human Factors and Safety Culture

How Leaders Can Influence Behaviours for Good



Eduardo Blanco-Munoz

This title explores human behavior in the context of workplace safety and risk management. Focused on understanding how people respond to danger and how leaders can put safety at the heart of their organizations' culture, it draws on the latest scientific insights from neuroscience, psychology, and behavioral economics. Integrating traditional and emerging perspectives in the field of Occupational Health and Safety, this book delivers both a vision and the tools to elevate safety as a core organizational value able to motivate and anchor safe behaviors and reinforce safety-oriented leadership.

CRC Press
July 2025 : 312pp
Pb: 978-1-041-01936-7 : \$66.99
Hb: 978-1-041-02012-7 : \$125

* For full contents and more information, visit: www.routledge.com/9781041019367

Industrial Engineering Strategy for Constructive Technologies

A Systems-Based Approach for the Global Economy



Adedeji B. Badiru Air Force Institute of Technology, Dayton, Ohio, USA

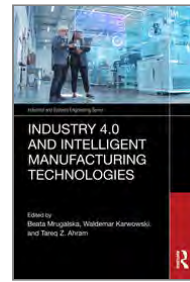
Series: Systems Innovation Book Series

There is an urgent need to develop robust strategies to respond to and leverage new and emerging technologies, particularly those based on Artificial Intelligence. An Industrial Engineering's systems-focused approach offers the best mechanism to address this urgent global need. This book is a necessary read for university students and instructors along with all areas of engineering as well as industry, business, government, and the military.

CRC Press
May 2025 : 272pp
Hb: 978-1-032-65808-7 : \$150
eBook: 978-1-032-65922-0

* For full contents and more information, visit: www.routledge.com/9781032658087

Industry 4.0 and Intelligent Manufacturing Technologies



Edited by **Beata Mrugalska** Poznan University of Technology, Poznan, Poland, **Waldemar Karwowski** Univ. of Central Florida, Orlando, USA, **Tareq Z. Ahram**

Series: Industrial and Systems Engineering Series

The world is undergoing a transformation driven by Industry 4.0 and Intelligent Manufacturing Technologies. This book explores the shift from automation and security to well-being and collaboration in industrial systems. This book is designed to captivate managers and researchers in the field of industrial engineering. It also offers valuable insights for students, graduates, and educators focusing on industrial and business management. However, the content is not exclusive to these audiences and will be engaging for any reader with an interest in the subject matter.

Routledge
September 2025 : 248pp
Hb: 978-1-041-03714-9 : \$130

* For full contents and more information, visit: www.routledge.com/9781041037149

Industry 5.0

Concepts and Strategies for Digital Transformation



Edited by **Mahender Singh Kaswan** Lovely Professional University, **Rajeev Rathi**, **Jose Arturo Garza-Reyes** Derby Business School, The University of Derby, Kedleston Road Campus, Derby UK

Series: Sustainable Manufacturing Technologies

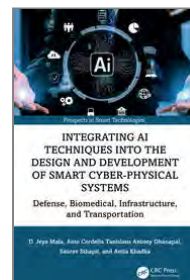
Industry 5.0 is a new paradigm aiming to address social and environmental sustainability in future industries. This book explores various models and execution frameworks across different sectors, enabling organizations to stay competitive by integrating digital technologies with human creativity. This resource provides practitioners and industry leaders with tools to effectively address contemporary challenges associated with product life cycles and societal impacts. It also helps organizations enhance their resilience to achieve the objectives in the Paris Agreement and COP 28, and assists policymakers and government agencies.

CRC Press
May 2025 : 140pp
Hb: 978-1-032-87821-8 : \$125
eBook: 978-1-003-53518-8

* For full contents and more information, visit: www.routledge.com/9781032878218

Integrating AI Techniques into the Design and Development of Smart Cyber-Physical Systems

Defense, Biomedical, Infrastructure, and Transportation



D. Jeya Mala, **Anto Cordelia Tanislaus Antony Dhanapal**, **Saurav Sthapit**, **Anita Khadka**

Series: Prospects in Smart Technologies

Integrating AI Techniques into the Design and Development of Smart Cyber-Physical Systems: Defense, Biomedical, Infrastructure, and Transportation offers an introductory exploration of the fundamental theories and concepts of Artificial Intelligence and Machine Learning that are utilized in the building of dependable cyber-physical systems. It brings the ideas of advanced design and development and empowered security measures to cyber-physical systems. By focusing on the application of AI in cyber-physical systems design as well as security aspects, an improvement in reliability and advancements can be explored.

CRC Press
June 2025 : 336pp
Hb: 978-1-032-78770-1 : \$190

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5TH EDITION

Introduction to Human Factors and Ergonomics, Fifth Edition

**R S Bridger**

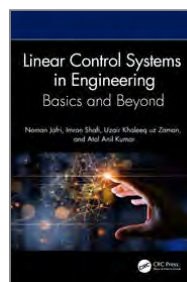
Ergonomics and human factors impact how humans interact with the world around them. Understanding these factors can be difficult. To cut through the tricky aspects of the subject, this bestselling textbook offers a comprehensive and up-to-date introduction to the field. This title places the subject matter into a system context using a human-machine model to structure the chapters and a knowledge application model to structure the organisation of material in each chapter.

CRC Press
October 2025 : 704pp
Hb: 978-1-032-69450-4 : \$125

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Linear Control Systems in Engineering

Basics and Beyond



Noman Jafri Dean of Engr., Abasyn Univ., Pakistan, **Imran Shafi** Assoc. Prof., Dept. of Mech. Engr., College of Electrical and Mech. Engr., NUST, Pakistan, **Uzair Khaleeq** **uz Zaman**, **Atal Anil Kumar** Post-Doc Researcher, Dept. of Engr., Fac. of Sci., Technology and Med., Univ. of Luxembourg

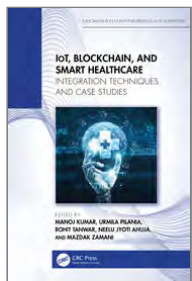
This textbook examines classical and modern control strategies toward systems' best performance, especially concerning design and operations. It simplifies control theory concepts through related mathematics and examples of real-life systems worldwide. The textbook is written for both undergraduate and graduate courses dealing with the subjects of electrical, mechanical, mechatronics, chemical, and aerospace engineering. It will guide the reader through fundamental concepts and practical applications, leading them to explore more complex and advanced topics.

CRC Press
September 2025 : 400pp
Hb: 978-1-032-77628-6 : \$120

* For full contents and more information, visit: www.routledge.com/9781032776286

IoT, Blockchain, and Smart Healthcare

Integration Techniques and Case Studies



Edited by **Manoj Kumar**, **Urmila Pilania**, **Rohit Tanwar**, **Neelu Jyoti Ahuja** University of Petroleum and Energy Studies, India, **Mazdak Zamani** Assistant Professor Department of Computer Science and Technology School of Science, Mathematics, and Technology Empire State University State University of New York

Series: Innovations in Health Informatics and Healthcare

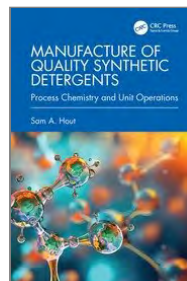
IoT, Blockchain, and Smart Healthcare: Integration Techniques and Case Studies provides a detailed exploration of how these technologies are combined, giving readers a deep understanding of their role in revolutionizing healthcare. It explores the practical applications of Blockchain and IoT devices in solving healthcare problems and addresses the challenges of incorporating these technologies into healthcare systems. The book also provides practical guidance on implementing cutting-edge methodologies, enabling readers to apply theoretical knowledge in real-world situations effectively.

CRC Press
September 2025 : 176pp
Hb: 978-1-032-84002-4 : \$140

* For full contents and more information, visit: www.routledge.com/9781032840024

Manufacture of Quality Synthetic Detergents

Process Chemistry and Unit Operations

**Sam A. Hout**

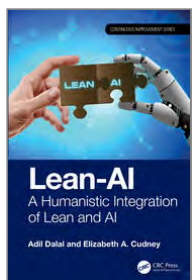
This book provides a thorough exploration of the step-by-step manufacturing processes utilized in the global production of synthetic detergents. Drawing from real-world manufacturing experience at various detergent plants both domestically and internationally, the text presents valuable insights into the industry. This comprehensive guide serves as a valuable reference for chemists, chemical engineers, manufacturing professionals, and engineers working in granular and liquids sciences, and manufacturing. It is an indispensable resource for those seeking to enhance their knowledge and skills in the field.

CRC Press
May 2025 : 208pp
Hb: 978-1-032-97851-2 : \$115
eBook: 978-1-003-59621-9

* For full contents and more information, visit: www.routledge.com/9781032978512

Lean-AI

A Humanistic Integration of Lean and AI



Adil Dalal CEO, Pinnacle Process Solutions, Intl. LLC, TX, **Elizabeth A. Cudney** Maryville University, St. Louis, USA

Series: Continuous Improvement Series

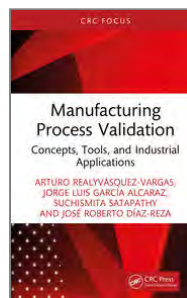
Lean-AI: A Humanistic Integration of Lean and AI offers a roadmap for organizations seeking to harness AI's potential while preserving the human-centric values at the heart of Lean. It provides a deep dive into how Lean principles can be enhanced through AI-driven intelligence, agility, and innovation. This book is designed for forward-thinking innovators, business leaders, Lean practitioners, and AI enthusiasts eager to explore the synergy between technology and human-centric process improvement. It is an essential read for those ready to challenge conventional paradigms and embrace the future of efficiency, collaboration, and intelligent innovation.

CRC Press
September 2025 : 304pp
Hb: 978-1-032-87503-3 : \$105

* For full contents and more information, visit: www.routledge.com/9781032875033

Manufacturing Process Validation

Concepts, Tools, and Industrial Applications



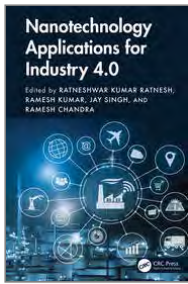
Arturo Realyvásquez-Vargas, **Jorge Luis García Alcaraz** Autonomous University of Ciudad Juárez, Chihuahua, Mexico, **Suchismita Satapathy**, **José Roberto Díaz-Reza**

Unlock the secrets to optimizing manufacturing processes with this essential guide to process validation. Designed for industry professionals and academics, this book bridges theory and practice, offering a clear roadmap to enhance quality and productivity. Whether aiming to streamline operations or achieve operational excellence, this book provides the knowledge and practical insights to drive continuous improvement. This resource serves as a crucial link between theoretical concepts and real-world applications. It provides a comprehensive guide for successfully implementing process validation, offering a clear and detailed roadmap for achieving optimal results.

CRC Press
August 2025 : 160pp
Hb: 978-1-041-09609-2 : \$69.99

* For full contents and more information, visit: www.routledge.com/9781041096092

Nanotechnology Applications for Industry 4.0



Edited by **Ratneshwar Kumar Ratnesh** Department of Electronics and Communication, Meerut Institute of Engineering and Technology, **Ramesh Kumar , Jay Singh , Ramesh Chandra**

This book explores the applications of nanotechnology in Industry 4.0 including how nanotechnology can be used to enhance various manufacturing processes. It discusses the use of nanotechnology in areas such as materials science, energy storage, electronics, biomedical and biotechnology, advanced computing and signal processing, and communication systems. Overall, it highlights the potential for mentioned technologies to transform the manufacturing and production processes of the future. This book is aimed at graduate students and researchers in nanotechnology, materials science and industrial engineering.

CRC Press

July 2025 : 346pp

Hb: 978-1-032-81690-6 : \$180

* For full contents and more information, visit: www.routledge.com/9781032816906

Navigating the Data Minefields

Management's Guide to Better Decision-Making



Scott M. Shemwell

Volumes have been written on the need for high-quality data to support organizational decision-making. Navigating the Data Minefields: Management's Guide to Better Decision-Making provides executives and SMEs with a 'reasonable' set of (useful) tools they can adapt to their specific organization and operating environment. Professionals that depend on large-high-quality data sets such as senior and midlevel management, engineering Subject Matter Experts (SMEs), Data Scientists, IT, Systems Engineers, and medical professionals will want to have this book in their decision-making arsenal.

CRC Press

June 2025 : 324pp

Hb: 978-1-032-67793-4 : \$120

eBook: 978-1-032-67954-9

* For full contents and more information, visit: www.routledge.com/9781032677934

Navigating the FRAM

Mastering the Functional Resonance Analysis Method for Modelling Complex Socio-Technical Systems



Edited by **Riccardo Patriarca**

Developed over decades of meticulous research, the FRAM serves as a powerful tool for modeling intricate systems, encompassing various realms: aviation, healthcare, IT software requirements, crisis management, and more. This book represents a culmination of two decades of research and practical applications of the FRAM. Written for researchers and practitioners in Occupational Health and Safety, Risk Engineering, Safety Engineering, Resilience Engineering, Human Factors, and related fields, Navigating the FRAM resonates with those seeking to deepen their understanding of complex systems.

CRC Press

October 2025 : 472pp

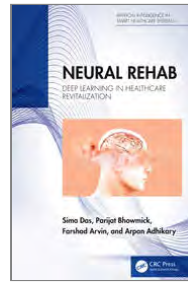
Pb: 978-1-032-85051-1 : \$86.99

Hb: 978-1-032-85435-9 : \$220

* For full contents and more information, visit: www.routledge.com/9781032850511

Neural Rehab

Deep Learning in Healthcare Revitalization



Sima Das , Parijat Bhowmick , Farshad Arvin , Arpan Adhikary

Series: Artificial Intelligence in Smart Healthcare Systems

Neural Rehab explores deep learning's significant impact on the revitalization of healthcare through neural rehabilitation. The focus is on how deep learning algorithms are being used to personalize rehabilitation plans, demonstrating how technology can tailor interventions to meet the unique needs of each individual. The book covers neural rehabilitation such as stroke recovery, brain injuries, and neurological disorders. An emphasis is placed on the patient-centric approach, showcasing how deep learning contributes to enhanced patient experiences, improved recovery, and an overall better quality of life. This book is essential for healthcare professionals and researchers.

CRC Press

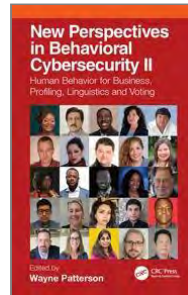
June 2025 : 240pp

Hb: 978-1-032-83998-1 : \$190

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New Perspectives in Behavioral Cybersecurity II

Human Behavior for Business, Profiling, Linguistics and Voting



Edited by **Wayne Patterson** Private Consultant for Howard University

New Approaches in Behavioral Cybersecurity II brings together international perspectives that explore how human behavior intersects with cybersecurity. The chapters highlight the integration of behavioral sciences like psychology, economics, and sociology with traditional cybersecurity approaches. Contributors examine linguistic differences in cyberattacks, explore the impact of personality on hacking behavior, and provide insights into ethical practices in the digital age. An ideal read for cybersecurity professionals, human factors practitioners, academics, and students this title will help readers broaden their understanding of how human behavior influences cyber defenses.

CRC Press

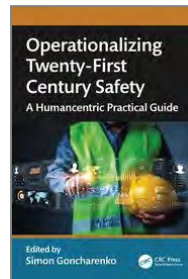
August 2025 : 202pp

Hb: 978-1-032-98352-3 : \$110

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Operationalizing Twenty-First Century Safety

A Humancentric Practical Guide



Edited by **Simon Goncharenko**

Unlike most of the existent human factors resources on the market today, which all require some fluency in the concepts and a certain level of pre-understanding, Operationalizing Twenty-First Century Safety: A Humancentric Practical Guide presents the material in a simple, easy-to-read language that does not require academic background or prior experience to ensure you can deliver lasting results. This book is written for professionals and practitioners at every career level of ergonomics and human factors, occupational health and safety, business and leadership and any industry where workplace risk is significant.

CRC Press

July 2025 : 135pp

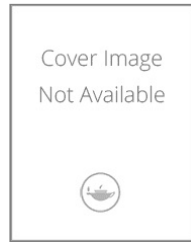
Pb: 978-1-032-94980-2 : \$66.99

Hb: 978-1-032-95078-5 : \$170

* For full contents and more information, visit: www.routledge.com/9781032949802

Principles of Spinning

Speed Frame in Spinning



Ashok R. Khare

Series: Principles of Spinning

This book describes speed frame with respect to four important mechanisms: flyer and bobbin drive, cone drums for varying speed of bobbins, differential motion to give combined speed to bobbins and a complicated building mechanism where modern speed frames score over conventional frames. This book also gives a detailed explanation of traditional mechanisms common in both types of frames, along with the path of roving from the nip of last drafting rollers to the flyer top. Concepts like improved drafting systems, use of servo motors for varying the bobbin speed according to change in its diameter and electronic controls are explained.

CRC Press
October 2025 : 280pp
Hb: 978-1-138-59660-3 : \$150

* For full contents and more information, visit: www.routledge.com/9781138596603

Projects Impacting Organizational Culture

Evolution by Integrating People into the Equation



Edited by **Raúl Molteni** Partner and CEO of Molteni Consulting

Series: Best on Quality

Projects for continuous improvement are prevalent in today's business landscape. However, individual and organizational resistance often hinders progress and inhibits results. *Projects Impacting Organizational Culture: Evolution by Integrating People into the Equation* is an essential guide to prevent and manage change. This book is a valuable resource for professionals in design, manufacturing, project management, systems engineering, manufacturing management, reliability, usability, and quality specialists. It is also beneficial for graduate and senior undergraduate students, as well as instructors seeking to enhance organizational performance.

CRC Press
September 2025 : 224pp
Pb: 978-1-032-89757-8 : \$66.99
Hb: 978-1-032-89834-6 : \$160

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Revolutionizing Healthcare Services

Unleashing Innovation through Generative AI



Edited by **Babita Singla, Kumar Shalender, Nripendra Singh, Sandhir Sharma**

Series: Artificial Intelligence in Smart Healthcare Systems

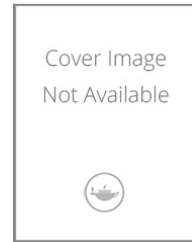
The increasing prominence of Generative AI across various industries presents an abundance of opportunities for integration within the healthcare sector. From generating valuable insights about patients to automating operations, streamlining patient care, and implementing preventive technologies, the use of Generative AI has the potential to usher in a new era of productivity and profitability for stakeholders within the healthcare ecosystem. *Revolutionizing Healthcare Services: Unleashing Innovation Through Generative AI* explores the current and potential applications of Generative AI in the healthcare sector.

CRC Press
June 2025 : 285pp
Hb: 978-1-032-87158-5 : \$125
eBook: 978-1-003-53127-2

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Safety and Health Savvy

A User's Guide to Thriving in the Workplace



Tim Marsh

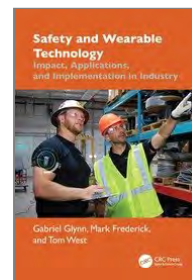
In an ever-changing world, understanding the essentials of safety and risk management is more crucial than ever. This concise guide not only revisits fundamental principles but also integrates the latest developments in wellbeing and mental health. Designed to be as user-friendly as possible, it simplifies complex concepts into practical advice that can be easily applied in day-to-day life. This book offers valuable insights for anyone looking to enhance their understanding of personal safety and wellbeing in the workplace. Readers will find a fascinating combination of key safety theories, grounded in the latest safety thinking, alongside actionable tips and methodologies.

CRC Press
October 2025 : 56pp
Pb: 978-1-032-96045-6 : \$26.99
Hb: 978-1-032-97603-7 : \$110

* For full contents and more information, visit: www.routledge.com/9781032960456

Safety and Wearable Technology

Impact, Applications, and Implementation in Industry



Gabriel Glynn, Mark Frederick, Tom West

Safety and Wearable Technology: Impact, Applications, and Implementation in Industry tackles the issue of workplace safety, as each day around the world workers lose their lives in accidents, and more succumbing to work-related illnesses. With wearable technology readily available, a new frontier has opened for workplace safety, offering powerful tools that can change worker protection. Intended for professionals across the safety, operations, and engineering fields, *Safety and Wearable Technology* will appeal to Health and Safety Engineers, Manufacturing Engineers, Plant Managers, and many others looking to understand and implement wearable tech in their safety protocols.

CRC Press
May 2025 : 154pp
Hb: 978-1-032-54988-0 : \$110
eBook: 978-1-003-43230-2

* For full contents and more information, visit: www.routledge.com/9781032549880

2ND EDITION

Safety at the Sharp End: A Guide to Non-Technical Skills, Second Edition

A Guide to Non-Technical Skills, Second Edition



Rhona Flin, Paul O'Connor Irish Centre for Applied Patient Safety and Simulation, Galway, **Tom Reader**

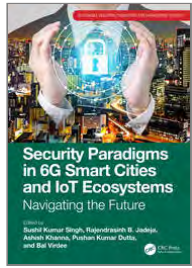
This book is a general guide to the theory and practice of non-technical skills (NTS) for safety. Now fully updated in this new edition, *Safety at the Sharp End. A Guide to Non-Technical Skills* considers the growth of interest in Crew Resource Management (CRM) approaches to identifying, training and assessing CRM/NTS skills. It covers the identification, training and evaluation of NTS and has been written for use by individuals who are studying or training these skills in CRM and other safety or human factors courses. It outlines the underlying principles, as well as practical techniques and advice and has been revised to cover the latest developments.

