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Advances in Simulation, Product Design and Development Proceedings of AIMTDR 2018 Springer This volume comprises select proceedings of the 7th International and 28th All India Manufacturing Technology, Design and Research conference 2018 (AIMTDR 2018). The papers in this volume discuss simulations based on techniques such as finite element method (FEM) as well as soft computing based techniques such as artificial neural network (ANN), their optimization and the development and design of mechanical products. This volume will be of interest to researchers, policy makers, and practicing engineers alike. **Advances in Mechanical Engineering Select Proceedings of ICAME 2020 Springer Nature** This book presents select peer-reviewed proceedings of the International Conference on Advances in Mechanical Engineering (ICAME 2020). The contents cover latest research in several areas such as advanced energy sources, automation, mechatronics and robotics, automobiles, biomedical engineering, CAD/CAM, CFD, advanced engineering materials, mechanical design, heat and mass transfer, manufacturing and production processes, tribology and wear, surface engineering, ergonomics and human factors, artificial intelligence, and supply chain management. The book brings together advancements happening in the different domains of mechanical engineering, and hence, this will be useful for students and researchers working in mechanical engineering. **Nondestructive Characterization of Materials IV Springer Science & Business Media** There is a great deal of interest in extending nondestructive technologies beyond the location and identification of cracks and voids. Specifically there is growing interest in the application of nondestructive evaluation (NOEI) to the measurement of physical and mechanical properties of materials. The measurement of materials properties is often referred to as materials characterization; thus nondestructive techniques applied to characterization become nondestructive characterization (NDCI). There are a number of meetings, proceedings and journals focused upon nondestructive technologies and the detection and identification of cracks and voids. However, the series of symposia, of which these proceedings represent the fourth, are the only meetings uniquely focused upon nondestructive characterization. Moreover, these symposia are especially concerned with stimulating communication between the materials, mechanical and manufacturing engineer and the NDE technology oriented engineer and scientist. These symposia recognize that it is the welding of these areas of expertise that is necessary for practical development and application of NDC technology to measurements of components for in service life time and sensor technology for intelligent processing of materials. These proceedings are from the fourth international symposia and are edited by C.O. Ruud, J. F. Bussiere and R.E. Green, Jr. . The dates, places, etc of the symposia held to date area as follows: Symposia on Nondestructive Methods for TITLE: Material Property Determination DATES: April 6-8, 1983 PLACE: Hershey, PA, USA CHAIRPERSONS: C.O. Ruud and R.E. Green, Jr. **Analysis of Metallic Aerospace Structures** This book intends to provide the foundation and applications used in aircraft stress analysis for metallic substructures. Instead of providing a mere introduction and discussion of the theoretical aspects, the book intends to help the starting engineer or first-time student conduct a stress analysis of an aircraft subpart. In this context, readers with a mechanical, civil, or naval engineering background follow the concepts. We can assure you that this book will fill up a void in the personal or professional library of many engineers trying, or planning, to conduct stress analysis on aircraft structures. The motivation for this book comes from years of teaching and industry experience and lessons learned. While there are excellent books on theory and others on analysis methods, there seems to be a gap between the graduating student and the industry practice. Although the intention is not to teach industry methods to undergraduate/graduate students, the books discuss the typical theory covered in traditional textbooks while using the concepts close to the industry practices. The book also tries to blend conventional theoretical approaches with some modern numerical techniques. This allows the beginning engineer, or the enrolled student in an aerospace undergraduate program, to learn and use the techniques while understanding their background in a practical sense. One major problem that we try to tackle throughout the book is the ``black-box'' approach. Emphasis is on the discussion of a result more than the right or wrong answer, allowing the reader to understand the topics better. <https://www.aeiseservices.org/> **Government Reports Announcements & Index Recent Trends in Civil Engineering Select Proceedings of ICRTICE 2019 Springer Nature** This book presents the selected peer-reviewed proceedings of the International Conference on Recent Trends and Innovations in Civil Engineering (ICRTICE 2019). The volume focuses on latest research and advances in the field of civil engineering and materials science such as design and development of new environmental materials, performance testing and verification of smart materials, performance analysis and simulation of steel structures, design and performance optimization of concrete structures, and building materials analysis. The book also covers studies in geotechnical engineering, hydraulic engineering, road and bridge engineering, building services design, engineering management, water resource engineering and renewable energy. The contents of this book will be useful for students, researchers and professionals working in civil engineering. **Analysis and Performance of Fiber Composites Wiley-Interscience** Having fully established themselves as workable engineering materials, composite materials are now increasingly commonplace around the world. Serves as both a text and reference guide to the behavior of composite materials in different engineering applications. Revised

for this Second Edition, the text includes a general discussion of composites as material, practical aspects of design and performance, and further analysis that will be helpful to those engaged in research on composites. Each chapter closes with references for further reading and a set of problems that will be useful in developing a better understanding of the subject.

