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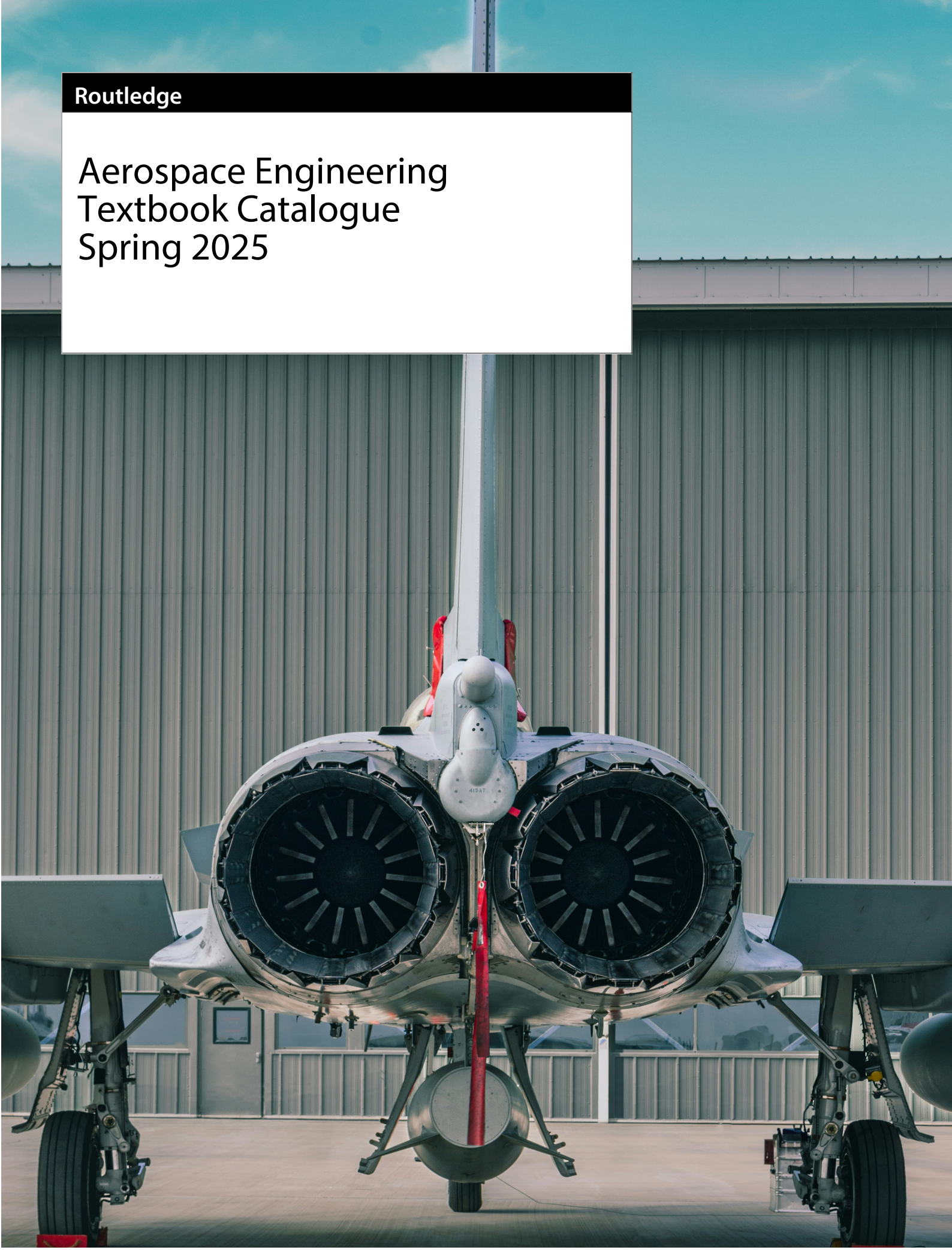
Aerospace Engineering Textbook Catalogue Spring 2025



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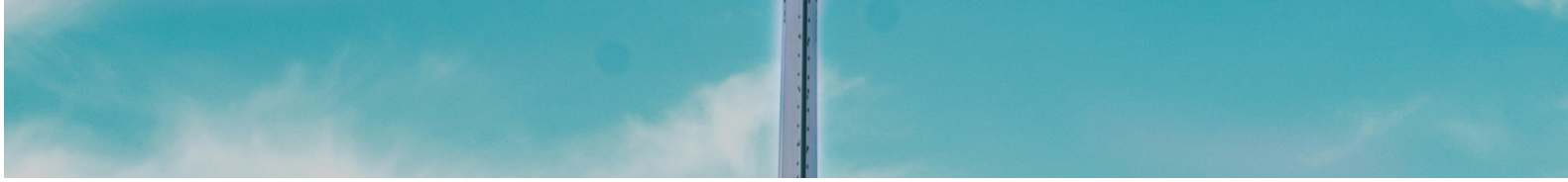