CRC Press
November 2025 : 360pp
Pb: 978-1-032-61882-1 : \$68.99
Hb: 978-1-032-64325-0 : \$170

* For full contents and more information, visit: www.routledge.com/9781032618821

Security Paradigms in 6G Smart Cities and IoT Ecosystems

Navigating the Future



Edited by **Sushil Kumar Singh** Marwadi University, **Rajendrasinh B. Jadeja** Marwadi University, **Ashish Khanna** Maharaja Agrasen Institute of Technology, India, **Pushan Kumar Dutta**, **Bal Virdee** London Metropolitan University

Series: *Sustainable Industrial Engineering and Management Systems*

As the world rapidly advances towards unparalleled connectivity and urbanization, the intersection of state-of-the-art telecommunications, smart city initiatives, and the Internet of Things (IoT) holds the potential for revolutionary changes in our daily lives. This book examines the complex interplay among these dynamic forces, analyzing the security challenges and opportunities that emerge as we venture into this technological frontier. By mastering the techniques outlined in the book, readers gain a competitive edge in their respective fields, enabling them to develop innovative and secure solutions tailored to specific domains.

CRC Press
October 2025 : 504pp
Hb: 978-1-032-91359-9 : \$220

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Sensor Technologies and Wireless Communications in Industry 5.0

A Solution for Smart Manufacturing



Edited by **Ramkumar K.R.**, **Bhupendra Singh**, **Lei Pan**, **Ankit Sharma** Chitkara University, Punjab

Series: *Innovations in Smart Manufacturing for Long-Term Development and Growth*

The book explores the IoT landscape, focusing on Sensor Technologies and Wireless Sensor Communications. It also discusses challenges in establishing interconnected sensors, network connectivity, longevity, and strategies for sustaining sensor networks in dynamic industrial environments. Designed as a research tool and an educational resource for academic institutions, this book is essential for researchers, students, and educators seeking up-to-date information on IoT technologies.

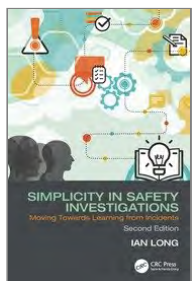
CRC Press
October 2025 : 216pp
Hb: 978-1-032-87822-5 : \$190

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2ND EDITION

Simplicity in Safety Investigations

Moving Towards Learning from Incidents, Second Edition



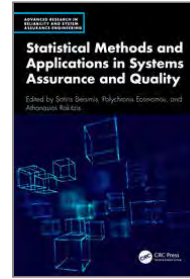
Ian Long

This book investigates over 30 major catastrophes and reveals the critical necessity of transitioning from identifying lessons to implementing actionable changes in workplace safety. New to this edition are two additional chapters, updated content on lessons learned from investigations and increased coverage of the process required to better understand workplace fatalities. This second edition of *Simplicity in Safety Investigations: Moving Towards Learning from Incidents* is an indispensable resource tailored for those in occupational health and safety practice including supervisors, managers, and business leaders across diverse industries.

CRC Press
June 2025 : 202pp
Pb: 978-1-032-86989-6 : \$66.99
Hb: 978-1-032-87065-6 : \$110
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Statistical Methods and Applications in Systems Assurance and Quality



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Statistical Methods and Applications in Systems Assurance and Quality provides a comprehensive overview of statistical methods for ensuring system quality and reliability. It discusses best practices for improving the quality of manufacturing products by using proper statistical methods. Designed for researchers, industry professionals, and academics, this reference is ideal for those working in manufacturing, healthcare, computer engineering, statistical process control, and machine learning applications. It serves as a valuable resource for anyone seeking to enhance system performance through data-driven insights.

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Sustainable Healthcare Systems in Africa

Technologies, Practices, and Management



Edited by **Wasswa Shafik**, **Adel Ben Youssef** University Cote d'Azur, France, **Chithirai Pon Selvan**, **Pushan Kumar Dutta**

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This book encompasses the development, implementation, and maintenance of socially, environmentally, and economically sustainable healthcare systems in Africa. This involves integrating technology, adopting sustainable practices, and effectively managing resources to ensure the long-term viability of healthcare services. The insights provided in this book will empower healthcare professionals, policymakers, and other stakeholders with the knowledge and tools necessary to drive positive change. It serves as a roadmap for decision-makers looking to implement lasting and impactful improvements in healthcare delivery throughout the continent.

CRC Press
November 2025 : 552pp
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Sustainable Supply Chains and Digital Transformation



Edited by **Saurabh Tiwari**, **Richa Goel** SCMS, Symbiosis International deemed University, IN

Series: *Emerging Trends in Technology in Management and Commerce*

This book focuses on the impact of digitalization on supply chains and how it is affecting every aspect of people's lives. Corporate executives, entrepreneurs, government officials, professionals, academics, postgraduate students, and research associates will undoubtedly find this book to be a valuable addition to their libraries.

CRC Press
August 2025 : 352pp
Hb: 978-1-032-76048-3 : \$140

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3RD EDITION

Systems Engineering for Commercial Aircraft

A Domain-Specific Adaptation

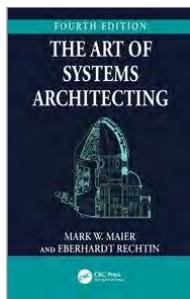
**Scott Jackson**

Systems-engineered aircraft are designed to transport passengers safely, ensuring all components work together seamlessly. This book explores the concept of aircraft as a complex system, including humans, with safety as a crucial aspect. By prioritizing safety and quality, fewer fatalities can be achieved, leading to efficient, reliable, and safe aircraft for passengers and crew. The primary audience for this book consists of major aircraft companies engaged in advanced design, aeronautical engineers, and systems engineers.

Routledge
June 2025 : 290pp
Hb: 978-1-041-01558-1 : \$125
eBook: 978-1-003-61621-4

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4TH EDITION

The Art of Systems Architecting

Mark W. Maier Centreville, VA, USA, **Eberhardt Rechtin**
University of Southern California, Palos Verdes, USA

This new edition provides structured heuristics to improve the least structured, most art-like elements of systems design. It offers unique techniques to bridge the difference between scientific engineering and qualitative design along with comprehensive methods for combining architectural design with digital engineering. This book can be used as a reference book for engineers and managers involved in creating new systems, people responsible for developing mandated architecture descriptions, software architects, system architects, and systems engineers, or as a textbook in graduate engineering courses.

CRC Press
June 2025 : 519pp
Hb: 978-1-032-77438-1 : \$120
eBook: 978-1-003-48359-5

* For full contents and more information, visit: www.routledge.com/9781032774381

2ND EDITION

The Design, Implementation, and Audit of Health and Safety Management Systems, Second Edition**Ron C. McKinnon**

Series: Workplace Safety, Risk Management, and Industrial Hygiene

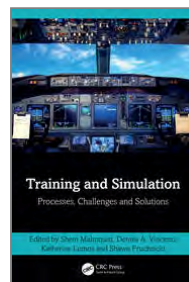
In today's complex work environments, occupational health and safety are critical concerns for all organizations. This title offers an in-depth exploration of creating, implementing, and evaluating structured safety management systems (SMS). As safety regulations and laws require every workplace to maintain a form of SMS, comprehensive guidance is provided here that offers the necessary foundations and detailed understanding of these essential systems.

CRC Press
October 2025 : 312pp
Hb: 978-1-032-95124-9 : \$140

* For full contents and more information, visit: www.routledge.com/9781032951249

Training and Simulation

Processes, Challenges and Solutions

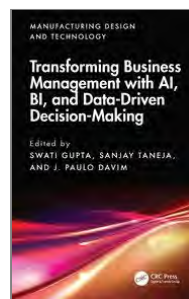


Edited by **Shem Malmquist**, **Dennis A. Vincenzi** Embry-Riddle Aeronautical University, USA, **Katherine Lemos**, **Shawn Pruchnicki**

Underpinned by case studies and real-life examples, this book will give the reader a thorough overview of the limitations of current training methods but with a view to improving and developing better methods for future training scenarios. Flight Simulation Training: Processes, Challenges and Solutions will appeal to practitioners of human factors, pilots, engineers involved in systems design, aviation safety specialists, flight test investigators and flight accident investigators.

CRC Press
September 2025 : 352pp
Hb: 978-1-032-65800-1 : \$160

* For full contents and more information, visit: www.routledge.com/9781032658001

Transforming Business Management with AI, BI, and Data-Driven Decision-Making

Edited by **Swati Gupta**, **Sanjay Taneja**, **J. Paulo Davim**
University of Aveiro, Portugal

Series: Manufacturing Design and Technology

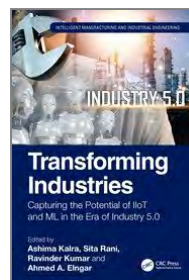
This book discusses how artificial intelligence (AI), business intelligence (BI), and data-driven decision-making are transforming traditional business management practices, leading to unparalleled innovation and efficiency. By covering practical uses and case studies that illustrate the real-world applications of AI and BI as decision-making tools, it book makes complex theories more accessible and understandable. Bridging the gap between theoretical concepts and practical data analysis issues, this book is a valuable resource for professionals in the business environment, industrial and manufacturing engineering, business analytics, and related fields.

CRC Press
October 2025 : 312pp
Hb: 978-1-032-91091-8 : \$160

* For full contents and more information, visit: www.routledge.com/9781032910918

Transforming Industries

Capturing the Potential of IIoT and ML in the Era of Industry 5.0



Edited by **Ashima Kalra** Chandigarh Engineering College, India, **Sita Rani** GNDEC, Ludhiana, **Ravinder Kumar** Thapar Institute of Engineering and Technology (TIET), India, **Ahmed A. Elngar**

Series: Intelligent Manufacturing and Industrial Engineering

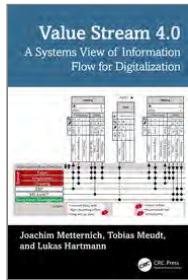
The rapid convergence of the Industrial Internet of Things (IIoT) and Machine Learning (ML) is propelling us into a new era known as Industry 5.0. This era is defined by unparalleled levels of automation, customization, and sustainability. Despite these advancements, there is a noticeable absence of comprehensive resources that offer a complete understanding of these transformative technologies and their practical applications across various industrial sectors. This book aims to fill the void by providing a timely and relevant guide that explores the theoretical foundations while also presenting real-world case studies and best practices.

CRC Press
October 2025 : 376pp
Hb: 978-1-032-88447-9 : \$160

* For full contents and more information, visit: www.routledge.com/9781032884479

Value Stream 4.0

A Systems View of Information Flow for Digitalization



Joachim Metternich, Tobias Meudt, Lukas Hartmann

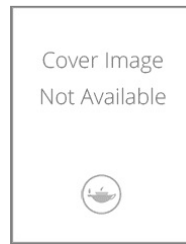
This book describes how material and information flows of a value stream can be synchronized with the aim of processing orders as quickly and waste-free as possible. The design of the value stream is systematically oriented towards the requirements of the respective business model. The approach described goes beyond the classic value stream method, which primarily improves material flow, and considers order processing from the customer's request to its fulfillment. A compact yet powerful book that is written for production managers, lean managers, operations managers, researchers, and students.

CRC Press
July 2025 : 96pp
Pb: 978-1-032-95831-6 : **\$68.99**
Hb: 978-1-032-95865-1 : **\$170**

* For full contents and more information, visit: www.routledge.com/9781032958316

Workforce Development for Global Manufacturing and Technology Transfer

An Integrated Systems Approach



Adedeji B. Badiru Air Force Institute of Technology, Dayton, Ohio, USA, **Cassie B. Barlow, Sharon C. Bommer**

Series: Systems Innovation Book Series

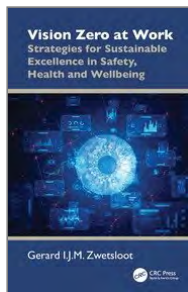
Workforce Development for Global Manufacturing and Technology Transfer: An Integrated Systems Approach focuses on work-integrated education, training, and learning. It offers practical case studies from the manufacturing and technology sector and advocates for the integration of people, technology, and processes to develop a critical workforce that aligns with national priorities. While this book primarily focuses on manufacturing workforce development, it is relevant to manufacturers worldwide and applies to a global audience by covering topics such as project management, product development, technology justification, and various modes of technology transfer.

CRC Press
November 2025 : 232pp
Hb: 978-1-032-88362-5 : **\$130**

* For full contents and more information, visit: www.routledge.com/9781032883625

Vision Zero at Work

Strategies for Sustainable Excellence in Safety, Health and Wellbeing



Gerard I.J.M. Zwetsloot

This book introduces Vision Zero, a commitment to creating workplaces free from serious accidents, harm, and work-related diseases while delivering excellence in Safety, Health, and Wellbeing (SHW). Based on the principle that a safe and healthy working environment is a fundamental labor right, Vision Zero integrates SHW aspects to promote understanding and deliver safer workplaces. Vision Zero at Work is essential for line managers, leaders and professionals in workplace safety, health, and wellbeing as well as policymakers, consultants, and organizational change agents in business and management.

CRC Press
June 2025 : 248pp
Hb: 978-1-041-02682-2 : **\$100**
eBook: 978-1-003-62122-5

* For full contents and more information, visit: www.routledge.com/9781041026822

Workplace Safety and Health Practices

Current and Evolving Trends



Frances Alston Oregon State University, USA, **Onwuka Okorie** Lawrence Livermore National Laboratory (LLNL), USA

Series: Sustainable Improvements in Environment Safety and Health

Workplace Safety and Health Practices investigates the current and future trends that are leading the way and improving workplace health and safety all over the world. Organized into four parts to provide ease of reading, this book focuses on program administration, management engagement and considerations of human aspects for safe and inclusive workplaces. This book will be a fascinating read for any health and safety professional. Its appeal will extend to industrial hygiene professionals, system engineers, construction engineers, and ergonomics and human factors practitioners.

CRC Press
July 2025 : 232pp
Hb: 978-1-032-61871-5 : **\$100**

* For full contents and more information, visit: www.routledge.com/9781032618715

Women, Tech, and Enterprise

A Path to Sustainable Equality in South Asia



Edited by **Kavita Indapurkar** Amity University, **Neeru Sidana** Amity University, **Richa Goel** SCMS, Symbiosis International deemed University, IN, **Tilotama Singh** Assoc. Prof., Uttarakhand Inst. of Mgmt., Uttarakhand University, IN

Series: Women in Industry 4.0

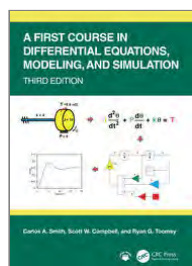
Women, Tech, and Enterprise: A Path to Sustainable Equality in South Asia explores the resilience and adaptability of women entrepreneurs in various industries. It provides practical advice on leveraging technology, building networks, securing funding, and navigating challenges in entrepreneurship. By emphasizing the significance of sustainability and inclusivity in entrepreneurship through interviews with industry experts and thought leaders, the book also sheds light on the crucial role of community and support networks in nurturing women's entrepreneurship, while exploring emerging trends and opportunities in the field.

CRC Press
November 2025 : 320pp
Hb: 978-1-032-91590-6 : **\$160**

* For full contents and more information, visit: www.routledge.com/9781032915906

3RD EDITION

A First Course in Differential Equations, Modeling, and Simulation



Carlos A. Smith University of South Florida, Tampa, USA,
Scott W. Campbell University of South Florida, Tampa, USA,
Ryan G. Toomey

This textbook shows how differential equations arise from applying basic physical principles and experimental observations to engineering systems. Avoiding overly theoretical explanations, the textbook also discusses classical and Laplace transform methods for obtaining the analytical solution of differential equations. In addition, the authors explain how to solve sets of differential equations where analytical solutions cannot easily be obtained. Incorporating valuable suggestions from mathematicians and mathematics professors, the Third Edition provides students with a practical understanding of how to apply differential equations in modern engineering and science.

CRC Press
 September 2025 : 808pp
 Hb: 978-1-041-02421-7 : \$120

* For full contents and more information, visit: www.routledge.com/9781041024217

Additive Manufacturing for Biomedical Implants and Prosthetics



Edited by Pawan Kumar Rakesh National Institute of Technology, India, **Pravin Kumar**

Series: Advanced Materials Processing and Manufacturing

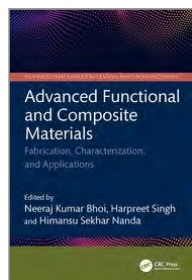
This book explains usage of additive manufacturing for the printing of bio-medical implants and prosthetics. It elaborates basics of printing of bio-medical implants and prosthetics including necessity, printing processes, materials, and standards followed by discussion of involved technologies, design and optimization, and post processing. It further highlights patient response and risks of bio-medical implants including future scope. Sustainability and Environmental concerns while AM of implants and process optimization are also covered. This book is aimed at graduate students and researchers in bioengineering, materials science, implant design and fabrication.

CRC Press
 October 2025 : 280pp
 Hb: 978-1-032-62286-6 : \$170

* For full contents and more information, visit: www.routledge.com/9781032622866

Advanced Functional and Composite Materials

Fabrication, Characterization, and Applications



Edited by Neeraj Kumar Bhoi Indian Institute of Information Technology, **Harpreet Singh**, **Himansu Sekhar Nanda**

Series: Advanced Materials Processing and Manufacturing

This book provides an in-depth understanding of the properties, characterization, and applications of advanced functional and composite materials for energy, electronics, biomedicine, and aerospace fields.

CRC Press
 October 2025 : 408pp
 Hb: 978-1-032-61934-7 : \$200

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Advanced Welding Technologies

Bridging Theory, Practice and Innovations in Fusion, Solid-State and



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Edited by Bappa Acherjee Birla Institute of Technology, Jharkhand, India, **Dawei Zhao** South Ural State University, Russia, **Fábio A. O. Fernandes** Universidade de Aveiro, Portugal

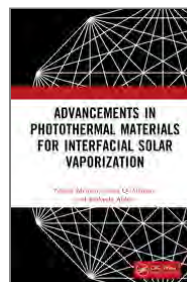
Series: Advanced Materials Processing and Manufacturing

This book on advanced welding technologies embodies an array of topics covering a spectrum of cutting-edge welding practices delving into modern welding processes, accentuating fusion welding, advancements in arc welding methods, and laser/electron beam welding technologies. Unique insights into hybrid welding techniques, integrating lasers and arcs, and their applications in joining ferrous and nonferrous metals are explored. It includes modeling and simulation techniques tailored to fusion welding, and arc-based additive manufacturing. This book is aimed at researchers and graduate students in materials science, welding and joining, and industrial manufacturing.

CRC Press
 October 2025 : 256pp
 Hb: 978-1-032-80459-0 : \$160

* For full contents and more information, visit: www.routledge.com/9781032804590

Advancements in Photothermal Materials for Interfacial Solar Vaporization



Najma Memon Visiting Faculty, Faculty of Applied Sciences, UCSI University, KL, Malaysia, **Saima Q. Memon** Univ of Sindh, Pakistan, **Shakeela Abbas**

This monograph aims to examine different types of photothermal materials, such as metallic, organic, and composites, that have been reported to generate localized heat at the air-water interface, leading to vapor production on the surface. It focusses on various factors, including photothermal efficiency, evaporation rate, and others, which influence vapor generation. By drawing useful conclusions, this book contributes to the development of cutting-edge interfacial solar vaporization systems for practical applications. This book is aimed at graduate students and researchers in energy and chemical engineering, and materials science.

CRC Press
 June 2025 : 126pp
 Hb: 978-1-032-79685-7 : \$250

* For full contents and more information, visit: www.routledge.com/9781032796857

Advances in Materials Science and Technology



Edited by Srikari Srinivasan, **Suresh R**, **Rahul M Cadambi**

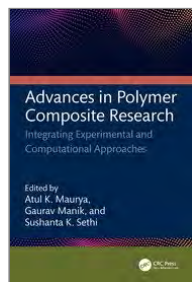
The field of materials science and engineering continues to evolve rapidly, driven by the need for innovative solutions across structural, energy, biomedical, and electronic applications. This book, comprising the proceedings of the International Conference on Advances in Materials Science and Technology (ICAMST-2024)

CRC Press
 August 2025 : 290pp
 Pb: 978-1-041-12342-2 : \$80
 Hb: 978-1-041-12341-5 : \$160

* For full contents and more information, visit: www.routledge.com/9781041123422

Advances in Polymer Composite Research

Integrating Experimental and Computational Approaches



Edited by **Atul Kumar Maurya** Dep. Plastics Engineering, Univ. Massachusetts, United States, **Gaurav Manik** IIT Roorkee, Uttar Pradesh, **Sushanta Kumar Sethi** IIT Dharwad, Karnataka

This book emphasizes the importance of experimental characterization techniques and computational modeling tools in polymer composites. Topics covered include finite element analysis, computational fluid dynamics, molecular dynamics simulations, machine learning, material informatics, multiscale modeling, advanced characterization techniques, and the emerging field of nanocomposites. Each chapter provides detailed discussions, case studies, and examples to illustrate the practical application of these techniques in polymer composite research. This book is aimed at graduate students and researchers in polymers, polymer composites, and materials science.

CRC Press

May 2025 : 338pp

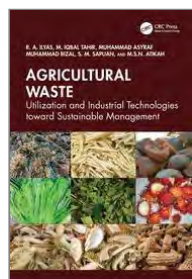
Hb: 978-1-032-71394-6 : \$210

eBook: 978-1-003-47633-7

* For full contents and more information, visit: www.routledge.com/9781032713946

Agricultural Waste

Utilization and Industrial Technologies toward Sustainable Management



R. A. Ilyas, **M. Iqbal Tahir**, **Muhammad Asyraf Muhammad Rizal** Universiti Teknologi Malaysia, Malaysia, **S. M. Sapuan** Universiti Putra, Malaysia, **M.S.N. Atikah**

This book provides an overview of agricultural waste and its utilization in various industrial technologies for sustainable management. It covers a wide range of topics, including the characterization of agricultural waste, its environmental impacts, and its use in different industrial sectors. The book also discusses the latest technological advancements in the conversion of agricultural waste into value-added products and the opportunities and challenges associated with their implementation. Offering a multidisciplinary approach, it serves as a valuable resource for researchers, academics, policymakers, and engineers interested in the sustainable management of agricultural waste.