Multibody Dynamics Computational Methods and Applications Springer Science & Business Media The ECCOMAS Thematic Conference “Multibody Dynamics 2009” was held in Warsaw, representing the fourth edition of a series which began in Lisbon (2003), and was then continued in Madrid (2005) and Milan (2007), held under the auspices of the European Community on Computational Methods in Applied Sciences (ECCOMAS). The conference provided a forum for exchanging ideas and results of several topics related to computational methods and applications in multibody dynamics, through the participation of 219 scientists from 27 countries, mostly from Europe but also from America and Asia. This book contains the revised and extended versions of invited conference papers, reporting on the state-of-the-art in the advances of computational multibody models, from the theoretical developments to practical engineering applications. By providing a helpful overview of the most active areas and the recent efforts of many prominent research groups in the field of multibody dynamics, this book can be highly valuable for both experienced researchers who want to keep updated with the latest developments in this field and researchers approaching the field for the first time.

Computational Plasticity Springer Science & Business Media This book contains 14 invited contributions written by distinguished authors who participated in the VIII International Conference on Computational Plasticity held at CIMNE/UPC (www.cimne.com) from 5-8 September 2005, in Barcelona, Spain. The chapters present recent progress and future research directions in the field of computational plasticity.

Offshore Energy Structures For Wind Power, Wave Energy and Hybrid Marine Platforms Springer This book provides all the key information needed to design offshore structures for renewable energy applications successfully. Suitable for practicing engineers and students, the author conveys design principles and best practices in a clear, concise manner, focusing on underlying physics while eschewing complicated mathematical detail. The text connects underlying scientific theory with industry standards and practical implementation issues for offshore wind turbines, wave energy converters and current turbines. Combined concepts such as wave-wind energy platforms are discussed, as well. Coverage of design codes and numerical tools ensures the usefulness of this resource for all those studying and working in the rapidly expanding field of offshore renewable energy.

Gear Geometry and Applied Theory Cambridge University Press This revised, expanded, edition covers the theory, design, geometry and manufacture of all types of gears and gear drives. This is an invaluable reference for designers, theoreticians, students, and manufacturers. This edition includes advances in gear theory, gear manufacturing, and computer simulation. Among the new topics are: 1. New geometry for modified spur and helical gears, face-gear drives, and cycloidal pumps. 2. New design approaches for one stage planetary gear trains and spiral bevel gear drives. 3. An enhanced approach for stress analysis of gear drives with FEM. 4. New methods of grinding face gear drives, generating double crowned pinions, and improved helical gear shaving. 5. Broad application of simulation of meshing and TCA. 6. New theories on the simulation of meshing for multi-body systems, detection of cases wherein the contact line on generating surfaces may have its own envelope, and detection and avoidance of singularities of generated surfaces.