CRC Press

September 2025 : 640pp

Hb: 978-1-032-75054-5 : \$200

* For full contents and more information, visit: www.routledge.com/9781032750545

Amino Acids Applications in the Geoenergy Industry



Edited by **Cornelius Borecho Bavoh**, **Kwamena Ato Quainoo**

This book explains amino acids as alternative green additives in the geo-energy and related carbon sequestration industry.

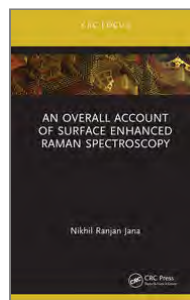
CRC Press

October 2025 : 216pp

Hb: 978-1-032-79660-4 : \$120

* For full contents and more information, visit: www.routledge.com/9781032796604

An Overall Account of Surface Enhanced Raman Spectroscopy



Nikhil Ranjan Jana Indian Association for the Cultivation of Science, India

This book covers all the aspects of surface enhanced Raman Spectroscopy (SERS) including brief history of the discovery of SERS and development of the field, basic principles and enhancement mechanism of SERS. It covers first generation (plasmonic nanomaterials) /second generation (plasmonic hot spots)/third generation (via plasmonic engineering) substrate nanomaterials that are developed for SERS, single molecule SERS and designed SERS probes for ultrasensitive detection applications. It further discusses different SERS detection platforms, highlight the issues of poor signal reproducibility and how to minimize it.

CRC Press

June 2025 : 192pp

Hb: 978-1-032-62289-7 : \$69.99

* For full contents and more information, visit: www.routledge.com/9781032622897

Artificial Intelligence, Machine Learning, and Data Analytics in the Energy Industry

Theory, Case Studies, and Applications



Edited by **Cenk Temizel**, **Salih Tutun**, **Celal Hakan Canbaz**, **Ekmek Alagoz**, **Emre Can Dündar**, **Mufrettin Murat Sari**, **Luigi Saputelli**, **Mehmet Melih Oksay**

This comprehensive resource bridges the knowledge gap in applying modern artificial intelligence and machine learning methods to the petroleum sector. It explores how AI, ML, and data analytics enhance efficiency, safety, and productivity in operations across various segments of the oil and gas value chain, including exploration, drilling, production, reservoir management, and renewables integration. With the growing importance of advanced data-driven approaches, this book provides value to both technical professionals looking for hands-on solutions and academics seeking a well-structured textbook for advanced studies.

CRC Press

November 2025 : 744pp

Hb: 978-1-041-02007-3 : \$210

* For full contents and more information, visit: www.routledge.com/9781041020073

Bioactive Glass Materials for Biological Applications



Edited by **Gujjala Raghavendra** National Inst of Tech Warangal, India, **P. Syam Prasad** Nat Inst of Tech, Warangal, **Dheeraj Kumar Gara** Jain Univ, Bengaluru

The book envelopes the complexities, challenges, and advancement in developing new class of bioactive materials for versatile applications. It outlines the materials involved, bioactivity against bioinert materials, phase change materials, biomolecular nature, synthetic biodegradable polymers, and bioactive glasses. The processing techniques of the bioactive glasses for versatile applications is also covered. A comprehensive focus is on the review of additive manufacturing routes suitable for biological applications with ability to print various bioactive materials whilst carrying living cells. It is aimed at graduate students and researchers in glasses and ceramics, and biomaterials.

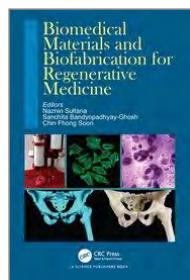
CRC Press

September 2025 : 248pp

Hb: 978-1-032-68985-2 : \$130

* For full contents and more information, visit: www.routledge.com/9781032689852

Biomedical Materials and Biofabrication for Regenerative Medicine



Edited by Naznin Sultana, Sanchita Bandyopadhyay-Ghosh, Chin Phong Soon

'Biomedical Materials and Biofabrication for Regenerative Medicine' addresses the existing and future trends of tissue engineering approaches for regenerating various organs/tissues. This book brings together leading experts to explore the latest innovations and applications in this dynamic field. From biomaterials design to scaffold development to 3D bioprinting, each chapter delves into cutting-edge research and practical insights shaping the future of healthcare.

CRC Press
June 2025 : 248pp
Hb: 978-1-032-59423-1 : \$160
eBook: 978-1-003-45463-2
* For full contents and more information, visit: www.routledge.com/9781032594231

Bionanocomposites for Biomedical Applications

Fundamental Concepts, Impacts, and Clinical Applications



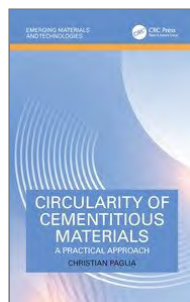
Edited by Shakeel Ahmed Government Degree College Mendhar, Jammu and Kashmir, India

This book examines bionanocomposites in the biomedical field from a fundamental level to in-depth applications using an interdisciplinary approach that combines polymer technology, nanotechnology, biomedical science, and pharmaceutical research. Advancements of bionanocomposites in biomedical applications, such as wound dressings, tissue engineering, drug delivery, bioimaging, biosensing, 3D-printing, medical implants, and many more, are comprehensively summarized supported by number of case studies. This book is aimed at graduate students and researchers in chemical, polymer, tissue, and biomedical engineering.

CRC Press
August 2025 : 400pp
Hb: 978-1-032-55557-7 : \$220
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Circularity of Cementitious Materials

A Practical Approach



Christian Paglia

Series: Emerging Materials and Technologies

Recycling of building and infrastructure materials are global concerns driven by natural resource preservation and sustainable development needs. This practical book explores the strategies necessary for successful recycling of cement-based materials to achieve sustainable and long service life. It investigates recycled cementitious materials to ensure decisive implementation and meet industry and societal challenges. Aimed at readers in materials, civil, and construction engineering, this book offers guidance to professionals and researchers developing strategies for sustainable application of cement-based materials.

CRC Press
August 2025 : 352pp
Hb: 978-1-032-60681-1 : \$170
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CO2 Adsorbents

Advances in Materials, Technologies, and Applications for a Sustainable Future



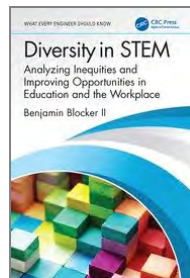
Edited by Ahad Ghaemi, Zohreh Khoshraftar, Fereshteh Poursmaeil

CO2 Adsorbents explores the materials and technologies used for adsorbing carbon dioxide. It covers materials synthesis, characterization, adsorption mechanisms, applications, modeling, and potential environmental and industrial impacts to help readers find the best adsorbent for their needs. It contributes understanding of CO2 adsorption processes, materials, and practical applications in addressing climate change and CO2 emissions reduction. It serves as a comprehensive reference for researchers, engineers, and professionals working in the field of carbon capture and utilization.

CRC Press
September 2025 : 592pp
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Diversity in STEM

Analyzing Inequities and Improving Opportunities in Education and the Workplace



Benjamin Blocker II

Series: What Every Engineer Should Know

This book surveys diversity in the broad field of STEM and provides potential solutions to improve outcomes in education, industry, and society. Offering a US-based point of view, but with globally applicable concepts around race, gender, culture, politics, and socioeconomic, the book identifies where issues around diversity in STEM exist, how they were created, and how these issues are being addressed in education and the workforce. Providing an analytical and practical viewpoint, the authors offer readers the opportunity to consider why diversity and equity in STEM matter and how to apply best practices that support inclusivity.

CRC Press
September 2025 : 160pp
Pb: 978-1-032-59215-2 : \$44
Hb: 978-1-032-59213-8 : \$110
* For full contents and more information, visit: www.routledge.com/9781032592152

Electric Vehicle Fluid Testing



Edited by Leonardo Israel Farfan Cabrera, Peter Lee, Ali Erdemir

This book explores developments, innovations, and discoveries regarding the testing and analyses of fluids used in electric vehicles in connection with tribological applications. The content covers all major aspects of testing and evaluation of such fluids and is intended to provide readers with the most relevant information on the improvement of efficiency and durability of electric vehicles' drivelines. Bringing together contributors from some of the most progressive industries and academic researchers to advance this rapidly growing field, this work serves as an invaluable reference for engineers and scientists in the tribology, lubrication, and automotive engineering fields.

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Emerging Materials for Biofuel Developments

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Edited by **Selvakumar Periyasamy, Eduardo Alberto López-Maldonado** Universidad Autónoma de Baja California, Mexico, **R Balachandran**

Series: *Emerging Materials and Technologies*

This book explores and summarizes recent innovations in emerging materials for technological developments of biofuels. It explains synthesis paths under the controlled strategy, characterizations, functional modifications, and applications of various potential emerging materials. It includes application of emerging materials in different competent biological feedstocks conversion routes. It highlights the significance of emerging materials in overcoming challenges and enhancing biofuel technologies' efficiency, sustainability, circular economy, feasibility, and prospects. This book is aimed at graduate students and researchers in chemical, bioprocess, and environmental engineering.

CRC Press
October 2025 : 432pp
Hb: 978-1-032-70399-2 : \$250

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Ethics for Engineers

Toward Ethical Behavior within Engineering Organizations



Seppo J. Ovaska, Andrew T. Brei

Series: *What Every Engineer Should Know*

Ethics for Engineers: Toward Ethical Behavior within Engineering Organizations offers a multilevel perspective on engineering ethics, making it a valuable resource for students, educators, and professionals alike. It contains case studies of micro-level ethical violations, evaluating their moral implications and discussing moral self-licensing behind making unethical decisions. It also explores macro-level cases that have caused significant reputational and financial damage to major companies. This pedagogically sound learning companion for courses in Engineering Ethics and related topics, strikes a balance between research-based findings and real-world experiences.

CRC Press
August 2025 : 250pp
Pb: 978-1-032-77942-3 : \$66.99
Hb: 978-1-032-77943-0 : \$160

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Fluorescent Particles in Forensic Engineering

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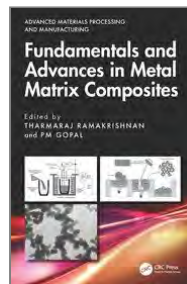
Edited by **Sayan Ganguly, Poushali Das, Rajeev Jain** Central Forensic Science Laboratory, India

Fluorescent Particles in Forensic Engineering examines the significant part that fluorescent particles play in forensic investigations. It provides in-depth insight into the applications of fluorescent particles for the detection of evidence, the examination of crime scenes, and the development of new methods in forensic science. The reader will come away with a comprehensive understanding of how fluorescent particles can be adapted to a variety of forensic applications to significantly improve the accuracy and efficacy of forensic investigations. This book serves as an excellent resource for forensic and materials professionals, researchers, and students.

CRC Press
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Hb: 978-1-032-78467-0 : \$220

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Fundamentals and Advances in Metal Matrix Composites



Edited by **Tharmaraj Ramakrishnan, PM Gopal**

Series: *Advanced Materials Processing and Manufacturing*

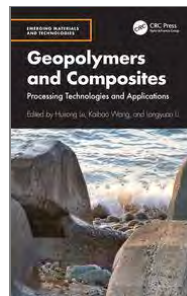
The scope of this book covers the fundamental background of Metal Matrix Composites, their processing and fabrication, testing and characterization, exploration of materials for MMCs and green MMCs, and advancements in all aspects of fabrication, testing, and applications. Development or fabrication of MMCs with evaluation of mechanical and tribological properties as well as machinability evaluation are covered including optimization of fabrication process as well as machining operations is also covered. This book is aimed at graduate students, researchers and professionals in micro/nanoscience and technology, mechanical engineering, industrial engineering, metallurgy, and composites.

CRC Press
June 2025 : 308pp
Hb: 978-1-032-80452-1 : \$210
eBook: 978-1-003-49971-8

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Geopolymers and Composites

Processing Technologies and Applications



Edited by **Huirong Le, Kaibao Wang, Longyuan Li**

Series: *Emerging Materials and Technologies*

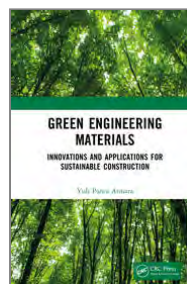
This book offer comprehensive insight into phosphate-activated geopolymer composites, advanced materials that offer promising application prospects in infrastructure, sewage treatment, and heavy metal solidification. With topical coverage that will help readers make full use of local resources and promote the sustainable development of enterprises, this reference is aimed at those working with advanced composite materials for construction and building, civil engineering, and water treatment, among others.

CRC Press
May 2025 : 200pp
Hb: 978-1-032-87973-4 : \$170
eBook: 978-1-003-53568-3

* For full contents and more information, visit: www.routledge.com/9781032879734

Green Engineering Materials

Innovations and Applications for Sustainable Construction



Yuli Panca Asmara

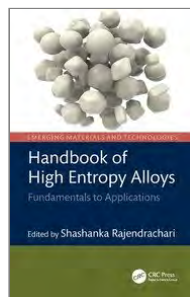
The use of green engineering materials represents a promising approach in sustainable development. This book explores various renewable materials and their properties, applications, and technological advancements driving their use in modern engineering and construction. Because this has a broad scope and provides readers with a basic level of technical knowledge, it is an ideal guide for general readers concerned with sustainability as well as anyone starting out in the field, including undergraduate students and readers in industry who want to keep abreast of current developments and trends in this field.

CRC Press
May 2025 : 184pp
Hb: 978-1-041-02063-9 : \$69.99
eBook: 978-1-003-61759-4

* For full contents and more information, visit: www.routledge.com/9781041020639

Handbook of High Entropy Alloys

Fundamentals to Applications



Edited by **Shashanka Rajendrachari**

Series: *Emerging Materials and Technologies*

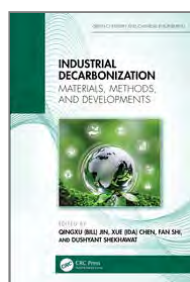
Handbook of High Entropy Alloys offers a comprehensive and multidisciplinary overview of these advanced materials, from foundational principles to synthesis techniques, advanced characterizations, and preparation methods. It also explores conventional as well as novel and emerging applications. This wide-ranging reference offers researchers, engineers, and engineering students a complete understanding of the preparation of high entropy alloys for modern and advancing applications.

CRC Press
October 2025 : 462pp
Hb: 978-1-032-85557-8 : \$220

* For full contents and more information, visit: www.routledge.com/9781032855578

Industrial Decarbonization

Materials, Methods, and Developments



Edited by **Qingxu (Bill) Jin, Xue (Ida) Chen, Fan Shi, Dushyant Shekhawat** U.S. Department of Energy

Series: *Green Chemistry and Chemical Engineering*

Materials and processes for industrial decarbonization are being developed to reduce the carbon footprint for CO₂-intensive industries. This book, the first of its kind in industrial decarbonization, presents the research and development efforts in materials and processes for industrial decarbonization, including but not limited to chemical, cement, iron/steel, paper/pulp, building and other industries. Featuring expert experience from academia, national labs, and industry, this book provides readers in chemical, process, construction, and related industries learn and confidently design and specify decarbonization technology-related materials and methods.

CRC Press
October 2025 : 600pp
Hb: 978-1-032-82179-5 : \$170

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Lab-At-Home Experiments in Chemistry and Chemical Engineering



Jude A. Okolie, Ugochukwu Patrick Okoye

With the rise of remote and hybrid learning, there is an increasing need for flexibility around laboratory-based coursework. This book offers readers a guide to conducting a wide variety of Chemistry and Chemical Engineering labs and experimental procedures that can be completed easily and safely outside of a traditional lab setting, including at home. It helps students and interested readers achieve hands-on learning of chemistry- and chemical engineering-based concepts without needing sophisticated lab equipment. It features ancillary videos and downloadable spreadsheets. It is aimed at chemistry and chemical engineering students, and general readers interested in these disciplines.

CRC Press
October 2025 : 120pp
Pb: 978-1-032-44914-2 : \$45.99
Hb: 978-1-032-44918-0 : \$115

* For full contents and more information, visit: www.routledge.com/9781032449142

Laser Additive Manufacturing in Oil and Gas Field Applications



Edited by **Qinying Wang**

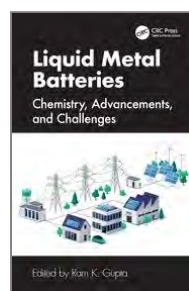
In the petroleum industry, harsh working environments can cause equipment to fail prematurely. Laser additive manufacturing technology can be applied to maintain high-performance key components and the rapid repairing of damaged equipment. This book introduces the methods and processes of laser additive manufacturing technology for application in oil and gas fields, as well as the microstructure, corrosion, wear, erosion-corrosion behavior, and mechanism of component or coating fabricated by this technology. This book is aimed at engineers and researchers working in the oil and gas industry and readers seeking a deeper dive into laser additive manufacturing of metals.

CRC Press
November 2025 : 216pp
Hb: 978-1-032-85470-0 : \$170

* For full contents and more information, visit: www.routledge.com/9781032854700

Liquid Metal Batteries

Chemistry, Advancements, and Challenges



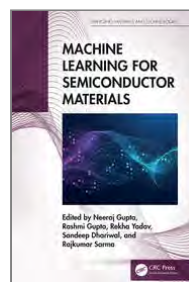
Edited by **Ram K. Gupta**

This book offers a broad overview of the current knowledge and future challenges in liquid metal batteries. It details the fundamental science of liquid metal batteries, materials for cathode and anode, various synthesis methods, and approaches to modify their properties to provide high energy and power densities, along with long life and stable electrochemical characteristics. With chapters written by experts in energy from around the globe, this book serves as a textbook for advanced students and offers new guidelines to researchers and industries working in energy and materials engineering.

CRC Press
September 2025 : 272pp
Hb: 978-1-032-78912-5 : \$160

* For full contents and more information, visit: www.routledge.com/9781032789125

Machine Learning for Semiconductor Materials



Edited by **Neeraj Gupta, Rashmi Gupta, Rekha Yadav, Sandeep Dhariwal, Rajkumar Sarma**

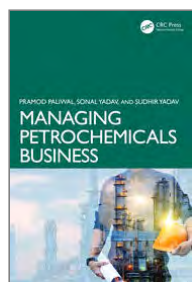
Series: *Emerging Materials and Technologies*

Machine Learning for Semiconductor Materials studies recent techniques and methods of machine learning to mitigate the use of Technology Computer Aided Design (TCAD). It provides the various algorithms of machine learning such as regression, decision tree, support vector machine and k-means clustering and so forth. This book also highlights semiconductor materials and their uses in multi-gate devices, analog and Radio Frequency (RF) behaviour of semiconductor devices with different materials. This book is aimed at researchers and graduate students in semiconductor materials, machine learning, and electrical engineering.

CRC Press
August 2025 : 222pp
Hb: 978-1-032-79688-8 : \$160

* For full contents and more information, visit: www.routledge.com/9781032796888

Managing Petrochemicals Business



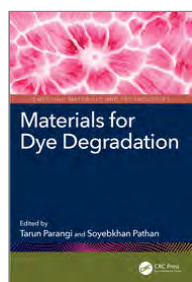
Pramod Paliwal Pandit Deendayal Energy University, India, **Sonal Yadav** Amrut Mody School of Management, India, **Sudhir Yadav** Pandit Deendayal Energy University, India

This book aims at a comprehensive overview of contemporary international petrochemicals business and explains related managerial complexities, business challenges, and opportunities to enhance competitiveness. It enables the readers to explore critical issues facing the industry, such as profitability and investment economics, optimizing business processes, regulatory aspects, refining different grades of crudes, marketing of refinery products, health, safety, and environment and emerging ESG compliances in petrochemical business. This book aims at researchers and graduate students in chemical engineering, business and management studies, and petrochemical industries professionals.

CRC Press
June 2025 : 198pp
Hb: 978-1-032-60311-7 : \$110

* For full contents and more information, visit: www.routledge.com/9781032603117

Materials for Dye Degradation



Edited by **Tarun Parangi**, **Soyebkhan Pathan**

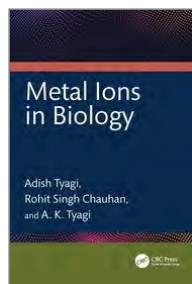
Series: Emerging Materials and Technologies

Increased use of dyes compromises the visual quality of water sources and enhance the biochemical and chemical oxygen demand that promote toxicity, mutagenicity, and carcinogenicity of the environments. This book presents a broad-spectrum content of the functionalized materials and well-established methods, and a commercial perspective of various investigations conducted on dye degradation as an environmental cleaning application. It confines the emerging areas of advanced materials and efficient methods for the environmental remediation field as accommodating concepts. This book is aimed at researchers and graduate students in environmental science, nanoscience, dyes, and chemistry.

CRC Press
June 2025 : 276pp
Hb: 978-1-032-44481-9 : \$160

* For full contents and more information, visit: www.routledge.com/9781032444819

Metal Ions in Biology



Adish Tyagi Bhabha Atomic Research Centre, Mumbai, **Rohit Singh Chauhan** K J Somaiya College of Science and Commerce, Mumbai, **A. K. Tyagi** Bhabha Atomic Research Centre, Mumbai

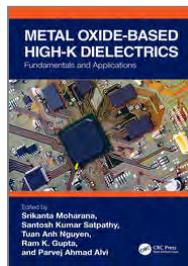
The present book discusses the inherent need and significance of metal ions in metabolic reactions. It details their essential elements and mechanistic prospects to regulate biological reactions. It discusses the broad domain of elements, including main group as well as transition elements, in a comparative and comprehensive manner. Contemporary and advanced topics like nuclear medicine, bio-mineralization, and so forth are covered as well. This book is aimed at graduate students and researchers in chemical engineering, materials science, chemistry, and biological sciences.

CRC Press
May 2025 : 244pp
Hb: 978-1-032-45882-3 : \$140
eBook: 978-1-003-43233-3

* For full contents and more information, visit: www.routledge.com/9781032458823

Metal Oxide-based High-K Dielectrics

Fundamentals and Applications



Edited by **Srikanta Moharana** Centurion University, India, **Santosh Kumar Satpathy** Centurion University, India, **Tuan Anh Nguyen**, **Ram K. Gupta**, **Parvej Ahmad Alvi** Banasthali Vidyapith

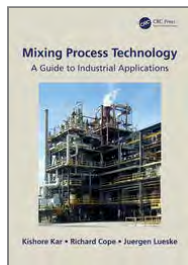
This book provides chronological advancement of metal oxide high-k dielectrics up to contemporary scenario, synthesis with suitability and challenges, and diverse properties with emerging technological applications. It helps readers to select metal oxide based high-k dielectrics with large band gap, cost effective and highly efficient material properties for plausible applications. It provides up to date research findings on established synthesis techniques, easy processing, characterization, properties, and prospective practical applicability including hybrid materials.

CRC Press
May 2025 : 364pp
Hb: 978-1-032-40295-6 : \$220
eBook: 978-1-003-35236-5

* For full contents and more information, visit: www.routledge.com/9781032402956

Mixing Process Technology

A Guide to Industrial Applications



Kishore Kar, **Richard Cope**, **Juergen Lueske**

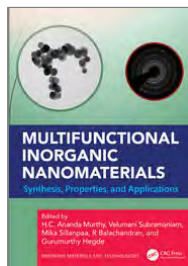
Industrial mixing processes present multiple optimization challenges to producing desirable products. This book shares the authors' extensive knowledge of mixing research and industrial practice. It features twenty industrial mixing chapters that are purposely light on mixing fundamentals, while heavy on practical mixing applications. This text serves as an applied guide to industrial mixing for chemical and process engineers and students who want brief explanations of mixing concepts with real-life examples and software to help perform associated design calculations.

CRC Press
July 2025 : 466pp
Hb: 978-1-032-99861-9 : \$170

* For full contents and more information, visit: www.routledge.com/9781032998619

Multifunctional Inorganic Nanomaterials

Synthesis, Properties, and Applications



Edited by **H.C. Ananda Murthy** Adama Science and Technology University, Ethiopia, **Velumani Subramaniam**, **Mika Sillanpää**, **R Balachandran**, **Gurumurthy Hedge**

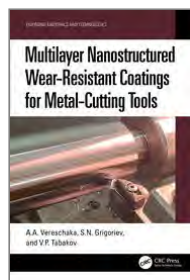
Series: Emerging Materials and Technologies

This book focusses on the latest discoveries and advances in the field of inorganic nanomaterials dealing with synthesis, functionalization, morphology, physio-chemical properties of 1D, 2D and 3D advanced materials and their interdisciplinary applications. The book reveals the significance of understanding the synthesis methodologies in tuning the nano-size properties of inorganic materials using various parameters to functionalize to specific applications in varieties of sectors covering energy, environment and health. This book is aimed at researchers and graduate students in materials science, nanotechnology and inorganic materials.

CRC Press
September 2025 : 344pp
Hb: 978-1-032-80456-9 : \$250

* For full contents and more information, visit: www.routledge.com/9781032804569

Multilayer Nanostructured Wear-Resistant Coatings for Metal-Cutting Tools



A.A. Vereschaka, S.N. Grigoriev, V.P. Tabakov

Series: Emerging Materials and Technologies

This reference focuses on the properties of multilayer nanostructured wear-resistant coatings for cutting tools. It provides an extensive overview of modern methods and approaches to creating wear-resistant coatings for cutting tools. The authors present a wealth of experimental data and offer generalizing theories, useful not only in the development of metal-cutting tools with coatings, but also in the creation of nanostructured materials for various applications. The book is intended for engineering and technical workers, as well as graduate students involved in the development, research, and practical application of methods for applying wear-resistant coatings.

CRC Press
September 2025 : 424pp
Hb: 978-1-032-85910-1 : \$220

* For full contents and more information, visit: www.routledge.com/9781032859101

Nanomaterial-based Sensors for Healthcare Application



Edited by Basanta Bhowmik

Series: Emerging Materials and Technologies

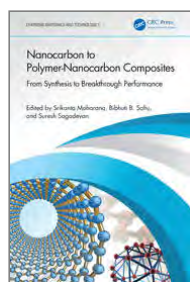
This book primarily focusses on nanomaterial synthesis, properties, sensor fabrication and uses for disease diagnosis and therapy. Major topics covered include synthesis of different dimensional nanomaterials, characterizations and analysis of nanomaterials, procedure for non-invasive disease diagnosis, and measurement principle of medical devices or sensor devices. It also illustrates state of the art nanomaterials for drug delivery supported by practical examples and case studies. This book is aimed at graduate students and researchers in Materials science, nanomaterials, sensors, and biosensors.

CRC Press
August 2025 : 242pp
Hb: 978-1-032-58191-0 : \$160

* For full contents and more information, visit: www.routledge.com/9781032581910

Nanocarbon to Polymer-Nanocarbon Composites

From Synthesis to Breakthrough Performance



Edited by Srikanta Moharana Centurion University, India, Bibhuti B. Sahu, Suresh Sagadevan

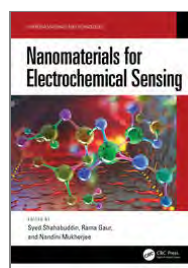
Series: Emerging Materials and Technologies

This book delves into the fascinating world of nanocarbon-polymer composites, exploring their synthesis, characterization, and application. It reviews various methods employed to produce carbon nanotubes, graphene, carbon nanofibers, and other nanocarbon materials, shedding light on their unique properties and the factors influencing their synthesis. With an emphasis on scalable and reproducible fabrication processes, the book bridges the gap between laboratory-scale production and industrial applications. It serves as a comprehensive guide for researchers, engineers, and professionals seeking to understand the synthesis techniques used to fabricate nanocarbon reinforcements.

CRC Press
August 2025 : 528pp
Hb: 978-1-032-64807-1 : \$200

* For full contents and more information, visit: www.routledge.com/9781032648071

Nanomaterials for Electrochemical Sensing



Edited by Syed Shahabuddin Pandit Deendayal Energy University, India, Rama Gaur Pandit Deendayal Energy University, India, Nandini Mukherjee Pandit Deendayal Energy University, India

Series: Emerging Materials and Technologies

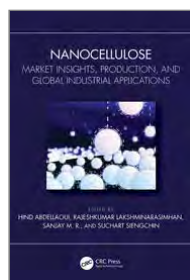
This book overviews fundamentals of electrochemical sensors, the preparation of electrodes, potential materials for sensing applications, different analytical methods used for electrochemical sensing applications. It further covers designing of various electrodes and electrode materials, instruments, sensing mechanism, advanced nanomaterials for sensing and so forth. The scalability and commercialization of electrochemical sensors and challenges and prospects of electrochemical sensors is also described. This book is aimed at researchers and graduate students in nanomaterials, electrochemistry, chemical engineering, and materials science.

CRC Press
May 2025 : 374pp
Hb: 978-1-032-45888-5 : \$220
eBook: 978-1-032-65487-4

* For full contents and more information, visit: www.routledge.com/9781032458885

Nanocellulose

Market Insights, Production, and Global Industrial Applications



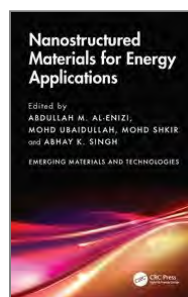
Edited by Hind Abdellaoui, Rajeshkumar Lakshminarasimhan, Sanjay M. R., Suchart Siengchin University of Technology, Thailand

This book deals with the different aspects of the nanocellulose and its composites, starting from resources such as bacterial, biomass and other lignocellulosic materials, different types of Microfibrillated cellulose, nanofiber cellulose, nanocrystalline cellulose, processes and characterization techniques, as well as the different applications in industrial domains. It infers the different processes of nanocellulose extraction following their different forms and sources as well as different products and industries that are currently using nanocellulose. This book is aimed at researchers and graduate students in chemical engineering, biomaterials, and advanced materials.

CRC Press
August 2025 : 424pp
Hb: 978-1-032-79693-2 : \$210

* For full contents and more information, visit: www.routledge.com/9781032796932

Nanostructured Materials for Energy Applications



Edited by Abdullah M. Al-Enizi, Mohd Ubaidullah, Mohd Shkir, Abhay K. Singh

Series: Emerging Materials and Technologies

This book demonstrates the necessity of novel methods for the development of nanostructured energy materials with improved characteristics for real life applications. It explores the prospective of nanoscale science to design and build up the device technology through novel nanoscale, photodetectors, photoconductor, photovoltaics, solar cells, batteries, supercapacitors, fuel cells, hydrogen generation and storage, and so forth. Various kinds of organic, inorganic, and organic-inorganic multilayer thin films photovoltaic solar cells devices are also addressed. This book is aimed at graduate students and researchers in photovoltaics, batteries, and energy storage, and thermoelectrics.

CRC Press
October 2025 : 432pp
Hb: 978-1-032-55552-2 : \$200

* For full contents and more information, visit: www.routledge.com/9781032555522

Novel Applications of Functionally Graded Materials



Edited by **Neeraj Kumar Bhoi** Indian Institute of Information Technology, **Harpreet Singh**, **Himansu Sekhar Nanda**

Series: Advanced Materials Processing and Manufacturing

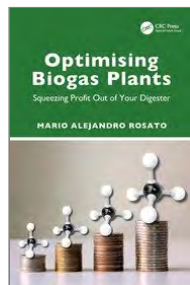
This book offers a thorough understanding of the unique characteristics, characterization techniques, and inventive applications of functionally graded materials (FGMs). It covers a wide range of sophisticated functional materials, including metals, composites, polymers, and ceramics, exploring their unique characteristics, and using cutting-edge characterization methods. Detailed examinations of applications in the fields of energy, electronics, biology, and aerospace provide important new insights into the revolutionary potential of these materials across a range of sectors. It is aimed at graduate students and researchers in materials science and manufacturing.

CRC Press
September 2025 : 280pp
Hb: 978-1-032-81432-2 : \$200

* For full contents and more information, visit: www.routledge.com/9781032814322

Optimising Biogas Plants

Squeezing Profit Out of Your Digester



Mario Alejandro Rosato Sustainable Technologies SL, Barcelona, Spain

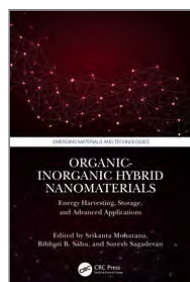
Keeping theory to a minimum without sacrificing scientific rigour, this comprehensive guide offers readers a practical approach to boosting the profitability of their biogas plants. The techniques explained allow for an assessment of a biogas plant throughout its entire life cycle, from critical review of the business plan to the selection of retrofits to recover additional income from the process byproducts. Building upon the laboratory test techniques published in the author's complementary book, Managing Biogas Plants, this text helps readers who are investing in or managing existing industrial biomass plants to optimize processes and profit.

CRC Press
August 2025 : 300pp
Hb: 978-1-041-00329-8 : \$150

* For full contents and more information, visit: www.routledge.com/9781041003298

Organic-Inorganic Hybrid Nanomaterials

Energy Harvesting, Storage, and Advanced Applications



Edited by **Srikanta Moharana** Centurion University, India, **Bibhuti B. Sahu**, **Suresh Sagadevan**

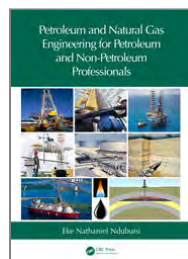
Series: Emerging Materials and Technologies

This book investigates the distinctive characteristics and potential of organic-inorganic hybrid nanomaterials in energy harvesting and storage devices in light of rising demand for effective and sustainable energy technology. It covers every aspect of organic-inorganic hybrid nanomaterials, from their basic principles to their synthesis, characterization, and potential uses. This book aims to encourage scientists, engineers, and policymakers to explore the limits of innovation to bring these materials closer to usage and serves as an important reference for academics, scientists, and engineers to explore the field of energy materials.

CRC Press
August 2025 : 436pp
Hb: 978-1-032-76990-5 : \$200

* For full contents and more information, visit: www.routledge.com/9781032769905

Petroleum and Natural Gas Engineering for Petroleum and Non-Petroleum Professionals



Eke Nathaniel Ndubuisi FMG RESOURCES LTD, NIGERIA

This book gives a comprehensive overview of the basics, principles, practice, application of eclectic technology in Oil and Gas industry. It covers fundamental operations, work scope definitions, execution methods, mathematical calculations, field applications, core subjects, diversities, introduction to petroleum economics/project management concepts, strategies which is the primary link between decision making and profitable operations. Topics discussed in the chapters are carefully structured with interactive pictorial illustrations where necessary to benefit all interested readers. This book is aimed at professionals and researchers in petroleum and natural gas engineering.

CRC Press
July 2025 : 360pp
Hb: 978-1-032-38530-3 : \$200

* For full contents and more information, visit: www.routledge.com/9781032385303

Process Design, Economics, and Project Engineering



Wayne Seames USAUSAUniversity of North Dakota, Grand Forks, ND, USA

The principal goal of this textbook is to prepare process/chemical engineers for careers in a wide variety of process-related jobs. The book will also serve as reference resource for engineers working in the process and process design industries. The book assumes prerequisite knowledge of material and energy balances, heat transfer, fluid flow, and mass transfer but does not require any prerequisite knowledge of economics, process control, process safety, or material selection. It is uniquely organized to follow the project life cycle that is most commonly used by engineering contractors and the operating companies they serve in the process industries.

CRC Press
August 2025 : 496pp
Hb: 978-1-032-83361-3 : \$130

* For full contents and more information, visit: www.routledge.com/9781032833613

Process Modeling and Optimization in Modern Manufacturing



Edited by **Ravi Pratap Singh** Dr B R Ambedkar NIT Jalandhar, India, **Narendra Kumar** NIT Jalandhar, India, **Vishal Francis** LPU Punjab, India, **Ankur Jaiswal** Manipal Institute of Technology, India

Series: Advanced Materials Processing and Manufacturing

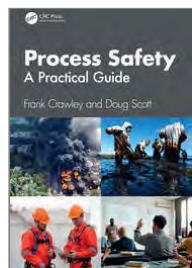
This book covers modeling and optimization of various modern manufacturing processes such as advanced machining, hybrid manufacturing, and additive manufacturing including related case studies in these domains. Various areas like smart manufacturing, hybrid manufacturing, 3D printing, process modeling and characterization, optimization, and so forth are covered in detail. Focus of this book is on Artificial neural network, finite element analysis, firefly/genetic algorithm, particle swarm, and fuzzy-based techniques. This book is aimed at researchers and graduate students in Mechanical, Manufacturing, Production, and Industrial Engineering.

CRC Press
October 2025 : 224pp
Hb: 978-1-032-58189-7 : \$160

* For full contents and more information, visit: www.routledge.com/9781032581897

Process Safety

A Practical Guide



Frank Crawley, Doug Scott

This book provides early career engineers with a strong practical background in Process Safety. It contains basic theory to bolster understanding of the subject, and gives practical information covering both design and operation of process plants. It offers an interactive approach with frequent links between chapters and inclusion of numerous case histories to illustrate and support the text. With its accessible and hands-on approach, this book gives early career chemical engineers a deeper understanding of the issues they will face while on the job and practical solutions to address and avoid problems. The book's many cases studies will also be of value to more experienced engineers.

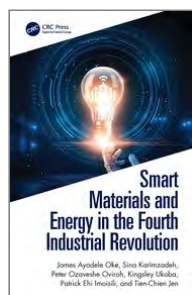
CRC Press

July 2025 : 448pp

Hb: 978-1-032-83983-7 : \$140

* For full contents and more information, visit: www.routledge.com/9781032839837

Smart Materials and Energy in the Fourth Industrial Revolution



James Ayodele Oke, Sina Karimzadeh, Peter Ozaveshe Oviroh, Kingsley Ukoba, Patrick Ehi Imoisili, Tien-Chien Jen
University of Johannesburg, South Africa

This book explores the role that smart materials and energy systems play in driving innovation and sustainability in the Fourth Industrial Revolution (4IR). It covers a wide range of topics in advanced materials science, energy technologies, and the ongoing digital transformation known as the 4IR. By connecting smart materials to large-scale sustainability efforts and clean energy technologies, it assists readers looking for solutions to climate change and global energy challenges, broadening its relevance to environmental policy and renewable energy sectors. It helps readers in materials, chemical, and related engineering disciplines stay ahead and adapt to future industry shifts.

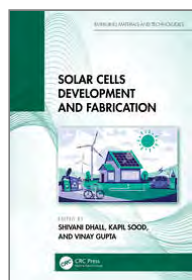
CRC Press

September 2025 : 352pp

Hb: 978-1-032-99502-1 : \$180

* For full contents and more information, visit: www.routledge.com/9781032995021

Solar Cells Development and Fabrication



Edited by Shivani Dhall, Kapil Sood, Vinay Gupta

Series: Emerging Materials and Technologies

This book covers the basic scientific background of solar cells, their principles, working, growth, operating parameters, commercialization status, manufacturing challenges and future scope of solar cells. Topics covered range from history and developments of solar cell generation to market growth and different application of solar cells including in-depth knowledge about Si, PSCs and next-generation multilayer bandgap-based solar cells and their fabrication techniques with advanced methodology. This book is aimed at graduate students and researchers in solar energy technology, device physics, and materials science.

CRC Press

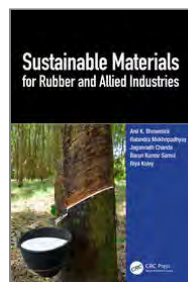
May 2025 : 176pp

Hb: 978-1-032-79659-8 : \$140

eBook: 978-1-003-49970-1

* For full contents and more information, visit: www.routledge.com/9781032796598

Sustainable Materials for Rubber and Allied Industries



Anil K. Bhowmick, Rabindra Mukhopadhyay, Jagannath Chanda, Barun Kumar Samui, Riya Koley

Traditional rubber products contain rubber and multiple additives; many of these materials are obtained from fossil fuel sources. The need for the use of more sustainable materials in the rubber industry is clear and advances are being made toward this goal. This unique book highlights these developments in the science and technology of sustainable materials in the rubber industry and covers both rubber materials and the ingredients necessary to make a product. This book is aimed at engineers, scientists, and researchers in materials science, chemistry, and related fields who are seeking to provide a sustainable alternative to this crucial industry.

CRC Press

September 2025 : 724pp

Hb: 978-1-032-79513-3 : \$200

* For full contents and more information, visit: www.routledge.com/9781032795133

Sustainable Smart Composites

Technology, and Applications



Edited by Hiral Parikh Navrachana University, India,
Piyush P. Gohil MAHARAJA SAYAJIRAO UNIVERSITY, INDIA

Series: Advancing Science and Engineering through Artificial Intelligence, Machine Learning, and Mathematical Modeling

The book discusses cutting-edge technologies, advancements in processing techniques, and real-world applications of composite materials in diverse fields such as structural, engineering, aerospace, automobiles, and defense. It further covers important topics such as the design and development of green composites and optimizing the mechanical properties of composite materials. It is primarily written for senior undergraduates, graduate students, and academic researchers in fields including industrial and production engineering, manufacturing engineering, materials science, mechanical engineering, aerospace engineering, and automobile engineering.

CRC Press

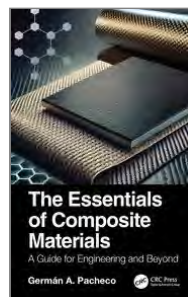
July 2025 : 280pp

Hb: 978-1-032-86377-1 : \$140

* For full contents and more information, visit: www.routledge.com/9781032863771

The Essentials of Composite Materials

A Guide for Engineering and Beyond



Germán A. Pacheco

The Essentials of Composite Materials: A Guide for Engineering and Beyond combines the theory of composite materials and their applications, with a focus on the main industries where they are used. Using the author's experience as a naval architect, boat builder, and composites designer, this book offers a guide to the selection of the most appropriate production processes, procedures, and materials for a particular project. It comprehensively covers polymer matrix composites, explaining what composite materials are, their components, and what they can be used for. It serves as a practical tool for readers working in the composite fields as well as those looking to enter it.

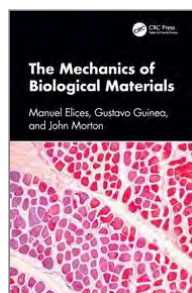
CRC Press

September 2025 : 216pp

Hb: 978-1-032-93279-8 : \$110

* For full contents and more information, visit: www.routledge.com/9781032932798

The Mechanics of Biological Materials



Manuel Elices, Gustavo Guinea, John Morton

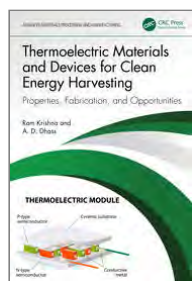
This book introduces the mechanical principles governing the behaviour of a wide range of biological materials. The approach is systematic and based on one-dimensional (fibres), two-dimensional (membrane), and three-dimensional (bulk) biological materials. The essential mathematical tools are developed from first principles and applied to materials as diverse as spider silk, blood vessels, and bone. The text is aimed at students of chemistry, materials engineering, and biology, who do not have a background in mechanics but wish to further their knowledge of the mechanics of biological materials.

CRC Press
July 2025 : 392pp
Hb: 978-1-032-89277-1 : \$120

* For full contents and more information, visit: www.routledge.com/9781032892771

Thermoelectric Materials and Devices for Clean Energy Harvesting

Properties, Fabrication, and Opportunities



Ram Krishna NIT Jamshedpur, India, A. D. Dhass
Mechanical Eng Dept, Gujrat India

Series: Advanced Materials Processing and Manufacturing

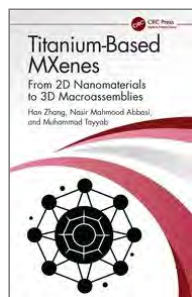
This book is designed to demonstrate the need for thermoelectric energy materials including non-conventional materials for heating and cooling applications in thermoelectric energy-efficient devices. In addition to the fundamentals, functionalities, and classifications associated with thermoelectric energy materials that can be used in industries, this book explores how these materials can contribute to high energy efficiency and sustainability even though they are used in waste heat recovery systems. Climate change and global warming are also taken into consideration. This book is aimed at researchers and graduate students in materials science and clean technologies.