Proceedings of the 13th International Scientific Conference Computer Aided Engineering Springer These proceedings of the 13th International Conference on Computer Aided Engineering present selected papers from the event, which was held in Polanica Zdrój, Poland, from June 22 to 25, 2016. The contributions are organized according to thematic sections on the design and manufacture of machines and technical systems; durability prediction; repairs and retrofitting of power equipment; strength and thermodynamic analyses for power equipment; design and calculation of various types of load-carrying structures; numerical methods for dimensioning materials handling; and long-distance transport equipment. The conference and its proceedings offer a major interdisciplinary forum for researchers and engineers to present the most innovative studies and advances in this dynamic field.

Technologies for economic and functional lightweight design Conference proceedings 2020 Springer Nature This book comprises the proceedings of the conference “Future Production of Hybrid Structures 2020”, which took place in Wolfsburg. The conference focused on hybrid lightweight design, which is characterized by the combination of different materials with the aim of improving properties and reducing weight. In particular, production technologies for hybrid lightweight design were discussed, new evaluation methods for the ecological assessment of hybrid components were presented and future-oriented approaches motivated by nature for the development of components, assemblies and systems were introduced. Lightweight design is a key technology for the development of sustainable and resource-efficient mobility concepts. Vehicle manufacturers operate in an area of conflict between customer requirements, competition and legislation. Material hybrid structures, which combine the advantages of different materials, have a high potential for reducing weight, while simultaneously expanding component functionality. The future, efficient use of function-integrated hybrid structures in vehicle design requires innovations and constant developments in vehicle and production technology. There is a great demand, especially with regard to new methods and technologies, for "affordable" lightweight construction in large-scale production, taking into account the increasing requirements with regard to variant diversity, safety and quality.

Peterson's Stress Concentration Factors John Wiley & Sons The bible of stress concentration factors—updated to reflect today's advances in stress analysis This book establishes and maintains a system of data classification for all the applications of stress and strain analysis, and expedites their synthesis into CAD applications. Filled with all of the latest developments in stress and strain analysis, this Fourth Edition presents stress concentration factors both graphically and with formulas, and the illustrated index allows readers to identify structures and shapes of interest based on the geometry and loading of the location of a stress concentration factor. Peterson's Stress Concentration Factors, Fourth Edition includes a thorough introduction of the theory and methods for static and fatigue design, quantification of stress and strain, research on stress concentration factors for weld joints and composite materials, and a new introduction to the systematic stress analysis approach using Finite Element Analysis (FEA). From notches and grooves to shoulder fillets

and holes, readers will learn everything they need to know about stress concentration in one single volume. Peterson's is the practitioner's go-to stress concentration factors reference Includes completely revised introductory chapters on fundamentals of stress analysis; miscellaneous design elements; finite element analysis (FEA) for stress analysis Features new research on stress concentration factors related to weld joints and composite materials Takes a deep dive into the theory and methods for material characterization, quantification and analysis methods of stress and strain, and static and fatigue design Peterson's Stress Concentration Factors is an excellent book for all mechanical, civil, and structural engineers, and for all engineering students and researchers. Advances in Engineering Design and Simulation Select Proceedings of NIRC 2018 Springer Nature This book consists of selected peer-reviewed papers presented at the NAFEMS India Regional Conference (NIRC 2018). It covers current topics related to advances in computer aided design and manufacturing. The book focuses on the latest developments in engineering modelling and simulation, and its application to various complex engineering systems. Finite element method/finite element analysis, computational fluid dynamics, and additive manufacturing are some of the key topics covered in this book. The book aims to provide a better understanding of contemporary product design and analyses, and hence will be useful for researchers, academicians, and professionals. Materials, Design, and Manufacturing for Sustainable Environment Select Proceedings of ICMDMSE 2020 Springer Nature This book comprises the select proceedings of the International Conference on Materials, Design and Manufacturing for Sustainable Environment (ICMDMSE 2020). The primary focus is on emerging materials and cutting-edge manufacturing technologies for sustainable environment. The