CRC Press
June 2025 : 224pp
Hb: 978-1-032-61932-3 : \$170

* For full contents and more information, visit: www.routledge.com/9781032619323

Titanium-Based MXenes

From 2D Nanomaterials to 3D Macroassemblies



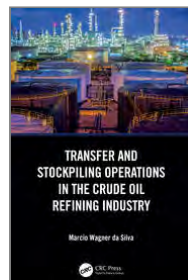
Han Zhang, Nasir Mahmood Abbasi, Muhammad Tayyab

This book explores titanium-based MXenes, an emergent class of materials with a broad range of properties and potential applications. It introduces 3D MXene assemblies and compares their properties with other well-known two-dimensional materials like graphene and transition metal dichalcogenides. The first comprehensive book on the subject, this work is aimed at researchers in materials and electrical engineering and related disciplines.

CRC Press
June 2025 : 448pp
Hb: 978-1-032-31735-9 : \$160

* For full contents and more information, visit: www.routledge.com/9781032317359

Transfer and Stockpiling Operations in the Crude Oil Refining Industry



Marcio Wagner da Silva

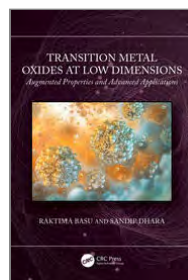
This book provides an overview of the stockpiling and storage operations in a crude oil refinery and how these operations relate to the processing areas within refineries. It explores and offers solutions to challenges related to the management of stockpiling operations, calling attention to an operation that is essential to the success of a refining business. Filled with insights by an author sharing experience as a transfer and stockpiling manager at a major crude oil refinery, this book is an essential reference for oil and gas managers, technicians, and engineers seeking to better manage product flows for safety, environmental compliance, and economic performance.

CRC Press
May 2025 : 258pp
Hb: 978-1-032-75060-6 : \$160
eBook: 978-1-003-47221-6

* For full contents and more information, visit: www.routledge.com/9781032750606

Transition Metal Oxides at Low Dimensions

Augmented Properties and Advanced Applications



Raktima Basu Saha Institute of Nuclear Physics, India, Sandip Dhara
Indira Gandhi Centre for Atomic Research, India

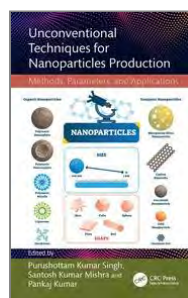
The book covers enhanced properties and cutting-edge applications of TMOs at low dimensions (2D, 1D, and 0D). The electronic band-gap modification and emergence of novel and fascinating properties due to reduced dimension is discussed in detail. It covers various synthesis procedures and advanced technical tools for the characterization of the TMOs at lower dimensions and enhanced properties of the TMOs at lower dimensions realizing ground-breaking applications in advanced energy storage and energy harvesting, catalysis, chemical sensing and so on. This book is aimed at researchers and graduate students in materials science.

CRC Press
May 2025 : 182pp
Hb: 978-1-032-79661-1 : \$160
eBook: 978-1-003-62369-4

* For full contents and more information, visit: www.routledge.com/9781032796611

Unconventional Techniques for Nanoparticles Production

Methods, Parameters, and Applications



Edited by **Purushottam Kumar Singh, Santosh Kumar Mishra, Pankaj Kumar**

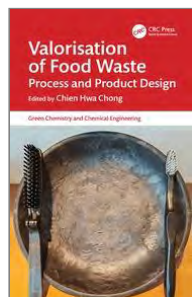
This book provides comprehensive overview of the latest advancements in unconventional nanoparticle synthesis and their applications including a foundational understanding of unconventional nanoparticle covering synthesis, characterization, and green manufacturing technologies. Further, it covers laser ablation mediated synthesis of carbon-coated TiO₂ nanoparticles, supercritical CO₂-assisted reaction crystallization, continuous hydrothermal nanoparticle synthesis, and safety and environmental implications of unconventional nanoparticle synthesis. This book is aimed at graduate students and researchers in materials science and nanomaterials.

CRC Press
August 2025 : 296pp
Hb: 978-1-032-83270-8 : \$140

* For full contents and more information, visit: www.routledge.com/9781032832708

Valorisation of Food Waste

Process and Product Design



Edited by **Chien Hwa Chong**

Series: *Green Chemistry and Chemical Engineering*

This book explores innovative strategies for repurposing food waste, with a strong focus on process and product design. It highlights diverse food waste sources including expiring materials and often overlooked resources, offering a comprehensive evaluation of technologies, methods, and sustainable solutions to address the global challenge of food waste. This text is aimed at academics, engineers, technologists, and researchers in the food, pharmaceutical, and chemical industries.

CRC Press

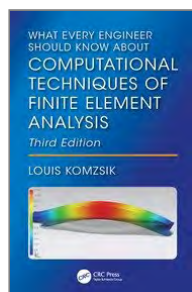
September 2025 : 296pp

Hb: 978-1-032-71651-0 : **\$150**

* For full contents and more information, visit: www.routledge.com/9781032716510

3RD EDITION

What Every Engineer Should Know About Computational Techniques of Finite Element Analysis



Louis Komzisk Siemens, Cypress, California, USA

This book is a concise, self-contained treatment of the finite element method and all the computational techniques needed for its efficient use and practical implementation. The book describes the process of transforming the physical problem into a mathematical model, the reduction of the mathematical model to numerically solvable computational form, and many practical engineering analysis solution techniques applied in various industries. This new edition presents finite element solutions to advanced industrial applications in response to readers of the earlier editions.

CRC Press

May 2025 : 392pp

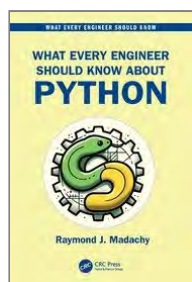
Pb: 978-1-032-94837-9 : **\$68.99**

Hb: 978-1-032-94749-5 : **\$110**

eBook: 978-1-003-58195-6

* For full contents and more information, visit: www.routledge.com/9781032948379

What Every Engineer Should Know About Python



Raymond J. Madachy Naval Postgraduate School, Monterey, California, USA

Series: *What Every Engineer Should Know*

Engineers of all disciplines can benefit from knowledge of Python. This powerful programming language can help engineers better leverage their skill set and do more sophisticated work in a shorter time. What Every Engineer Should Know About Python provides engineering students and practitioners with a simple and practical introduction to Python for technical programming and other empowering uses for engineering and scientific work, without computer science jargon. This practical and concise book serves as a self-contained introduction to engineers and readers from scientific disciplines new to programming or new to Python.

CRC Press

May 2025 : 318pp

Pb: 978-1-032-35818-5 : **\$66.99**

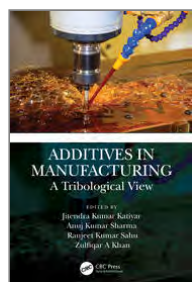
Hb: 978-1-032-35562-7 : **\$160**

eBook: 978-1-003-33107-0

* For full contents and more information, visit: www.routledge.com/9781032358185

Additives in Manufacturing

A Tribological View



Edited by **Jitendra Kumar Katiyar** SRM Institute of Science and Technology, India, **Anuj Kumar Sharma** Centre for Advanced Studies, India, **Ranjeet Kumar Sahu** NIT Karnataka, India, **Zulfiqar A Khan** Bournemouth University, UK

Additives improve the surface properties, reducing friction and wear at the interface, and improving service life of interacting engineering systems and components and this book focusses on a comprehensive study of additives in terms of their role in tribological performance of manufacturing processes. It offers the fundamental understanding of tribological performance and the latest developments in reduction of wear and energy consumption through tribological processes in manufacturing integrated with industry relevant results. This book is aimed at researchers and graduate students in mechanical engineering, tribology, and additive manufacturing.

CRC Press
September 2025 : 304pp
Hb: 978-1-032-22036-9 : \$160

* For full contents and more information, visit: www.routledge.com/9781032220369

Advanced Applications in Heat Exchanger Technologies

AI, Machine Learning, and Additive Manufacturing



Edited by **Sunil Kumar**, **Kavita Rathore**, **Debjyoti Banerjee**

Advanced Applications in Heat Exchanger Technologies presents the most recent developments in enhancing heat exchanger performance, reliability, and resilience, including the implementation of Artificial Intelligence, Machine Learning, and Additive Manufacturing. Covering the essential parts of many commercial endeavors, ranging from aerospace to marine applications to oil-and-gas, it discusses various heat exchanger types and interdisciplinary industry applications. This book is intended for researchers and graduate students who are interested in heat exchangers R&D and the diverse range of industrial applications of heat exchanger technologies in contemporary practice.

CRC Press
August 2025 : 462pp
Hb: 978-1-032-83544-0 : \$220

* For full contents and more information, visit: www.routledge.com/9781032835440

Advances in Sports Science and Technology



Edited by **D. Prasanna Balaji**, **Pinar Dinç Kalayci**, **Seshadri S. Ramkumar** Texas Tech University, Lubbock, USA

It focused on the strategies, challenges and choices in the renaissance of modern sports. It brought together scientists, sports persons, decision makers and executives from across the globe to share research approaches, methods and results. It analyzed ways for implementing adaptable and observable improvement which have direct impact on sports.

CRC Press
May 2025 : 1116pp
Pb: 978-1-041-01765-3 : \$66.99
Hb: 978-1-041-01761-5 : \$220
eBook: 978-1-003-61628-3

* For full contents and more information, visit: www.routledge.com/9781041017653

2ND EDITION

Aerodynamics Principles for Air Transport Pilots



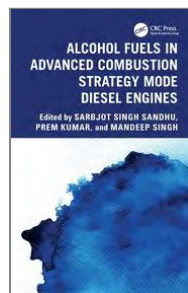
Rose G Davies Massey University, New Zealand

This book provides a thorough understanding of the forces acting on an aircraft across a range of speeds and their effects on the aircraft's performance. The second edition features new content on aircraft performance as a part of the applications of analysis of aerodynamic forces, new sections on features of aerofoil on aerodynamic forces, and force feedback on control of PCATD. The book is intended for senior undergraduates studying to obtain their Airline Transport Pilot License (ATPL)/Airline Transport Pilot (ATP) certificate. Aviation and air transport pilots and aircraft maintenance engineers will also benefit from the content.

CRC Press
July 2025 : 296pp
Hb: 978-1-032-69286-9 : \$160

* For full contents and more information, visit: www.routledge.com/9781032692869

Alcohol Fuels in Advanced Combustion Strategy Mode Diesel Engines



Edited by **Sarbjoy Singh Sandhu**, **Prem Kumar**, **Mandeep Singh**

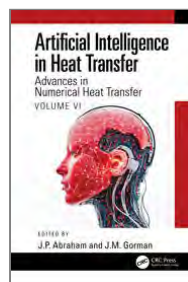
Alcohol Fuels in Advanced Combustion Strategy Mode Diesel Engines investigates the utilization of alcohol-based fuels in diesel engines with specific emphasis on advanced combustion modes including Homogeneous Charge Compression Ignition (HCCI), Partially Premixed Compression Ignition (PCCI), Partially Premixed Compression Ignition (PPCI), and dual fuel Reactivity Controlled Compression Ignition (RCCI). The book will interest industry professionals in automotive and fuels engineering working with alcohol fuels, advanced combustion mode diesel engines, engine instrumentation, and environmental challenges.

CRC Press
September 2025 : 288pp
Hb: 978-1-032-77288-2 : \$160

* For full contents and more information, visit: www.routledge.com/9781032772882

Artificial Intelligence in Heat Transfer

Advances in Numerical Heat Transfer Volume VI



Edited by **J.P. Abraham**, **J.M. Gorman**

This book shows how AI tools and techniques, such as artificial neural networks, machine learning algorithms, genetic algorithms, etc., provide practical benefits specific to thermal sciences. It presents case studies involving heat and mass transfer, multi-objective optimization, conjugate heat transfer, nano-fluids, thermal radiation, heat transfer through porous media (metal foam), and more. This book will serve as an important resource for upper-level undergraduate students, researchers, engineers, and professionals, equipping them with the knowledge and inspiration to push the boundaries of the thermal sciences through AI-driven tools and techniques.

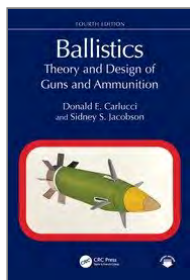
CRC Press
May 2025 : 262pp
Hb: 978-1-032-68810-7 : \$160
eBook: 978-1-032-68812-1

* For full contents and more information, visit: www.routledge.com/9781032688107

4TH EDITION

Ballistics

Theory and Design of Guns and Ammunition



Donald E. Carlucci U.S. Army, Picatinny Arsenal, Rockaway Township, New Jersey, USA, **Sidney S. Jacobson** Retired, Chester, New Jersey, USA

Ballistics examines the analytical and computational tools for predicting a weapon's behavior in terms of pressure, stress, and velocity, demonstrating their applications in ammunition and weapons design. The new edition features a new chapter on closed bomb experimentation and analysis, which discusses closed bomb testing to incorporate new propellants into interior ballistics designs. With its thorough coverage of interior, exterior, and terminal ballistics, this new edition continues to be the standard resource for ballistics experts and researchers studying the technology of guns and ammunition and designing state-of-the-art propellants.

CRC Press
May 2025 : 680pp
Hb: 978-1-032-90945-5 : \$230
eBook: 978-1-003-56066-1

* For full contents and more information, visit: www.routledge.com/9781032909455

Chassis-Domain-Oriented Dynamic Control for Autonomous Vehicles

Estimation, Modeling, Motion Planning and Execution



Shuo Cheng Nanyang Technological University, **Peng Dong** School of Transportation Science and Engineering, Beihang University, **Xiangyang Xu** School of Transportation Science and Engineering, Beihang University, **Shuhan Wang** School of Transportation Science and Engineering, Beihang University, **Yanfeng Liu** School of Transportation Science and Engineering, Beihang University

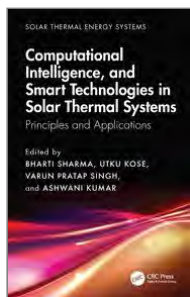
Over seven detail-rich chapters, this book comprehensively describes autonomous vehicle chassis modeling and control, chassis domain dynamic control, the estimation of essential dynamic states, research on motion planning, the development of chassis coordinated control, and related topics. This is a vital guide for readers from various expertise backgrounds. Advanced undergraduate and postgraduate students who study vehicle engineering will benefit from the descriptions of theoretical foundations and practical methodologies. Engineers and researchers will also benefit from the unique insight into modeling and control technologies for autonomous vehicles.

CRC Press
September 2025 : 194pp
Hb: 978-1-032-95253-6 : \$160

* For full contents and more information, visit: www.routledge.com/9781032952536

Computational Intelligence, and Smart Technologies in Solar Thermal Systems

Principles and Applications



Edited by **Bharti Sharma** DIT University, Dehradun, Uttarakhand, India, **Utku Kose**, **Varun Pratap Singh Kumar** Technical Education Department Uttar Pradesh (Under Government of Uttar Pradesh), India

Series: *Solar Thermal Energy Systems*

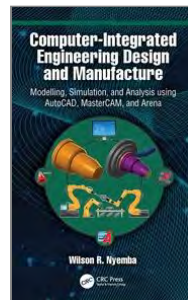
The text covers emerging technologies and innovations in the field, such as hybrid solar thermal systems, advanced materials for collectors, novel heat storage solutions, and advancements in concentrating solar power (CSP) technologies. It presents artificial intelligence and machine learning techniques for solar thermal system optimization. It is primarily written for senior undergraduates, graduate students, and academic researchers in mechanical engineering, energy engineering, computer science and engineering, renewable energy, solar energy, and clean technologies.

CRC Press
September 2025 : 296pp
Hb: 978-1-041-06289-9 : \$140

* For full contents and more information, visit: www.routledge.com/9781041062899

Computer-Integrated Engineering Design and Manufacture

Modelling, Simulation, and Analysis using AutoCAD, MasterCAM, and Arena



Wilson R Nyemba University of Zimbabwe, Zimbabwe

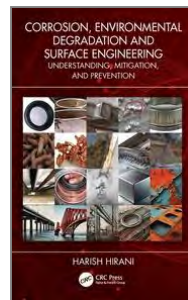
This book presents advanced concepts of computer-aided design, and computer-aided manufacture, through modelling and computer numerical control, coupled with simulation of production systems. It dwells on the subtle and key features such as the applications and effective use of dynamic blocks in modelling, subtractive and additive layer manufacturing, flexible manufacturing systems as well as automation and robotics.

CRC Press
October 2025 : 408pp
Hb: 978-1-032-90796-3 : \$160

* For full contents and more information, visit: www.routledge.com/9781032907963

Corrosion, Environmental Degradation and Surface Engineering

Understanding, Mitigation, and Prevention



Harish Hirani Indian Institute of Technology, New Delhi, India

Corrosion, Environmental Degradation and Surface Engineering: Understanding, Mitigation, and Prevention offers an insightful exploration into the causes, mechanisms, and mitigation strategies of material degradation. This comprehensive work unravels the complexities of corrosion, wear, and fatigue, while showcasing cutting-edge techniques like surface engineering and predictive analytics. Packed with real-world case studies and innovative solutions, the book bridges the gap between theoretical concepts and practical applications.

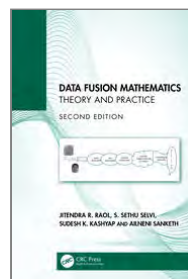
CRC Press
October 2025 : 560pp
Hb: 978-1-032-89866-7 : \$200

* For full contents and more information, visit: www.routledge.com/9781032898667

2ND EDITION

Data Fusion Mathematics

Theory and Practice



Jitendra R. Raol Ramaiah Instof Tech, India, **S. Sethu Selvi** Ramaih Institute of Technology, India, **Sudesh K. Kashyap** CSIR-NAL, India, **Ailneni Sanketh** CSIR-NAL, India

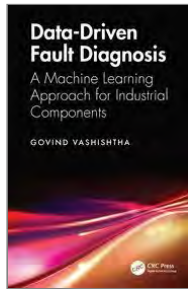
The new edition offers updated chapters alongside four brand new chapters based on recent research carried out by the authors, including topics on machine learning techniques, target localisation using a network of 2D ground radar, thermal imaging sensors for multi-target angle only tracking, and multisensor data fusion for single platform and team platforms. It also covers major mathematical expressions, formulae and equations and their derivations. It discusses signed distance function concepts, DF models and architectures, aspects and methods of type 1 and 2 fuzzy logics, and related practical applications. In addition, it covers soft computing paradigms.

CRC Press
June 2025 : 664pp
Hb: 978-1-032-90436-8 : \$210
eBook: 978-1-003-56026-5

* For full contents and more information, visit: www.routledge.com/9781032904368

Data-Driven Fault Diagnosis

A Machine Learning Approach for Industrial Components



Govind Vashishtha

Data-Driven Fault Diagnosis delves into the application of machine learning techniques for achieving robust and efficient fault diagnosis in industrial components. The aim of this book is to empower engineers, data scientists, and researchers with the knowledge and tools necessary to implement data-driven fault diagnosis systems in their respective industrial domains.

CRC Press
September 2025 : 192pp
Hb: 978-1-041-01163-7 : \$110

* For full contents and more information, visit: www.routledge.com/9781041011637

Data-Driven Global Optimization Methods and Applications



Huachao Dong, Peng Wang, Jinglu Li

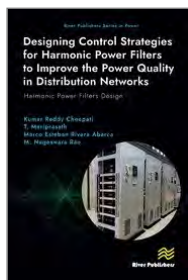
This book presents recent advances in data-driven global optimization methods, combining theoretical foundations with real-world applications to address complex engineering optimization challenges. Both a professional book and an academic reference, this title will provide valuable insights for researchers, students, engineers and practitioners in a variety of fields, including optimization methods and algorithms, engineering design and manufacturing and artificial intelligence and machine learning.

CRC Press
July 2025 : 348pp
Hb: 978-1-041-06575-3 : \$140

* For full contents and more information, visit: www.routledge.com/9781041065753

Designing Control Strategies for Harmonic Power Filters to Improve the Power Quality in Distribution Networks

Harmonic Power Filters Design



Kumar Reddy Cheepati, T. Mariprasath, Marco Esteban Rivera Abarca, M. Nageswara Rao

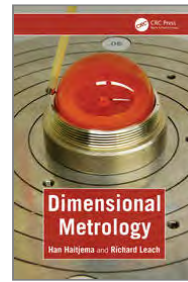
Series: River Publishers Series in Power

This book delves into the intricacies of power quality issues, with a special focus on harmonics and their mitigation through advanced filter design and control strategies. It is tailored for both professionals and students in electrical engineering, power systems, and power electronics. Written by leading experts in the field, this text/reference combines theoretical foundations with practical insights, making it an essential resource for anyone looking to deepen their understanding of power quality and harmonic filtering.

River Publishers
June 2025 : 258pp
Hb: 978-8-770-04732-6 : \$140
eBook: 978-8-770-04733-3

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Dimensional Metrology



Han Haitjema KU Leuven, Belgium, **Richard Leach** University of Nottingham, United Kingdom

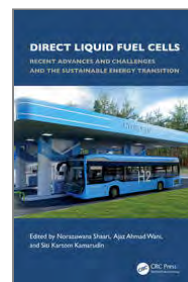
This book provides in-depth coverage of metrology principles for students, practicing engineers, technologists, and researchers. It presents and explains mathematical principles and treatments and practical applications of metrology, with numerous chapter exercises that link theory to the solution of practical problems. Computer-based classes of dimensional metrology are covered, such as CMM-technology, areal surface measurement, and X-ray computed tomography. Readers are shown how to perform and evaluate dimensional measurements and interpret the results. Measuring instruments and methods are explained so readers can determine which to use for specific applications.