book covers a wide range of topics such as advanced materials, vibration, tribology, finite element method (FEM), heat transfer, fluid mechanics, energy engineering, additive manufacturing, robotics and automation, automobile engineering, industry 4.0, MEMS and nanotechnology, optimization techniques, condition monitoring, and new paradigms in technology management. Contents of this book will be useful to students, researchers, and practitioners alike. Computational Contact Mechanics Springer Science & Business Media Topics of this book span the range from spatial and temporal discretization techniques for contact and impact problems with small and finite deformations over investigations on the reliability of micromechanical contact models over emerging techniques for rolling contact mechanics to homogenization methods and multi-scale approaches in contact problems. Computer Science for Environmental Engineering and EcoInformatics International Workshop, CSEEE 2011, Kunming, China, July 29-30, 2011. Proceedings Springer Science & Business Media This two-volume set (CCIS 158 and CCIS 159) constitutes the refereed proceedings of the International Workshop on Computer Science for Environmental Engineering and EcoInformatics, CSEEE 2011, held in Kunming, China, in July 2011. The 150 revised full papers presented in both volumes were carefully reviewed and selected from a large number of submissions. The papers are organized in topical sections on computational intelligence; computer simulation; computing practices and applications; ecoinformatics; image processing information retrieval; pattern recognition; wireless communication and mobile computing; artificial intelligence and pattern classification; computer networks and Web; computer software, data handling and applications; data communications; data mining; data processing and simulation; information systems; knowledge data engineering; multimedia applications. 5th International Munich Chassis Symposium 2014 chassis.tech plus Springer The key drivers of innovation in the field of chassis systems are measures to improve vehicle dynamics and driving safety, efforts to reduce fuel consumption, and intelligent development methods. In addition, chassis development is focusing on enhancing ride comfort while also improving NVH characteristics. At the same time, modularization strategies, concepts for the electrification of the powertrain, and steps towards greater system connectivity are making increasingly complex demands on the chassis and its development. Developers are being called upon to respond to these challenges with a variety of solutions. Digital Transformation of the Design, Construction and Management Processes of the Built Environment Springer Nature This open access book focuses on the development of methods, interoperable and integrated ICT tools, and survey techniques for optimal management of the building process. The construction sector is facing an increasing demand for major innovations in terms of digital dematerialization and technologies such as the Internet of Things, big data, advanced manufacturing, robotics, 3D printing, blockchain technologies and artificial intelligence. The demand for simplification and transparency in information management and for the rationalization and optimization of very fragmented and splintered processes is a key driver for digitization. The book describes the contribution of the ABC Department of the Polytechnic University of Milan (Politecnico di Milano) to R&D activities regarding methods and ICT tools for the interoperable management of the different phases of the building process, including design, construction, and management. Informative case studies complement the theoretical discussion. The book will be of interest to all stakeholders in the building process - owners, designers, constructors, and faculty managers - as well as the research sector. Data Driven Smart Manufacturing Technologies and Applications Springer Nature This book reports innovative deep learning and big data analytics technologies for smart manufacturing applications. In this book, theoretical foundations, as well as the state-of-the-art and practical implementations for the relevant technologies, are covered. This book details the relevant applied research conducted by the authors in some important manufacturing applications, including intelligent prognosis on manufacturing processes, sustainable manufacturing and human-robot cooperation. Industrial case studies included in this book illustrate the design details of the algorithms and methodologies for the applications, in a bid to provide useful references to readers. Smart manufacturing aims to take advantage of advanced information and artificial intelligent technologies to enable flexibility in physical manufacturing processes to address increasingly dynamic markets. In recent years, the development of innovative deep learning and big data analytics algorithms is dramatic. Meanwhile, the algorithms and technologies have been widely applied to facilitate various manufacturing applications. It is essential to make a timely update on this subject considering its importance and rapid progress. This book offers a valuable resource for researchers in the smart manufacturing communities, as well as practicing engineers and decision makers in industry and all those interested in smart manufacturing and Industry 4.0.

Progressive Failure and Life Prediction of Ceramic and Textile Composites Independently Published An engineering approach to predict the fatigue life and progressive failure of multilayered composite and textile laminates is presented. Analytical models which account for matrix cracking, statistical fiber failures and nonlinear stress-strain behavior have been developed for both composites and textiles. The analysis method is based on a combined micromechanics, fracture mechanics and failure statistics analysis. Experimentally derived empirical coefficients are used to account for the interface of fiber and matrix, fiber strength, and fiber-matrix stiffness reductions. Similar approaches were applied to textiles using Repeating Unit Cells. In composite fatigue analysis, Walker's equation is applied for matrix fatigue cracking and Heywood's formulation is used for fiber strength fatigue degradation. The analysis has been compared with experiment with good agreement. Comparisons were made with Graphite-Epoxy, C/SiC and Nicalon/CAS composite materials. For textile materials, comparisons were made with triaxial braided and plain weave materials under biaxial or uniaxial tension. Fatigue predictions were compared with test data obtained from plain weave C/SiC materials tested at AS&M. Computer codes were developed to perform the analysis. Composite Progressive Failure Analysis for Laminates is contained in the code CPFail. Micromechanics Analysis for Textile Composites is contained in the code MicroTex. Both codes were adapted to run as subroutines for the finite element code ABAQUS and CPFail-ABAQUS and MicroTex-ABAQUS. Graphic user interface (GUI) was developed to connect CPFail and MicroTex with ABAQUS. Xue, David Y. and Shi, Yucheng and Katikala, Madhu and Johnston, William M., Jr. and Card, Michael F. Marshall Space Flight Center CERAMIC MATRIX COMPOSITES; TEXTILES; FATIGUE LIFE; FAILURE ANALYSIS; LAMINATES; MICROMECHANICS; FRACTURE MECHANICS; COMPUTER PROGRAMS; FINITE ELEMENT METHOD; GRAPHICAL USER INTERFACE... Recent Trends in Mechanical Engineering Select Proceedings of ICIME 2020 Springer Nature This book consists of peer-reviewed proceedings from the International Conference on Innovations in Mechanical Engineering (ICIME 2020). The contents cover latest research in all major areas of mechanical engineering, and are broadly divided into five parts: (i) thermal engineering, (ii) design and optimization, (iii) production and industrial engineering, (iv) materials science and metallurgy, and (v) multidisciplinary topics. Different aspects of designing, modeling, manufacturing, optimizing, and processing are discussed in the context of emerging applications. Given the range of topics covered, this book can be useful for students, researchers as well as professionals. Composite Joints and Connections Principles, Modelling and Testing Elsevier The growing use of composites over metals for structural applications has made a thorough understanding of the behaviour of composite joints in various applications essential for engineers, but has also presented them with a new set of problems. Composite joints and connections addresses these differences and explores the design, modelling and testing of bonded and bolted joints and connections. Part one discusses bolted joints whilst part two examines bonded joints. Chapters review reinforcement techniques and applications for composite bolted and bonded joints and investigate the causes and effects of fatigue and stress on both types of joint in various applications and environments. Topics in part one include metal hybridization, glass-reinforced aluminium (GLARE), hybrid fibre metal laminates (FML), glass fibre reinforced polymer (GFRP) and carbon fibre reinforced polymer (CFRP) composites. Topics in part two include calculation of strain energy release rates, simulating fracture and fatigue failure using cohesive zone models, marine and aerospace applications, advanced modelling, stress analysis of bonded patches and scarf repairs. Composite joints and connections is a valuable reference for composite manufacturers and composite component fabricators, the aerospace, automotive, shipbuilding and civil engineering industries and for anyone involved in the joining and repair of composite structures. Explores the design, modelling and testing of bonded and bolted joints and connections Reviews reinforcement techniques and applications for composite bolted and bonded joints Investigates the causes and effects of fatigue and stress on bolted and bonded joints in various applications and environments Multiphysics Modelling and Simulation for Systems Design and Monitoring Proceedings of the Multiphysics Modelling and Simulation for Systems Design Conference, MMSSD 2014, 17-19 December, Sousse, Tunisia Springer This book reports on the state of the art in the field of multiphysics systems. It consists of accurately reviewed contributions to the MMSSD'2014 conference, which was held from