CRC Press
July 2025 : 346pp
Hb: 978-0-367-42092-5 : \$160

* For full contents and more information, visit: www.routledge.com/9780367420925

Direct Liquid Fuel Cells

Recent Advances and Challenges and the Sustainable Energy Transition



Edited by **Norazuwana Binti Shaari** Universiti Kebangsaan Malaysia, **Ajaz Ahmad Wani** Universiti Kebangsaan Malaysia, **Siti Kartom Kamarudin**

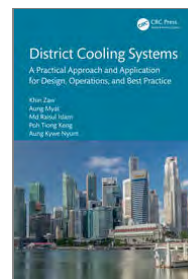
This edited guide to direct liquid fuel cells (DLFCs) provides readers with a detailed discussion of their characteristics, mechanisms, and role in global decarbonization. Expert contributors address various facets including their working mechanisms, sustainability, life cycle assessment, and more. Readers will gain an expansive understanding and benefit from the discussion of various DLFCs. This all-inclusive and cross-disciplinary resource is a vital guide for researchers and undergraduate and graduate students studying renewable energy, energy storage and conversion, and decarbonization towards Net Zero.

CRC Press
July 2025 : 244pp
Hb: 978-1-032-83266-1 : \$210

* For full contents and more information, visit: www.routledge.com/9781032832661

District Cooling Systems

A Practical Approach and Application for Design, Operations, and Best Practice



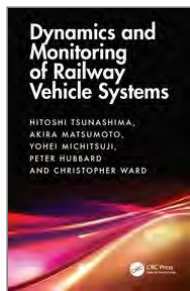
Khin Zaw, Aung Myat, Md Raisul Islam, Poh Tiong Keng, Aung Kywe Nyunt

This book draws on the authors' industry and academic expertise to explain the theory and practice of district cooling systems (DCSs). The in-depth exploration of the design and development of DCSs presents detailed best practices for their optimization in both development and operation phases. As this book provides both industry know-how and future research directions related to DCSs, it is invaluable for DCS industry professionals and advanced undergraduate and postgraduate engineering students who aim to enter this industry and develop leading, highly efficient DCS systems.

CRC Press
May 2025 : 228pp
Hb: 978-1-032-67014-0 : \$200
eBook: 978-1-032-67016-4

* For full contents and more information, visit: www.routledge.com/9781032670140

Dynamics and Monitoring of Railway Vehicle Systems



Hitoshi Tsunashima Nihon University, Japan, **Akira Matsumoto** College of Industrial Technology, Japan, **Yohei Michitsuji**, **Peter Hubbard**, **Christopher Ward**

This book provides cutting edge research into railway vehicle dynamics and the condition monitoring of railway vehicle and track. Using real world global examples, the book focuses on safety and maintenance from a global perspective. Beginning with an explanation of the practical theory behind dynamics and running safety when passing a curve, the book enables readers to understand the motion and vibration of railway vehicles both in theory and in practice.

CRC Press
September 2025 : 208pp
Hb: 978-1-032-42265-7 : \$160

* For full contents and more information, visit: www.routledge.com/9781032422657

Engineering Drawing and Product Manufacturing Information with 3D Models

ISO Geometrical Product Specification Standards



Frank Mill

This book provides a comprehensive guide to the use of 3D Computer-aided Design (CAD) models for communicating design intent, mainly through the adoption of International Standards Organisation (ISO) methods for describing shape and for depicting dimensions and tolerances on drawing sheets or in other Product Manufacturing Information (PMI) based media. It describes the fundamentals of computer numerical control (CNC) and the generation of 3D printing and additive manufacturing models as well as basic fabrication specifications. Common file types used to store, share and transfer media are described in some depth.

CRC Press
May 2025 : 258pp
Hb: 978-1-032-49698-6 : \$120
eBook: 978-1-003-39507-2

* For full contents and more information, visit: www.routledge.com/9781032496986

Engineering Mathematics with MATLAB



Chul Ki Song Gyeongsang National University, Korea, **Jong-Ryeol Kim**

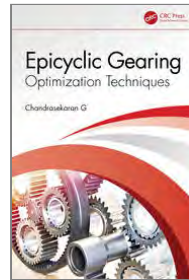
This textbook takes a streamlined, practical approach, designed to make engineering mathematics accessible and manageable for undergraduate students and instructors alike. Students will gain a fundamental understanding within the scope of a two-semester course. Designed with practicality in mind, this book offers a balanced approach to mastering engineering mathematics, with a manageable workload aligned to academic schedules. It is an invaluable resource for instructors seeking effective teaching tools and for students aiming to build strong mathematical foundations that they can apply to their own engineering discipline.

CRC Press
July 2025 : 664pp
Pb: 978-1-041-00255-0 : \$61.99
Hb: 978-1-032-97984-7 : \$140

* For full contents and more information, visit: www.routledge.com/9781041002550

Epicyclic Gearing

Optimization Techniques



Chandrasekaran G

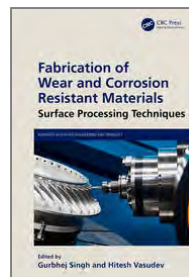
A variety of optimization techniques are covered with a focus on practical application. The formulation of the underlying mathematical models and the algorithms for solving are explained and then applied to solve real world problems in epicyclic gearing. Figures and charts are also provided. Each chapter includes a detailed case study based on a real-world application of epicyclic gearing. The case studies highlight the realities and challenges in the design optimization of epicyclic gearing systems, illustrate the application of optimization techniques in a real-world context, compare different optimization techniques and identify the areas of future work.

CRC Press
May 2025 : 364pp
Hb: 978-0-367-70066-9 : \$160
eBook: 978-1-003-14446-5

* For full contents and more information, visit: www.routledge.com/9780367700669

Fabrication of Wear and Corrosion Resistant Materials

Surface Processing Techniques



Edited by **Gurbhej Singh**, **Hitesh Vasudev** LPU, India

Series: Advances in Surface Engineering and Tribology

This book presents cutting-edge surface processing methods, incorporating concepts from the fields of metallurgy, chemistry, physics, and nanotechnology. It covers developments in manufacturing processes that aim to improve materials' and components' resistance to wear and corrosion. Investigating techniques such as plasma treatment, laser cladding, chemical vapor deposition, and nano structuring, the book evaluates each technique's capability to ensure durability and resistance to corrosion and prolong the life of materials. This book is intended for researchers and graduate students studying surface engineering, coatings and claddings, and corrosion and wear resistance of materials.

CRC Press
October 2025 : 400pp
Hb: 978-1-032-90108-4 : \$220

* For full contents and more information, visit: www.routledge.com/9781032901084

Fatigue Prediction for Random Loads

Using the Rainflow Method



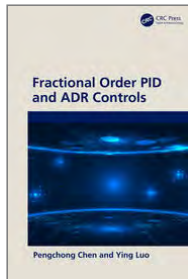
Igor Rychlik, **Sayan Gupta**, **Georg Lindgren** Lund University, Sweden

Fatigue is an important mode of material degradation in structural components subjected to vibrations and reliable estimation of their fatigue life span, and is a key consideration in the design and development of such systems. This book uses advanced concepts of probability theory, random variables and random processes to develop spectral based methods and formulae for predicting expected fatigue damage and expected fatigue life. The developments presented here bypass the need for computationally expensive rainflow cycle counting that is usually adopted in time domain approaches.

CRC Press
May 2025 : 332pp
Hb: 978-0-367-89584-6 : \$170
eBook: 978-1-003-01994-7

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Fractional Order PID and ADR Controls



Pengchong Chen Zhengzhou University, China, **Ying Luo**

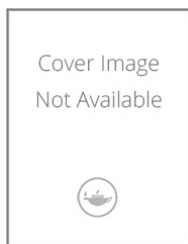
It covers fractional-order Proportional-Integral-Derivative (PID) control, fractional-order Active Disturbance Rejection (ADR) control, and the combined fractional-order PID-ADR control. The book begins with an analysis of the three-parameter fractional-order PID controller, demonstrating its application to the Permanent Magnet Synchronous Motor (PMSM) speed servo system, due to its comprehensive inclusion of proportional, integral, and differential elements. It then delves into Active Disturbance Rejection Control and Periodic Disturbance Compensation, comparing the performance of each controller based on various parameters.

CRC Press
June 2025 : 191pp
Hb: 978-1-032-50240-3 : \$120
eBook: 978-1-003-39763-2

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Fuels for Sustainable Transportation

Advances, and Applications



Edited by **Gaurav Dwivedi** MANIT Bhopal, India, **Ashwani Kumar** Technical Educational Department, UP, India, **Sujeet Kesharvani** Maulana Azad National Institute of Technology Bhopal, India

Series: Advances in Manufacturing, Design and Computational Intelligence Techniques

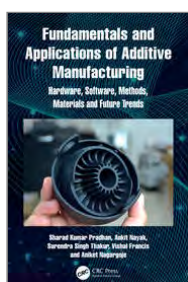
The text provides a holistic view to reduce the use of fossil fuels and move towards sustainable future transportation fuels like biodiesel, ethanol, and hydrogen fuels. It explores the compatibility of biodiesel with vehicles and its utilization across various transport modes. The text further analyses the performance metrics, efficiency, and environmental impact compared to conventional diesel. It is primarily written for senior undergraduates, graduate students, and academic researchers in the fields of mechanical engineering, energy engineering, environmental engineering, manufacturing engineering, industrial and production engineering, and automotive engineering.

CRC Press
November 2025 : 368pp
Hb: 978-1-032-87830-0 : \$160

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Fundamentals and Applications of Additive Manufacturing

Hardware, Software, Methods, Materials and Future Trends



Sharad Kumar Pradhan, **Ankit Nayak**, **Surendra Singh Thakur**, **Vishal Francis**, **Aniket Nagargoje**

Through nine chapters covering software, hardware, solid-based, liquid-based, and powder-based 3D printing processes, this textbook provides a comprehensive but easy-to-understand and application-oriented guide to the fundamentals and applications of 3D printing. The broad coverage and engaging discussion format make this an ideal textbook for undergraduate and postgraduate students and an accessible reference for enthusiasts with elementary knowledge. In guiding readers from the basic concepts through to individual methodologies and printing techniques, it is invaluable to any reader who aims for a career related to any related application and industry.

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Fundamentals of Electrical Machines



Ants Kallaste, **Toomas Vaimann**, **Anton Rassõlkin**, **Kuno Janson**

This accessible textbook offers a clear and concise introduction to the core principles of electric machines, focusing on the conversion of energy through mechanical power, electrical power, torque, magnetic fields, and rated voltage. Covering the key processes behind electric machine theory, including mechanics and electromagnetism, Fundamentals of Electrical Machines enables readers to develop a systematic view of the technology. Including case studies with industry examples, the book is both theoretical and practical.

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Greenhouse Engineering

Software-driven Design and Modelling for Optimal Microclimate Control



Veer Parkash Sethi Punjab Agricultural University, India

The comprehensive software-based engineering approach in this book provides an in-depth exploration of the latest innovations in greenhouse thus transforming the existing Controlled Environment Agriculture (CEA) to a futuristic Greenhouse Smart Agriculture (GSA) aiding the readers to optimize crop yields, reduce environmental impact, and enhance farm profitability through software decision support systems. From renewable energy solutions and software-driven sustainable practices to AI-powered optimization and integrated smart greenhouse design, it covers the entire spectrum of GSA including practical knowledge, global case studies and real-world examples.

CRC Press
August 2025 : 674pp
Hb: 978-1-032-71395-3 : \$160

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Handbook on Digital Twin and Artificial Intelligence Techniques for Rail Applications



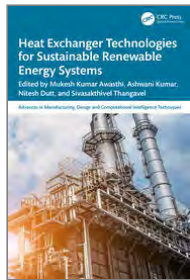
Edited by **Maksym Spiryagin**, **Stefano Bruni**, **Colin Cole**

With contributions from experts from around the world, this handbook aims to systemize the existing experience and knowledge that can be used to the development of more efficient and controlled railway systems. It showcases the modern methods, methodologies and frameworks for the development of DT and AI architectures and apparatus in the area of the existing railway systems and transport eng tasks. It covers specialized topics like the processes related to the transformation of a physical twin into a digital twin; the application of data-driven and physics-based simulation approaches; asset management application tasks with the implementation of DT and AI and several other topics

CRC Press
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Heat Exchanger Technologies for Sustainable Renewable Energy Systems



Edited by **Mukesh Kumar Awasthi** Department of Mathematics, Babasaheb Bhimrao Ambedkar University, Lucknow, India., **Ashwani Kumar** Technical Educational Department, UP, India, **Nitesh Dutt** College of Engineering Roorkee, India, **Sivasakthivel Thangavel** GCET, India

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Heat Exchanger Technologies for Sustainable Renewable Energy Systems serves as a comprehensive resource on the cutting-edge advancements and applications of heat exchanger technologies in the realm of renewable energy. This book delves into the fundamental principles, design methodologies, and operational strategies for optimizing heat exchange processes in various sustainable energy systems. Covering a wide range of topics, the book explores innovative heat exchanger designs, materials, and configurations that enhance thermal performance and efficiency.

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Hollow Fiber Membrane-Based Evaporative Cooling Systems



Xin Cui, Weichao Yan, Kian Jon Chua

Hollow Fiber Membrane-based Evaporative Cooling Systems covers the principles, applications, and optimization strategies of the evaporative cooling method. It demonstrates how this technology is a promising solution for fulfilling substantial cooling needs while reducing energy consumption. The book explores how the hollow fiber membrane-based evaporative cooler can solve the problems of droplet drift, mold growth, and air-water cross-contamination in conventional direct evaporative coolers.

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Thomas Kannattumadom

Series: River Publishers Series in Transport Technology

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Implementing Competency-Based Training and Assessment in Aviation



Norman MacLeod

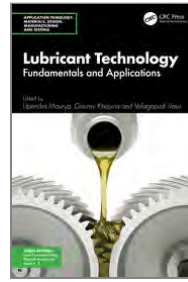
Implementing Competency-Based Training and Assessment in Aviation explains in detail, with examples, how to practically and effectively implement CBTA and EBT in aviation. It demonstrates how to develop competence models, assess workplace competence, and the role of competence models in recruitment and selection. Taking the framework published by ICAO, the book breaks it down into its component parts and explains how to identify the changes in behavior needed to enable individuals to act safely and efficiently in hazardous environments. Airline personnel, pilots, and aviation industry professionals involved in performance assessments and training will benefit from the book.

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Fundamentals and Applications



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Mechanical Equipment Mechanism Design

100 Cases



Hao Zhang, Adrian David Cheok iUniversity Tokyo Japan, **Yujun Zhang, Tianyong Zhang**

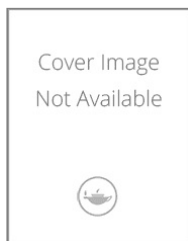
This book presents a carefully curated selection of 100 practical design cases that reveal key mechanical mechanisms in innovative machinery and electronics. By consolidating years of technical expertise, the authors guide readers through designs that, while not flawless, effectively fulfill their intended functions. Ideal for technicians and engineers, the book provides clear, practical insights that empower readers to develop distinctive approaches in design and gain confidence in pioneering the next generation of mechanical systems.

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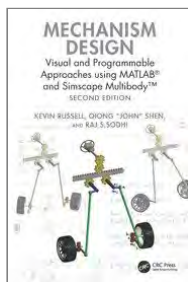
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Visual and Programmable Approaches using MATLAB® and Simscape Multibody™



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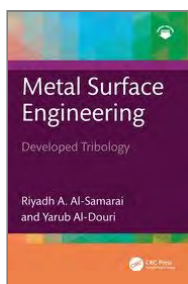
This updated edition of *Mechanism Design: Visual and Programmable Approaches using MATLAB® and Simscape Multibody™* offers a comprehensive introduction to kinematic synthesis, covering motion, path, and function generation techniques for a wide range of planar and spatial single- and multi-loop linkage systems.

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Metal Surface Engineering

Developed Tribology



Riyadh A. Al-Samarai University of Samarra, Iraq, **Yarub Al-Douri** Prof. Fellow of the European Academy of Sci., NANOCAT, Univ. of Malaya

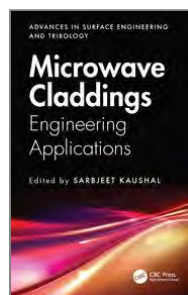
Metal Surface Engineering offers updated and advanced information on tribology for ferrous and non-ferrous materials and discusses the practical application and performance of surface eng. It covers wear and low-friction techniques in mechanical, electrical and electronic devices and components in equipment found in the automotive and aerospace industry with the purpose to improve efficiency and extend equipment life. This book also offers analytical approaches and symbolic models that demonstrate the control of materials under different conditions. It also covers advanced technologies such as advanced coatings, thermal techniques and diversification.

CRC Press
May 2025 : 330pp
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eBook: 978-1-003-58473-5

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Microwave Claddings

Engineering Applications



Edited by Sarbjeet Kaushal Gulzar Group of Institutions, Khanna

Series: Advances in Surface Engineering and Tribology

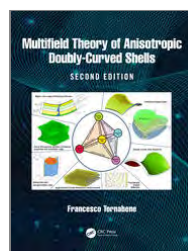
Microwave Claddings presents an effective approach for improving the surface properties of materials, providing distinct advantages compared to conventional procedures like flame spraying or arc welding. It explains how composites, metals, ceramics, and polymers can be coated with microwave cladding to improve resistance to corrosion, durability, and strength. Exploring this promising application of microwave technology, the book demonstrates its usage in various industries, including automotive, aerospace, and oil and gas. The book will interest engineering students and researchers studying tribology, cladding and microwave technology, and manufacturing.

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2ND EDITION

Multifield Theory of Anisotropic Doubly-Curved Shells



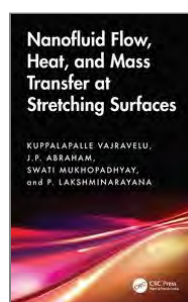
Francesco Tornabene

This book analyses the multifield behaviour of doubly-curved shells made of anisotropic and advanced materials. These materials include fiber reinforced composite materials, carbon nanotubes, variable angle tow composites, honeycomb cells, anisogrid, and functionally graded materials.

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Nanofluid Flow, Heat, and Mass Transfer at Stretching Surfaces



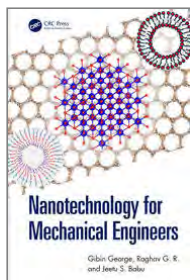
Kuppapalle Vajravelu, **J.P. Abraham**, **Swati Mukhopadhyay**, **P. Lakshminarayana**

This book explores nanofluid and hybrid nanofluid flow at a moving surface, stretching plate, stretching disk, and past a stretching surface. It demonstrates the wide range of applications of nanofluid heat and mass transport enhancement in many industrial and manufacturing processes and presents multiple solution strategies including boundary layer flow problems with dimensionless equations, numerical simulation, and theoretical approaches. This book will interest industry researchers and graduate students studying applications of nanotechnology and nanofluids within the fields of mechanical, chemical, manufacturing, and biomedical engineering.

CRC Press
November 2025 : 240pp
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Nanotechnology for Mechanical Engineers



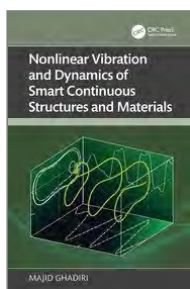
Gibin George Fayetteville State University, Fayetteville, NC, **Raghav G. R.**, **Jeetu S. Babu**

This book exclusively aims to deliver a basic understanding of nanotechnology from a mechanical engineering perspective. It begins with the history and fundamentals of nanotechnology and comprehension of the relationship between the properties and the structure. A brief overview of the several techniques available for the synthesis of various nanostructures and the techniques for size control is provided in the subsequent section. The third section is on the demonstrated applications of nanostructured materials in the field that are closely related to mechanical engineering. This book is aimed at Researchers and graduate students in mechanical engineering and nanotechnology.

CRC Press
June 2025 : 398pp
Hb: 978-1-032-32904-8 : \$170

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Nonlinear Vibration and Dynamics of Smart Continuous Structures and Materials



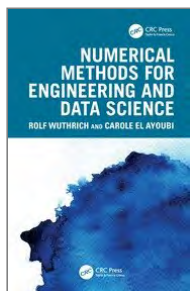
Majid Ghadiri

Nonlinear Vibration and Dynamics of Smart Continuous Structures and Materials delves into intricate subjects concerning the analysis of nonlinear vibration issues in continuous structures. It covers general concepts and a history of nonlinear systems before evolving into kinetics and solution methods of continuous structures. Exploring the implementation of new types of materials in various sectors of automobile, aerospace, and structural engineering, the book provides applicable information on the behaviors of smart structures. The book will interest academic researchers and graduate students studying structural engineering, mechanics of solids, and smart materials.

CRC Press
May 2025 : 402pp
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Numerical Methods for Engineering and Data Science



Rolf Wuthrich, **Carole El Ayoubi**

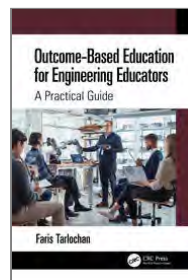
The textbook presents key principles building upon the fundamentals of engineering mathematics. It explores classical techniques for solving linear and nonlinear equations, computing definite integrals and differential equations. Emphasis is both on the theoretical underpinnings and in the practical implementation of these using Octave. Each chapter is supplemented with examples and exercises. The second half discusses machine learning. The authors introduce basic concepts and algorithms such as linear regression and classification. A special focus is on the understanding of errors and practical implementation of the algorithm, in particular the concepts of bias, variance and noise.