December 17 to 19, 2004 in Hammamet, Tunisia. The different chapters, covering new theories, methods and a number of case studies, provide readers with an up-to-date picture of multiphysics modeling and simulation. They highlight the role played by high-performance computing and newly available software in promoting the study of multiphysics coupling effects, and show how these technologies can be practically implemented to bring about significant improvements in the field of design, control and monitoring of machines. In addition to providing a detailed description of the methods and their applications, the book also identifies new research issues, challenges and opportunities, thus providing researchers and practitioners with both technical information to support their daily work and a new source of inspiration for their future research. Proceedings of 5th International Conference on Advanced Manufacturing Engineering and Technologies NEWTECH 2017 Springer This book presents the proceedings from the 5th NEWTECH conference (Belgrade, Serbia, 5-9 June 2017), the latest in a series of high-level conferences that bring together experts from academia and industry in order to exchange knowledge, ideas, experiences, research results, and information in the field of manufacturing. The range of topics addressed is wide, including, for example, machine tool research and in-machine measurements, progress in CAD/CAM technologies, rapid prototyping and reverse engineering, nanomanufacturing, advanced material processing, functional and protective surfaces, and cyber-physical and reconfigurable manufacturing systems. The book will benefit readers by providing updates on key issues and recent progress in manufacturing engineering and technologies and will aid the transfer of valuable knowledge to the next generation of academics and practitioners. It will appeal to all who work or conduct research in this rapidly evolving field. Advances in Materials and Manufacturing Engineering Proceedings of ICAMME 2019 Springer Nature This book gathers outstanding papers presented at the International Conference on Advances in Materials and Manufacturing Engineering (ICAMME 2019), held at KIIT Deemed to be University, Bhubaneswar, India, from 15 to 17 March 2019. It covers theoretical and empirical developments in various areas of mechanical engineering, including

manufacturing, production, machine design, fluid/thermal engineering, and materials. Introduction to Finite Element Analysis and Design John Wiley & Sons Introduces the basic concepts of FEM in an easy-to-use format so that students and professionals can use the method efficiently and interpret results properly Finite element method (FEM) is a powerful tool for solving engineering problems both in solid structural mechanics and fluid mechanics. This book presents all of the theoretical aspects of FEM that students of engineering will need. It eliminates overlong math equations in favour of basic concepts, and reviews of the mathematics and mechanics of materials in order to illustrate the concepts of FEM. It introduces these concepts by including examples using six different commercial programs online. The all-new, second edition of Introduction to Finite Element Analysis and Design provides many more exercise problems than the first edition. It includes a significant amount of material in modelling issues by using several practical examples from engineering applications. The book features new coverage of buckling of beams and frames and extends heat transfer analyses from 1D (in the previous edition) to 2D. It also covers 3D solid element and its application, as well as 2D. Additionally, readers will find an increase in coverage of finite element analysis of dynamic problems. There is also a companion website with examples that are concurrent with the most recent version of the commercial programs. Offers elaborate explanations of basic finite element procedures Delivers clear explanations of the capabilities and limitations of finite element analysis Includes application examples and tutorials for commercial finite element software, such as MATLAB, ANSYS, ABAQUS and NASTRAN Provides numerous examples and exercise problems Comes with a complete solution manual and results of several engineering design projects Introduction to Finite Element Analysis and Design, 2nd Edition is an excellent text for junior and senior level undergraduate students and beginning graduate students in mechanical, civil, aerospace, biomedical engineering, industrial engineering and engineering mechanics. Face-gear Drives: Design, Analysis, and Testing for Helicopter Transmission Applications The use of face-gears in helicopter transmissions was explored. A light-weight, split-torque transmission design utilizing face-gears is described. Face-gear design and geometry were investigated. Topics included tooth generation, limiting inner and outer radii, tooth contact analysis, contact ratio, gear eccentricity, grinding, and