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A Practical Guide



Faris Tarlochan

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Phase Change Heat Transfer

Boiling and Condensation



Vijay K. Dhir

This book covers theory and experiments in heat transfer associated with boiling and condensation. It presents the basics of solid-liquid-vapor phase interactions and methods to measure surface wettability and interfacial tension between liquid and vapor. It is intended for upper-level undergraduate mechanical, aerospace, and chemical engineering students taking courses in Phase Change Heat Transfer; Boiling and Condensation; Nuclear Thermal Hydraulics; Heat and Mass Transfer. Exploring the mechanistic details of flow boiling heat transfer in a pool, it gives correlations for prediction of nucleate boiling, critical heat flux, and post-critical heat flux.

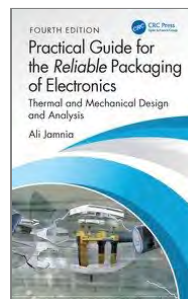
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4TH EDITION

Practical Guide for the Reliable Packaging of Electronics

Thermal and Mechanical Design and Analysis



Ali Jamnia

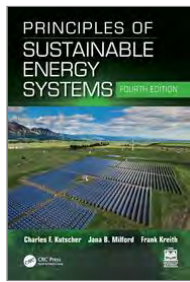
A definitive guide for both newcomers to the field and those in need of a refresher, the fourth edition of Practical Guide to the Reliable Packaging of Electronics provides a comprehensive understanding of the thermal and mechanical aspects of electromechanical system design, along with insights into potential failures.

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Charles F. Kutscher National Renewable Energy Laboratory, Golden, Colorado, USA, **Jana B. Milford** University of Colorado Boulder, USA, **Frank Kreith**

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This book provides students with a fundamental and practical understanding of the energy transition. It discusses the design, production, and economics of energy conversion and storage technologies as well as requirements and technologies for the end-use sectors of transportation, buildings, and industry. This new edition features recent advances in batteries and other storage technologies, electricity transmission, electric vehicles, and beneficial electrification and demand response in buildings. The book is intended for upper-level undergraduate and graduate engineering students taking courses in Renewable Energy, Energy Systems, and Energy Conversion.

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Sherif D. El Wakil University of Massachusetts Dartmouth

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Hb: 978-1-032-86002-2 : \$200

* For full contents and more information, visit: www.routledge.com/9781032860022

Railway Engineering Technology

Developments and Innovations



Edited by **V. M. Ravindra Kumar** Associate Prof, VIT-AP University, Andhra Pradesh, India, **Vineesh K. P.** Assistant Prof, NIT Calicut, Kerala, India, **Sunil Kumar Sharma** Institute of Railway Vehicles and Railway Technology, Germany

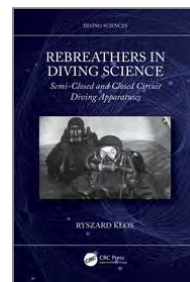
This book presents advances in railway engineering including railway wheels, wheel failure mechanisms, innovations in railway track designs, and axle failures. It covers rail-wheel traction characteristics under various environmental conditions for full-scale test conditions including braking systems. It provides an understanding of applications of digital twin technology in railway systems, predictive maintenance, performance optimization, and overall system efficiency with sustainable practices, and energy-efficient technologies and environmental impact assessments. This book is aimed at researchers and professionals in railway and mechanical engineering, and transportation systems.

CRC Press
October 2025 : 352pp
Hb: 978-1-032-83650-8 : \$180

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Rebreathers In Diving Science

Semi-Closed and Closed Circuit Diving Apparatuses



Ryszard Klos The Naval Academy, Poland

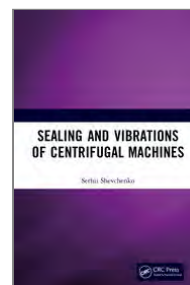
Series: Diving Sciences

This book covers investigations on the diving apparatus operational features including research investigations, basics of measuring methods, their technical realization, elaboration, and discussion of the results. It contains analyses of research reports prepared in the leading research diving centres to formulate opinions when comparing the methods used and equipment presented including accuracy of experiments, complexity analysis, laboratory expertise, metrology features of the used instruments, and correctness of the calibration procedures. This book is aimed at researchers, professionals and graduate students in life support system design, diving submarine safety, and ventilation.

CRC Press
May 2025 : 392pp
Hb: 978-1-032-59608-2 : \$200
eBook: 978-1-032-64920-7

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Sealing and Vibrations of Centrifugal Machines



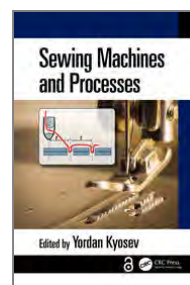
Serhii Shevchenko

Seals are vital to the performance stability of centrifugal machines, influencing everything from sealing efficiency to vibration reliability. This comprehensive guide offers an in-depth exploration of the modeling, calculation, and design of stuffing box and mechanical seals, as well as advanced non-contact sealing technologies.

CRC Press
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Hb: 978-1-041-09504-0 : \$220

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Sewing Machines and Processes



Edited by **Yordan Kyosev**

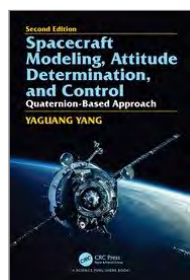
Sewing Machines and Processes presents modern engineering fundamentals of sewing processes and machines for the complete spectrum of sewing stitches. It explores various needle types, properties of sewing threads, material transport, and advances in sewing techniques and technologies. The book will interest both researchers and industry professionals working in the apparel industry, textile production/manufacturing, and design assembly processes. It will also benefit graduate students taking courses in Apparel Technology, Sewing Technology, Sewing Processes, and Joining Technology of Textiles.

CRC Press
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Spacecraft Modeling, Attitude Determination, and Control

Quaternion-Based Approach, Second edition



Yuguang Yang

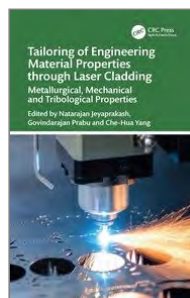
This book discusses spacecraft modeling, attitude determination, estimation, and controls. A background on rotation sequence and reference frames is provided, followed by the discussion of the attitude determination using vector measurements, and control designs independent of actuators in use. For actuators unable to generate the required control torques, control methods with achievable torques are provided. The book includes attitude control in special maneuvers and systems, such as orbital-raising, docking and rendezvous, and multi-body space systems.

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Tailoring of Engineering Material Properties through Laser Cladding

Metallurgical, Mechanical and Tribological Properties



Edited by **Natarajan Jeyaprakash** China University of Mining and Technology, **Govindarajan Prabu** National Taipei University of Technology, **Che-Hua Yang** National Taipei University of Technology

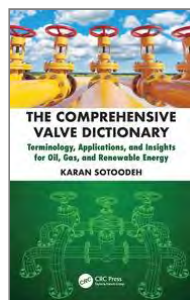
In this comprehensive guide to laser cladding of engineering materials, expert contributors provide a detailed yet easy-to-follow explanation of the process, its use for surface modification, and the benefits and applications of this technique in different environments and for different purposes. This book is essential for all manufacturing industry personnel who work with materials in various industrial settings and need to control their surface properties and enhance their behaviour at micron and nano level.

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Karan Sotoodeh University of Stavanger, Norway

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Edited by **Gaurav Prashar** Rayat Bahra Institute of Engineering and Nano-Technology, India, **Hitesh Vasudev** LPU, India, **Lalit Thakur** NIT Kurukshetra, India

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Transparency and Public Participation for Radioactive Waste Management in Europe



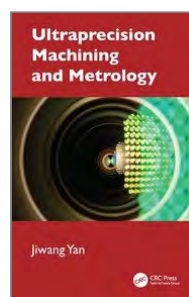
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Transparency and Public Participation for Radioactive Waste Management in Europe investigates how the pillars of the Aarhus Convention and a broader understanding of transparency by Civil Society (CS) can be transposed into Radioactive Waste Management (RWM), particularly in the establishment of Radioactive Waste (RW) facilities in different national contexts. The book will interest nuclear energy policymakers, government employees, and radioactive waste management facility operators. It will also aid researchers and academics investigating public perception and facility siting considerations.

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Ultraprecision Machining and Metrology



Jiwang Yan

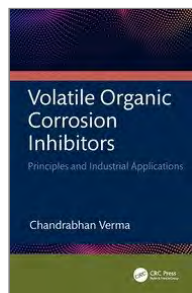
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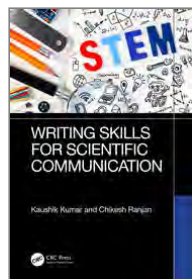
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3.	Alcohol at Work	34	Computer-Aided Structural Analysis	3	Engineering Mathematics with MATLAB	62
3D Digital Design in Ergonomics and Human Factors	Alcohol Fuels in Advanced Combustion Strategy Mode Diesel Engines	33	Computer-Integrated Engineering Design and Manufacture	60	Engineering the Circular Economy	37
5.	Algorithms in Advanced Artificial Intelligence	11	Computer Organization, Design, and Architecture	12	Environmental Bioavailability Handbook	25
50 Ways to Fool Your User	Amino Acids Applications in the Geoenergy Industry	49	Control for Fractional-Order Systems and Fractional-Order Control	13	Environmental Geology and Sustainability	25
A.	Analysis of Machine Elements Using SOLIDWORKS Simulation 2025	2	Corrosion, Environmental Degradation and Surface Engineering	60	Epicyclic Gearing	62
A Blueprint for Greenhouse Gas Reduction	Analytical Inventory Management and Optimization	34	Cybersecurity 2050	13	Ergonomics	37
Accessible Remote Sensing	An Overall Account of Surface Enhanced Raman Spectroscopy	49	D.		Ergonomics and Diversity, Equity, and Inclusion	37
Adaptive Agro-Management for Environmental Sustainability	ANSYS Tutorial Release 2025	2	Data-Driven Fault Diagnosis	61	Essentials of Automatic Control with MATLAB in 20 Lessons	14
Additive Manufacturing	Applied Artificial Intelligence and Machine Learning Techniques for Engineering Application:11	11	Data-Driven Global Optimization Methods and Applications	61	Ethics for Engineers	51
Additive Manufacturing for Biomedical Implants and Prosthetics	ARM Assembly Language	11	Data Fusion Mathematics	60	Excellence in Air Show Performers	37
Additives in Manufacturing	Artificial Intelligence, Machine Learning, and Data Analytics in the Energy Industry	49	Design and Construction of Concrete Floors	3	Experimental Methodology for Human-Robot Interaction	14
Advanced Analytics for Industry 4.0	Artificial Intelligence-based Signal Processing for Brain Activity Analysis	12	Design and Construction of Steel Structures	3	Experimental Vibro-acoustics	4
Advanced Applications in Heat Exchanger Technologies	Artificial Intelligence and Digital Forensics	35	Designing Control Strategies for Harmonic Power Filters to Improve the Power Quality in Distribution Networks	61	Explainable AI for Earth Observation Data Analysis	26
Advanced Cutting Tool Technology and Machine Processes	Artificial Intelligence and Human Rights, Democracy, and the Rule of Law	12	Designing Faultless Mechanical Products Based on Advanced Reliability Analysis	36	Exploring Research Through Co-Design	37
Advanced Functional and Composite Materials	Artificial Intelligence and Machine Learning Algorithms for Engineering Applications	12	Designing Robots to Improve Quality of Life for Older Adults	36	Explosion Safety for Industries	37
Advanced Manufacturing Technologies in Biomedical Science	Artificial Intelligence in Heat Transfer	59	Designing with Alternative Building Materials and Review of Building Materials	2	Exposure Assessment and Health Effects Due to Ionizing and Non-Ionizing Radiation	14
Advanced Treatment Technologies for the Removal of Microplastics in Wastewater	Assessment of Tensegrity Structures	2	Designing with SOLIDWORKS 2025	2	F.	
Advanced Welding Technologies	Automated Driving and Driver Assistance Systems	2	Design of Fibre-Polymer Composite Structures	13	Fabrication of Wear and Corrosion Resistant Materials	62
Advancements in Cybersecurity	B.		Design Optimization Using Artificial Intelligence	13	Fatigue of Materials and Structures	4
Advancements in Photothermal Materials for Interfacial Solar Vaporization	Ballistics	60	Design Principles of Autonomous Systems	13	Fatigue Prediction for Random Loads	62
Advances in Artificial Intelligence for Healthcare Applications	Basic Motorsport Engineering	2	Development and Application of National-Scale Dynamic Water Resources Assessment Model in China	25	Federated Learning for Neural Disorders in Healthcare 6.0	15
Advances in Hardware Design for Security and Trust	Beneficiation and Management of Technological Waste	24	Digital Product Design and Manufacturing	36	Finite Element Simulations with ANSYS Workbench 2024	4
Advances in Materials Science and Technology	Big Data Management and Analytics	35	Digital Transformation and Sustainability of Business	13	Fluorescent Particles in Forensic Engineering	51
Advances in Polymer Composite Research	Bioactive Glass Materials for Biological Applications	49	Digital Twins for Smart Cities and Urban Planning	13	Food Manipulation Technology	15
Advances in Science, Engineering and Technology	Biomedical Materials and Biofabrication for Regenerative Medicine	50	Dimensional Metrology	61	Food Safety and Inspection	38
Advances in Sports Science and Technology	Bionanocomposites for Biomedical Applications	50	Direct Liquid Fuel Cells	61	Forensic Engineering for Academia	4
Advances in State and Parameter Estimation	Boeing, the 737 MAX Crisis and Aviation Safety	35	District Cooling Systems	61	Fostering Healthcare through Artificial Intelligence	15
Advancing Responsible AI in Public Sector Application	Bonding Systems and Equipment	35	Diversity in STEM	50	Fractional Order Intelligent Modeling for Lithium-Ion Batteries	15
Aerodynamics Principles for Air Transport Pilots	Business Analytics	35	Dynamics and Monitoring of Railway Vehicle Systems	62	Fractional Order PID and ADR Controls	63
A Field Manual of Magnetotelluric (MT) Surveys with Case Studies for Earth Scientists and Engineers	C.		E.		FRP-Strengthened Metallic Structures	4
A First Course in Differential Equations, Modeling, and Simulation	Cable Stayed Bridges	2	Effects of Electromagnetic Radiation on Living Beings	14	Fuels for Sustainable Transportation	63
A First Course in Quality Engineering	Chassis-Domain-Oriented Dynamic Control for Autonomous Vehicles	60	Electric Drives	14	Fundamentals and Advances in Metal Matrix Composites	51
African Women Trailblazers in STEM	Circular Economy and Sustainable Management	25	Electric Vehicle Fluid Testing	50	Fundamentals and Applications of Additive Manufacturing	63
Agricultural Waste	Circularity of Cementitious Materials	50	Emerging Materials for Biofuel Developments	51	Fundamentals of Electrical Machines	63
AI and Fintech	Classical to Quantum Transport in Multi-Dimensional Field Effect Transistors	12	Emerging Organic Contaminants in Soil	25	Fundamentals of Environmental Engineering	26
AI and Gamification Technologies for Complex Work	Climate Change and Sustainable Developments	25	Emerging Trends in Industrial Engineering and Management	36	Fundamentals of Green Hydrogen Supply Chain and Power-to-X	26
AI Based Solutions for Inclusive Quality Education	Climate Change Impacts on Workplace Health and Safety	35	Empowering Women in STEM	36	Fundamentals of Machining Processes	38
AI Deep Learning in Image Processing	CO2 Adsorbents	50	Energy-Based Safety	36	G.	
AIoT Innovations in Digital Health	Computational Intelligence, and Smart Technologies in Solar Thermal Systems	60	Energy 4.0	14	G20 and Energy Security	26
	Computational Intelligence Algorithms for the Diagnosis of Neurological Disorders	12	Engineering Drawing and Product Manufacturing Information with 3D Models	62	Generative Artificial Intelligence in Healthcare	38

Geoinformatics for Flood Risk Management . . .	26	Industry 5.0	41	Microgrid Handbook	17	Organic-Inorganic Hybrid Nanomaterials . . .	55
Geology of the Cauvery Basin in South India . .	26	Innovations in Non-Conventional Energy		Microwave Claddings	65	Organic Farming	28
Geometrical Enhancements Based on Data-		Sources	16	Mixing Process Technology	53	Outcome-Based Education for Engineering	
Driven Design Decisions	38	Integrating AI Techniques into the Design and		Modern Power Converters for Renewable		Educators	66
Geopolymers and Composites	51	Development of Smart Cyber-Physical Systems .	41	Energy Applications	17	P	
Global Business Transformation	38	Integration of Advanced Systems in		Modern Power Systems Engineering	17	Parallel Robots	18
Granular Lunar Soils	4	Environmental Science and Water Desalination .	27	Molecular Simulations and Multiphysics		Parametric Modeling with Autodesk Fusion	
Green Engineering Materials	51	Intelligent and Sustainable Power and Energy		Nanoscale Coupling	5	(Spring 2025 Edition)	6
Greenhouse Engineering	63	Systems	16	Motion Simulation and Mechanism Design with		Petroleum and Natural Gas Engineering for	
Green Hydrogen Production	38	Intelligent Computing Techniques and		SOLIDWORKS Motion 2025	5	Petroleum and Non-Petroleum Professionals . .	55
Green Manufacturing	39	Applications	16	Multifield Theory of Anisotropic Doubly-Curved		Phase Change Heat Transfer	66
Green Technologies for Pollutants Remediation		Intelligent Systems and Simulation	16	Shells	65	Photovoltaic Modules	19
and Recovery from Water and Soil	27	Introduction to Environmental Ethics	27	Multifunctional Inorganic Nanomaterials . . .	53	Plasticity	6
Green Technology and Smart Materials for		Introduction to Human Factors and Ergonomics,		Multilayer Nanostructured Wear-Resistant		Plastisphere	29
Engineering Applications	39	Fifth Edition	42	Coatings for Metal-Cutting Tools	54	Power Energy and Secure Smart Technologies .	19
H		Introduction to Mathematical Techniques Used		Multiphase Flows in Deformable Geomaterials		Power System Management	19
Handbook of AI-Based Mechatronics Systems and		in GIS	27	Introduction to Optical Metrology	16	Power System Protection with Artificial	
Smart Solutions in Industrial Automation . . .	39	Introduction to Structural Analysis	5	Investing for a Greener Planet	28	Intelligence Applications	19
Handbook of AI-Driven Threat Detection and		IoT, Blockchain, and Smart Healthcare	42	N		Practical Guide for the Reliable Packaging of	
Prevention	39	L		Nanocarbon to Polymer-Nanocarbon		Electronics	66
Handbook of AI in Engineering Applications . .	39	Lab-At-Home Experiments in Chemistry and		Composites	54	Principles of Reinforced Concrete Design . . .	6
Handbook of Artificial Intelligence for Smart City		Chemical Engineering	52	Nanocellulose	54	Principles of Spinning	44
Development	39	Laser Additive Manufacturing in Oil and Gas Field		Nanofluid Flow, Heat, and Mass Transfer at		Principles of Sustainable Energy Systems . . .	67
Handbook of Construction Management . . .	40	Applications	52	Stretching Surfaces	65	Process Design, Economics, and Project	
Handbook of Deep Learning Models for		Lean-AI	42	Nanomaterial-based Sensors for Healthcare		Engineering	55
Healthcare Data Processing	40	Limit States of Compressed Concrete Elements		Application	54	Processes and Design for Manufacturing . . .	67
Handbook of Design and Industry	40	by Transverse Deformations	5	Nanomaterials for Electrochemical Sensing . .	54	Process Modeling and Optimization in Modern	
Handbook of Emergency Response	40	Linear Control Systems in Engineering	42	Nanomaterials in Environmental Remediation .	28	Manufacturing	55
Handbook of High Entropy Alloys	52	Liquid Metal Batteries	52	Nanostructured Materials for Energy Applications		Process Safety	56
Handbook of Human Factors and Ergonomics in		Localization and Mapping of Autonomous		Nanotechnology Applications for Industry 4.0 .	54	Product Design for Students	6
Contemporary Business	40	Mobile Robots	16	Nanotechnology for Mechanical Engineers . .	66	Progressive Computational Intelligence,	
Handbook of Mine Safety	40	Lubricant Technology	64	Nature-Inspired Metaheuristic Algorithms . .	17	Information Technology and Networking . . .	19
Handbook on Digital Twin and Artificial		M		Navigating the Data Minefields	43	Projects Impacting Organizational Culture . . .	44
Intelligence Techniques for Rail Applications .	63	Machine Learning for Semiconductor Materials .	52	Navigating the FRAM	43	Public Acceptance of Green Growth and	
Health 5.0	41	Machining Simulation Using SOLIDWORKS CAM		Neural Rehab	43	Decarbonization	29
Heat Exchanger Technologies for Sustainable		2025	5	New Perspectives in Behavioral Cybersecurity II .	43	R	
Renewable Energy Systems	64	Management of Water Resources Using		Next-Generation Artificial Intelligence Driven		Railway Engineering Technology	67
Heavy Metals in Aquatic Ecosystems	27	Electrochemical Methods	28	Smart and Renewable Energy	17	Rare-Earth-Doped Fiber Lasers and Amplifiers .	19
Historical Evolution of Artificial Intelligence . .	15	Managing Petrochemicals Business	53	Next-Generation Data-Driven Business 4.0 using		Real-Time Embedded Systems with Open-Source	
Hollow Fiber Membrane-Based Evaporative		Manufacture of Quality Synthetic Detergents .	42	the Internet of Things, Blockchain, and		Operating Systems	20
Cooling Systems	64	Manufacturing Process Validation	42	Interconnected Devices	18	Rebreathers In Diving Science	67
Human Factors and Safety Culture	41	Materials for Dye Degradation	53	Non Gaussian State Estimation and the		Recent Trends in Engineering, Science and	
I		Matrix Analysis of Frame Structures	5	Maximum Correntropy Approach	18	Technology	20
Image Analysis, Classification and Change		Mechanical Equipment Mechanism Design . .	64	Nonlinear Vibration and Dynamics of Smart		Recent Trends in VLSI and Semiconductor	
Detection in Remote Sensing	27	Mechanics of Solids and Structures	65	Continuous Structures and Materials	43	Packaging	20
Implement AS 9100 D/EN 9100:2018 for Business		Mechanism Design	65	Novel Applications of Functionally Graded		Reinforced Concrete	7
Excellence	64	Membrane Technology for Sustainability . . .	28	Materials	55	Remote Sensing for Geoscientists	29
Implementing Competency-Based Training and		Metal Ions in Biology	53	Numerical Methods for Engineering and Data		Remote Sensing of Land Cover and Land Use	
Assessment in Aviation	64	Metal Oxide-based High-K Dielectrics	53	Science	66	Changes in South and Southeast Asia, Two Volume	
Improving the Energy Efficiency of Mobile		Metal Surface Engineering	65	O		Set	29
Networks	15	Microgrid 4.0	17	Operationalizing Twenty-First Century Safety . .	43	Remote Sensing of Land Cover and Land Use	
Industrial Decarbonization	52	O		Optical and Wireless Communications	18	Changes in South and Southeast Asia, Volume 1 .	29
Industrial Engineering Strategy for Constructive		Optical Electromagnetic Field Analysis Using		Python	18	Changes in South and Southeast Asia, Volume 2 .	29
Technologies	41	Optimal Designs of Sensor Placement in Water		Optimising Biogas Plants	55	Remote Sensing of Tropical Dry Forests in the	
Industry 4.0 and Intelligent Manufacturing		Distribution Systems	6	Optimizing Smart and Sustainable Agriculture for		Americas	30
Technologies	41	Optimising Biogas Plants	55	Sustainability	18	Revolutionizing Healthcare Services	44

Revolutionizing Solar Energy Harvesting	20	Tailoring of Engineering Material Properties through Laser Cladding	68	Urban Water Engineering and Management	32
Rock Mechanics	7	Tank Cascade Systems of Sri Lanka	30	V	
Rock Mechanics & Strata Control	7	Technology Developments in Computer Intelligence and their Applications in the era of Industry 5.0	23	Valorisation of Food Waste	58
S		Technopreneurship and Sustainability	30	Value Stream 4.0	47
Safety and Health Savvy	44	Temperature Development in Early Age Concrete Elements	7	Vermicomposting and Other Zoocomposting Systems for Solid Waste Valorization	32
Safety and Wearable Technology	44	Terahertz Channel Measurement, Modeling, and Security Properties	23	Vision Zero at Work	47
Safety at the Sharp End: A Guide to Non-Technical Skills, Second Edition	44	Terahertz Technology in Microwave and Photonics for Effective Communications	23	Volatile Organic Corrosion Inhibitors	69
Sealing and Vibrations of Centrifugal Machines	67	The Art of Systems Architecting	46	Vortex Ventilation	8
Secure Detection and Control in Cyber-Physical Systems	20	The Comprehensive Valve Dictionary	68	W	
Security Paradigms in 6G Smart Cities and IoT Ecosystems	45	The Design, Implementation, and Audit of Health and Safety Management Systems, Second Edition	46	Wave Energy Convertors in Tropical Seas	9
Self-Commissioning Wireless Power Transfer	20	The Essentials of Composite Materials	56	What Every Engineer Should Know About Computational Techniques of Finite Element Analysis	58
Sensor Technologies and Wireless Communications in Industry 5.0	45	The Global Positioning System and GIS	30	What Every Engineer Should Know About Python	58
Sewing Machines and Processes	67	The Immersion Method for Microbially Induced Calcite Precipitation:	7	Wind Energy Design	69
Simplicity in Safety Investigations	45	The Language of Grounding and Bonding	23	Women, Tech, and Enterprise	47
Smart Cyber-Physical Systems	21	The Mechanics of Biological Materials	57	Wood and Wood-Based Materials for Building	9
Smart Electronic Devices	21	The Old and New Persistent Organic Pollutants	31	Workforce Development for Global Manufacturing and Technology Transfer	47
Smart Electronics Devices and Models for Healthcare Systems	21	Theory and Application of Secondary Electron Emission	23	Workplace Safety and Health Practices	47
Smart Grids	21	Theory and Design of Railway Truss Bridges	8	Writing Skills for Scientific Communication	69
Smart Materials and Energy in the Fourth Industrial Revolution	56	Thermal Infrared Remote Sensing	31		
Smart Sensing with Digital Twins	30	Thermal Spray Coatings for High-Temperature Conditions	68		
Smart Sensors	21	Thermoelectric Materials and Devices for Clean Energy Harvesting	57		
Social Cyber Engineering and Advanced Security Algorithms	21	The Science of Energy	31		
Society 5.0	22	Titanium-Based MXenes	57		
Soft Robotics for Medical and Healthcare Applications	22	Towards Unmanned Surface Vehicles	23		
Solar Cells Development and Fabrication	56	Training and Simulation	46		
Spacecraft Modeling, Attitude Determination, and Control	68	Transfer and Stockpiling Operations in the Crude Oil Refining Industry	57		
Statistical Methods and Applications in Systems Assurance and Quality	45	Transforming Business Management with AI, BI, and Data-Driven Decision-Making	46		
Structures for Architects	7	Transforming Healthcare Infrastructure	8		
Sustainable Biotechnological Remedial Frameworks for the Rejuvenation of Heavily Polluted Environments	30	Transforming Industries	46		
Sustainable Cities	22	Transition Metal Oxides at Low Dimensions	57		
Sustainable Electronics	22	Transition to Sustainable Energy Technologies	31		
Sustainable Healthcare Systems in Africa	45	Transparency and Public Participation for Radioactive Waste Management in Europe	68		
Sustainable Materials and Technologies in VLSI and Information Processing	22	U			
Sustainable Materials for Rubber and Allied Industries	56	Ultraprecision Machining and Metrology	68		
Sustainable Smart Composites	56	Unconventional Techniques for Nanoparticles Production	57		
Sustainable Supply Chains and Digital Transformation	45	Underwater Structures	8		
Switching Power Converters	22	Urban Engineering	8		
Systems Engineering for Commercial Aircraft	46	Urban Human Mobility	31		
T		Urban Stormwater Management	31		
		Urban Transportation Systems in Emerging Countries	8		

A.	Bhowmick, Mukhopadhyay, Chanda, Samui, Koley	56	Dey, Mondal, Paul, Banerjee, Obaid	16	Gupta, Taneja, Davim	46
Abdellaoui, Lakshminarasimhan, M. R., Siengchin	Bhowmik	54	Dhall, Sood, Gupta	56	H.	
Abraham, Gorman	Bierals	23	Dhir	66	Haitjema, Leach	61
Acharya, Bansal, Jain, Jain, Rodrigues	Bierals	35	Digonnet	19	Hallowell	36
Acharya, Shukla, Chowdhury, Garg	Biswas, Ghute, Das	26	Dixit, Dixit	6	Haq, Shah	24
Acherjee, Zhao, Fernandes	Blanco-Munoz	41	Dong, Wang, Li	61	Hirani	60
Agarwal, Solanki, Singh, Shah	Blocker II	50	Dovramadjiev	33	Hohl, Hinds, Welton	11
Ahmed	Boldea	14	Dwivedi, Dwivedi, Meili	30	Hollenbeck, Chen	30
Ahmed, Bajpai, Faisal, Lata Tripathi	Booker	34	Dwivedi, Kumar, Kesharvani	63	Hopkins	35
Al-Samarai, Al-Douri	Bridger	42	E.		Hout	42
Al-Samarai, Al-Douri	Busciantella-Ricci, Scatagliini	37	Eidani, Rouzbehi	17	Huang, Ye, Stewart, Das	31
Alston, Okorie	C.		Ekolu	7	I.	
Ana, Arya, Mehraj	Canty	27	El-Hofy	38	Ilyas, Tahir, Rizal, Sapuan, Atikah	49
Ananda Murthy, Subramaniam, Sillanpää, Balachandran, Hedge	Caridis	8	El-Reedy	3	Imoize, Kuznetsov, Lemesko, Yermenko	10
Arora, Sharma	Carlucci, Jacobson	60	Elices, Guinea, Morton	57	Indapurkar, Sidana, Goel, Singh	47
Arora, Sharma, Mahesh	Chakradhara Rao	5	El Wakil	67	Iskhakov, Frolov, Ribakov	5
Asmara	Chandrasekaran	3	F.		J.	
Awasthi, Kumar, Dutt, Thangavel	Chang	5	Farfan Cabrera, Lee, Erdemir	50	Jackson	46
B.	Chang	5	Farret	14	Jafri, Shafi, Zaman, Kumar	42
Babu, Balasubbareddy, M, Nwulu, Ramachandaramurthy, Sharma	Chaudhary, Parnianifard, Sharma	18	Fenner, Reddy, Srinivasa	65	Jain, Chakraborty	26
Badiru	Chaurasiya, Bajaj, Chourasia	12	Filler	4	Jammia	66
Badiru, Barlow, Bommer	Cheepati, Mariprasath, Rivera Abarca, Rao	61	Flin, O'Connor, Reader	44	Jana	49
Bajpai, Meshram, Biswas	Chen, Luo	63	Fortuna, Frasca, Buscarino	14	Janapati, Desai, Fernandes, Sengupta, Tayal	11
Balaji, Kalayci, Ramkumar	Chen, Wang	6	Félix, Assoreira Almendra, Moreira da Silva, Pombo, Cruz	40	Jeyaprakash, Prabhu, Yang	68
Ballim	Cheng, Dong, Xu, Wang, Liu	60	G.		Jin, Chen, Shi, Shekhawat	52
Bandyopadhyay	Chong	58	Ganguly	3	Jugulum, Fogarty, Heien, Putchala	35
Bandyopadhyay, Bose	Chuvieco, Martin	27	Ganguly, Das, Jain	51	K.	
Banerjee, Bhattacharyya, De, Datta, Sarigiannidis, Platos, Asad	Corke, Nelson	69	Garber	3	K.R., Singh, Pan, Sharma	45
Bansal, Tripathi, Srivastava, Vuppuluri	Correia, Keller, Knippers, Motttram, Paulotto, Sena-Cruz, Ascione	3	Gautam, Chandra, Rani	27	Kajikawa, Okamoto	18
Barker	Crawley, Scott	56	Geekiyana, Gunarathna, Ranagalage, Jayasinghe, Perera, Vithanage	30	Kallaste, Vaimann, Rassölkkin, Janson	63
Bashir, Kumar, Nisa	Cui, Feng	23	Gehlot, Singh, Priyadarshi, Akram, Azam	17	Kalra, Rani, Kumar, Elngar	46
Basu, Dhara	Cui, Yan, Chua	64	George, G. R., Babu	66	Kang, Zhang, Tanaka	10
Basu Mallik, Mukherjee, Kar, Fan	D.		Ghadiri	66	Kannattumadom	64
Bavoh, Quainoo	Dalal, Cudney	42	Ghaemi, Khoshraftar, Pouresmael	50	Kar, Cope, Lueske	53
Bersimis, Economou, Rakitzis	Dargar, Birla, Dargar, Singh, Ganeshaperumal	22	Glynn, Frederick, West	44	Karachalios	37
Bertolotti, Manduchi	Das, Bhowmick, Arvin, Adhikary	43	Goel, Krishnan, Prasad, Jayashree, McCarthy	38	Karamouz, Moridi	32
Bhambri, Anand	da Silva	57	Goncharenko	43	Kasinathan, Kanchan	24
Bhoi, Singh, Nanda	Davies	59	Gupta	52	Kaswan, Rathi, Garza-Reyes	41
Bhoi, Singh, Nanda	Denton, Pells, Pells	2	Gupta, Gupta, Yadav, Dhariwal, Sarma	52	Katiyar, Sharma, Sahu, Khan	59
	Desai, Desai, Nayak	19	Gupta, Sharma, Rishiwal, C S	23	Kaushal	65

Kennedy, Kennedy	30	Li, Liu, Wen, Lu	7	Moharana, Sahu, Sagadevan	55	Periyasamy, López-Maldonado, Balachandran	51
Khan, Hajjani, Gupta, Rahman, Yogamoorthi, Ullah, Khan	34	Limkatanyu	5	Moharana, Satpathy, Nguyen, Gupta, Alvi	53	Permana	8
Khan, Narula, Naim, Srivastava	40	Liu, Jia, Wang, Du, Niu, Hu, Liu	25	Molteni	44	Poonia, Upreti, Khan	21
Khare	44	Liu, Jiang, Zhang	28	Moorhouse, Meggitt	4	Pradhan, Nayak, Thakur, Francis, Nagargoje	63
Khare, Aizaz, Khare	15	Livesey	2	Mrugalska, Karwowski, Ahram	41	Prashar, Vasudev, Thakur	68
Komzsik	58	Long	45	Muhsen, Allaham, Al-Mahmodi, Tarawneh, Alkhraibat, Al-Halhouli	26	Pratap Singh, Kumar, Francis, Jaiswal	55
Kothari, Rani, Singh	26	Lorincz, Klarin	15	Mukhtar K. P., Huerta-Soto, Jain, Ramirez-Asis	11	Premkumar, Usha, Kumar, Gopiseti	16
Krishna, Dhass	57	M		N		Prost	29
Krishnamoorthi, Bukkapatnam, Krishnamoorthi	33	M. Al-Enizi, Ubaidullah, Shkir, K. Singh	54	Nag Dasgupta, Singh, Boojh	25	Pu, Yu	31
Kuchhal, Kumar, Kumar Pachauri, Kumar Sharma	20	Ma, Li, Liu	23	Naidu	31	PV, Chanusot, Mohan, Kumar, Porwal	26
Kumar, Dembla, Tinker, Bhatia	40	Mabrouki	27	Nakagawa	4	R	
Kumar, K. P., Sharma	67	MacLeod	64	Nandal, Dahiya, Singh, Dagur, Kumar	19	Racz, Badiru	40
Kumar, Karmakar, Rani, Singh	24	Madachy	58	Nasir, Qadir, Abdul Mannan	28	Radhakrishnan, Ozana	18
Kumar, Kumar, Dixit, Singh	12	Madav, Chandrasekaran, Singh	7	Naveenkumar, Sharma, D., Abdullah, Elgar	39	Raghavendra, Prasad, Gara	49
Kumar, Kumar, Kumar Phanden, Schmidt, Chakraborty	36	Magare, Trivedi, Khandeparkar	19	Ndubuisi	55	Rajendrachari	52
Kumar, Kumar	39	Maier, Rehtin	46	Neacsu	22	Ramakrishnan, Gopal	51
Kumar, Pilia, Tanwar, Ahuja, Zamani	42	Majahar Ali, Rabi, Ismail	34	Niemz, Sandberg	9	Rangel Junior	37
Kumar, Ramamoorthy, Jain, Kose, Tek	38	Makkar, Ravindran, Chakraborty, Pal	39	Ntuli, Mashifana, Sithole, Falayi	28	Raol, P. V., George	10
Kumar, Rani, Kumar, Jain	39	Mala, Dhanapal, Sthapit, Khadka	41	Nudehi, Steffen	2	Raol, Selvi, Kashyap, Sanketh	60
Kumar, Ranjan	69	Malmquist, Vincenzi, Lemos, Pruchnicki	46	Nyemba	60	Rathebe	14
Kumar, Rathore, Banerjee	59	Mandol, Kumar, Verma, Singh	38	O		Rathi, Gupta, Kothari	6
Kumar, Sindhvani, Kumar, Singh, Davim	30	Mangos, Ferraro	34	Oancea, Kyratsis	36	Ratnesh, Kumar, Singh, Chandra	43
Kumar, Thangavel, Dwivedi	38	Marsh	44	Obara	2	Realyvasquez-Vargas, García Alcaraz, Satapathy, Díaz-Reza	42
Kumar, Yan, Bansal, Kumar	17	Mathura	36	Okie, Karimzadeh, Oviroh, Ukoba, Imoisili, Jen	56	Reddy, Rao	20
Kumar, Zafar, Naaz	12	Matsuyuki, Nakamura	8	Okolie, Okoye	52	Reddy C, Nag	15
Kumar Chaudhary, Patel, Mishra, Kumawat	35	Maurya, Khajuria, Vasu	64	Oruganti, Karras, Thakur, Chaithanya, Metta, Lathigara	13	Reible	26
Kumar Dutta, Singh, Jain, Kaunert, Vig	12	McCauley	37	Ovaska, Brei	51	Rider	3
Kumar Singh, Jadeja, Khanna, Dutta, Virdee	45	McKinnon	46	P		Rogers	25
Kutscher, Milford, Kreith	67	Memon, Memon, Abbas	48	Pacheco	56	Rogers, Mitzner	36
Kyosev	67	Merat	13	Paglia	50	Rosato	55
Ktos	67	Merat, Almuhtadi	21	Paliwal, Yadav, Yadav	53	Roy, Hazra, Paul	17
L		Metternich, Meudt, Hartmann	47	Pandey, Singh, Sengupta, Chowdhury	25	Rumane	40
Lawrence	2	Mikalauskiene, Streimikiene, Mikalauskas	29	Panigrahi, Tripathy	13	Russell, Shen, Sodhi	65
Le, Wang, Li	51	Mill	62	Parangi, Pathan	53	Rychlik, Gupta, Lindgren	62
Lee, Li	5	Mishra, Dev, Pandey, Awasthi	13	Pareek, Mishra, K. Mishra, Singh, Gautam	23	S	
Lee, Schilling	4	Mishra, Naskar	24	Parikh, P. Gohil	32	Saheb, Appala, Khan	22
Li, Li, Wen	13	Mkparu, Goel, Singh, Mkparu	34	Patnaik, Abbasi, Abbasi	43	Saini, A. Mahajan, Le	18
		Moda, Khoshakhlagh, Gruszecka-Kosowska, Rangarajan, Ali, Saleh, Philips	35	Patriarca	43	Samal, Panda, Kabat, Awad, Jayasingh, Tosh	16
		Mohan, Raju, Sekhar, Prasad	11	Patterson	43	Sanchez-Azofeifa	30
		Moharana, Sahu, Sagadevan	54	Pazwash	31	Sandhu, Kumar, Singh	59

Seames	55	Swathika, Karthikeyan	21	Yan	68
Sekhar Rout, Saxena, Lata Tripathi	21			Yan, Mo, Wen	20
Selvan N B, V., Chin	17	T		Yang	20
Sethi	63	Taghirad	18	Yang	68
Shaari, Wani, Kamarudin	61	Tarlochan	66	Yates, Schmutz, Redding	40
Shafik, Youssef, Selvan, Dutta	45	Tay	9	Ye, Dale	27
Shahabuddin, Gaur, Mukherjee	54	Tcharkhtchi, Vanaei, Khelladi	15	Yu, Cao, Guan, Wang	16
Shama	2	Temizel, Tutun, Canbaz, Alagoz, Dündar, Sari,	14		
Sharma, Bokoro, Tanwar	14	Saputelli, Oksay	49	Z	
Sharma, Kose, Singh, Kumar	60	Thakkar, Bhatt, Leung, Balasingham	41	Zaw, Myat, Islam, Keng, Nyunt	61
Shemwell	43	Tian, Wu, Robinson, Carreno-Medrano, Chan,	67	Zdarta, Jesionowski, Rinklebe	27
Shevchenko	67	Sakr, Abdi, Croft, Kulić	14	Zhang, Abbasi, Tayyab	57
Shih	11	Ting, Stagner	8	Zhang, Ahmad	25
Shih	6	Tiwari, Goel	45	Zhang, Cheok, Zhang, Zhang	64
Shiva	12	Tornabene	65	Zhang, Wells	25
Shukla, Malik, Jain, Mishra	21	Tsunashima, Matsumoto, Michitsuji, Hubbard,	28	Zhao, Hu	4
Singh, Daga, Yadav	19	Ward	62	Zheng, Liu	23
Singh, Kumar, Pahariya, Bolshev, Singh	28	Tyagi, Chauhan, Tyagi	53	Ziganshin, Logachev	8
Singh, Mishra, Kumar	57			Zwetsloot	47
Singh, Ravindran	11	U			
Singh, Vasudev	62	Unsworth	8		
Singh, Vasudev, Prakash, Singh	34			Železnik, de Butler, Haverkamp, Hooge, Daniška,	
Singh, Vasudev, Sharma, Cheepu	39	V		Swahn, Wales	68
Singla, Shalender, Singh, Sharma	44	V.S, Verma, Govindarajan	10		
Sirohi	16	Vadrevu, Justice, Gutman	29		
Sivakugan, Shukla, Das, To	7	Vadrevu, Justice, Gutman	29		
Smith, Campbell, Toomey	48	Vadrevu, Justice, Gutman	29		
Smith, Ferris	38	Vajravelu, Abraham, Mukhopadhyay,	65		
Song, Kim	62	Lakshminarayana	61		
Soni, Hasteer, Bhardwaj, Sindhwani, Davim	24	Vashishtha	10		
Soofastaei	33	Vemuri, Emmert	54		
Sotoodeh	68	Vereschaka, Grigoriev, Tabakov	69		
Sozen, Ichinose, Pujol	6	Verma	21		
Spearing, Kostecki	7	Verma, Adhikari, Mishra, Lata Tripathi, Shukla	31		
Spellman	31	Villante, Dell'Aversano, Ranieri	33		
Spiryagin, Bruni, Cole	63	Vink, Hedge	29		
Srinivasan, R, Cadambi	48	Vithanage, Bakir, Posth			
Sultana, Bandyopadhyay-Ghosh, Soon	50				
Swathika, Karthikeyan	22	W			
		Wajid, Terashima-Marín, Zafar, Wajid, Bhushan	13		
		Wang	52		
		Wang, Chen	15		
		Wang, Hirai	15		
		Wang, Zhu, Correia, De Jesus, Lesiuk	4		
		Watts	37		
		Woo	36		
		Wuthrich, El Ayoubi	66		
		Y			