structural stiffness. Design charts were developed to determine minimum and maximum face-gear inner and outer radii. An analytical study showed that the face-gear drive is relatively insensitive to gear misalignment with respect to transmission errors, but the tooth contact is affected by misalignment. A method of localizing the bearing contact to permit operation with misalignment was explored. Two new methods for grinding of the face-gear tooth surfaces were also investigated. The proper choice of shaft stiffness enabled good load sharing in the split-torque transmission design. Face-gear experimental studies were also conducted. These tests demonstrated the feasibility of face-gears in high-speed, high-load applications such as helicopter transmissions ... Transmissions (Machine Elements), Gears, Design, Helicopters. Non-smooth Problems in Vehicle Systems Dynamics Proceedings of the Euromech 500 Colloquium Springer Science & Business Media The book combines vehicle systems dynamics with the latest theoretical developments in dynamics of non-smooth systems and numerical analysis of differential-algebraic dynamical systems with discontinuities. These two fields are fundamental for the modelling and analysis of vehicle dynamical systems. The results are also applicable to other non-smooth dynamical systems. Recent Advances in Integrated Design and Manufacturing in Mechanical Engineering Elsevier This book presents recent advances in the integration and the optimization of product design and manufacturing systems. The book is divided into 3 chapters corresponding to the following three main topics : - optimization of product design process (mechanical design process, mass customization, modeling the product representation, computer support for engineering design, support systems for tolerancing, simulation and optimization tools for structures and for mechanisms and robots), -optimization of manufacturing systems (multi-criteria optimization and fuzzy volumes, tooth path generation, machine-tools behavior, surface integrity and precision, process simulation), - methodological aspects of integrated design and manufacturing (solid modeling, collaborative tools and knowledge formalization, integrating product and process design and innovation, robust and reliable design, multi-agent approach in VR environment). The present book is of interest to engineers, researchers, academic staff, and postgraduate students interested in integrated design and manufacturing in mechanical engineering. Reduced-Order Modeling (ROM) for Simulation and Optimization Powerful Algorithms as Key Enablers for Scientific Computing Springer This edited monograph collects research contributions and addresses the advancement of efficient numerical procedures in the area of model order reduction (MOR) for simulation, optimization and control. The topical scope includes, but is not limited to, new out-of-the-box algorithmic solutions for scientific computing, e.g. reduced basis methods for industrial problems and MOR approaches for electrochemical processes. The target audience comprises research experts and practitioners in the field of simulation, optimization and control, but the book may also be beneficial for graduate students alike. Integrated Design and Manufacturing in Mechanical Engineering Proceedings of the 1st IDMME Conference held in Nantes, France, 15-17 April 1996 Springer Science & Business Media This volume contains the selected papers of the first I.D.M.M.E. conference on 'Integrated Design and Manufacturing in Mechanical Engineering', held in Nantes from 15-17 April 1996. Its objective was to discuss the questions related to the definition of the optimal design and manufacturing processes and to their integration through coherent methodologies in adapted environments. The initiative of the Conference and the organization thereof, is mainly due to the efforts of the french PRIMECA group (Pool of Computer Resources for Mechanics) started eight years ago. We were able to attract the international community with the support of the International Institution for Production Engineering Research (C.I.R.P.). The conference brought together two hundred and fifty specialists from around the world. About ninety papers and twenty posters were presented covering three main topics : optimization and evaluation of the product design process, optimization and evaluation of the manufacturing systems and methodological aspects. Proceedings of the 19th Asia Pacific Automotive Engineering Conference & SAE-China Congress 2017: Selected Papers Springer This Proceedings volume gathers outstanding papers submitted to the 19th Asia Pacific Automotive Engineering Conference & 2017 SAE-China Congress, the majority of which are from China - the largest car-maker as well as most dynamic car

market in the world. The book covers a wide range of automotive topics, presenting the latest technical advances and approaches to help technicians solve the practical problems that most affect their daily work. **Design of Ship Hull Structures A Practical Guide for Engineers Springer Science & Business Media** In this book, the four authors show us the condensed experience how to design ship hull structures from a practical viewpoint. In three parts, the book presents the fundamentals, the theory and the application of structural design of hulls. The topics are treated comprehensively with an emphasis on how to achieve reliable and efficient ship structures. The authors have in particular introduced their experiences with the rapid increase of ship sizes as well as the introduction of ship types with a high degree of specialization. The associated early failures of these "new" structures have been analyzed to provide the readers with illustrations why structural design needs to be carried out on several levels in order to ensure that correct loading is applied and that local structural behaviour is properly understood. **Design and Modeling of Mechanical Systems Proceedings of the Fifth International Conference Design and Modeling of Mechanical Systems, CMSM'2013, Djerba, Tunisia, March 25-27, 2013 Springer Science & Business Media** The 5th International Congress on Design and Modeling of Mechanical Systems (CMSM) was held in Djerba, Tunisia on March 25-27, 2013 and followed four previous successful editions, which brought together international experts in the fields of design and modeling of mechanical systems, thus contributing to the exchange of information and skills and leading to a considerable progress in research among the participating teams. The fifth edition of the congress (CMSM'2013), organized by the Unit of Mechanics, Modeling and Manufacturing (U2MP) of the National School of Engineers of Sfax, Tunisia, the Mechanical Engineering Laboratory (MBL) of the National School of Engineers of Monastir, Tunisia and the Mechanics Laboratory of Sousse (LMS) of the National School of Engineers of Sousse, Tunisia, saw a significant increase of the international participation. This edition brought together nearly 300 attendees who exposed their work on the following topics: mechatronics and robotics, dynamics of mechanical systems, fluid structure interaction and vibroacoustics, modeling and analysis of materials and structures, design and manufacturing of mechanical systems. This book is the proceedings of CMSM'2013 and contains a careful selection of high quality contributions, which were exposed during various sessions of the congress. The original articles presented here provide an overview of recent research advancements accomplished in the field mechanical engineering. **Aircraft Landing Gear Design Principles and Practices AIAA** This is the only book available today that covers military and commercial aircraft landing gear design. It is a comprehensive text that will lead students and engineers from the initial concepts of landing gear design through final detail design. The book provides a vital link in landing gear design technology from historical practices to modern design trends, and it considers the necessary airfield interface with landing gear design. The text is backed up by calculations, specifications, references, working examples. **Recent Developments and Innovative Applications in Computational Mechanics Springer Science & Business Media** This Festschrift is dedicated to Professor Dr.-Ing. habil. Peter Wriggers on the occasion of his 60th birthday. It contains contributions from friends and collaborators as well as current and former PhD students from almost all continents. As a very diverse group of people, the authors cover a wide range of topics from fundamental research to industrial applications: contact mechanics, finite element technology, micromechanics, multiscale approaches, particle methods, isogeometric analysis, stochastic methods and further research interests. In summary, the volume presents an overview of the international state of the art in computational mechanics, both in academia and industry. **Neural Networks in the Analysis and Design of Structures Springer** Neural Networks are a new, interdisciplinary tool for information processing. Neurocomputing being successfully introduced to structural problems which are difficult or even impossible to be analysed by standard computers (hard computing). The book is devoted to foundations and applications of NNs in the structural mechanics and design of structures. **Advanced Aerospace Materials Aluminum-Based and Composite Structures Walter de Gruyter GmbH & Co KG** Advanced Aerospace Materials is intended for engineers and students of aerospace, materials, and mechanical engineering. It covers the transition from aluminum to composite materials for aerospace structures and will include essential and advanced analyses used in today's aerospace industries. Various aspects of design, failure and monitoring of structural components will be derived and presented accompanied by relevant formulas and analyses.