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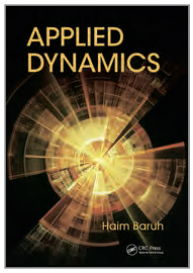
Contents

Applied Dynamics



Haim Baruh Rutgers University, Piscataway, New Jersey, USA

This modern study of engineering dynamics covers an array of topics, from basic principles to two- and three-dimensional motion, general kinematics and kinetics, analytical mechanics, vehicle motion, vibration response, and stability. By including examples from everyday life, the book makes concepts relatable and accessible. However, no effort is made to reduce rigor, as the text provides thorough coverage of the fundamental concepts of Newtonian and Lagrangian mechanics, three-dimensional motion, Kane's equations, as well as the stability and response of dynamical systems.

CRC Press
December 2014 : 876pp
Hb: 978-1-482-25073-2 : **£155**
eBook: 978-0-429-09044-8
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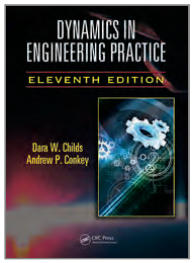
11TH EDITION

Dynamics in Engineering Practice



Dara W. Childs Texas A&M University, College Station, USA**, Andrew P. Conkey** Texas A&M University, Corpus Christi, USA

Series: Applied and Computational Mechanics

Written by a renowned teacher, researcher, and professional consultant in applied dynamics, this book represents a revolutionary approach to modern engineering dynamics analysis—one you can assimilate quickly and easily to get immediate results. The eleventh edition includes a new chapter on Lagrangian Dynamics, and many new and revised examples and chapter problems. The book begins by establishing the premise that most dynamics engineers are developing and analyzing models to predict motion, and that the subject of differential equations is the natural language for dynamics.

CRC Press
April 2015 : 474pp
Hb: 978-1-482-25025-1 : **£145**
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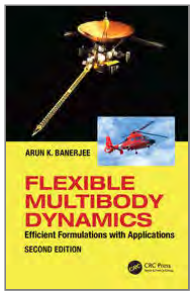
2ND EDITION

Flexible Multibody Dynamics

Efficient Formulations with Applications



Arun Banerjee American Institute of Aeronautics & Astronautics, USA

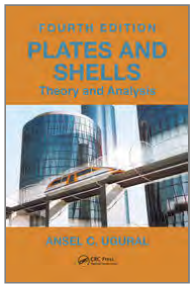
The book uses Kane's method due to its efficiency, and the simple resulting equations it produces in comparison to other methods, and extends it with algorithms such as order-n. Kane's method compensates for the errors of premature linearization, which are often inherent within vibrations modes found in a great deal of public domain software. Describing how to build mathematical models of multibody systems with elastic components, the book applies this to systems such as construction cranes, trailers, helicopters, spacecraft, tethered satellites and underwater vehicles. It also looks at topics such as vibration, rocket dynamics, simulation of beams, deflection and matrix formulation.

CRC Press
August 2024 : 406pp
Pb: 978-1-032-13928-9 : **£45.99**
Hb: 978-1-032-13919-7 : **£91.99**
eBook: 978-1-003-23152-3
* For **full contents** and more information, visit: **www.routledge.com/9781032139289**

4TH EDITION

Plates and Shells

Theory and Analysis, Fourth Edition



Ansel C. Ugural New Jersey Institute of Technology, Newark, USA

Series: Applied and Computational Mechanics

Noted for its practical, accessible approach to senior and graduate-level engineering mechanics, Plates and Shells: Theory and Analysis is a long-time bestselling text on the subjects of elasticity and stress analysis. Many new examples and applications are included to review and support key foundational concepts. Advanced methods are discussed and analyzed, accompanied by illustrations. Problems are carefully arranged from the basic to the more challenging level. Computer/numerical approaches (Finite Difference, Finite Element, MATLAB) are introduced, and MATLAB code for selected illustrative problems and a case study is included.

CRC Press
October 2017 : 618pp
Hb: 978-1-138-03245-3 : **£190**
eBook: 978-1-315-10462-1
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Aerodynamics Principles for Air Transport Pilots

Rose G Davies Massey University, New Zealand

Equipping readers with the ability to analyze the nature of airflow on aircrafts, the book provides comprehensive knowledge of the characteristics of subsonic and supersonic airflow. Readers will gain a clear understanding of the aerodynamic forces acting on an aircraft across a range of speeds and their effects on the aircraft's performance. The book emphasizes the connection between the operating actions in flight and aerodynamic requirements. The content will be of interest to senior undergraduates studying to obtain their Airline Transport Pilot License (ATPL)/Airline Transport Pilot (ATP) certificate, general aviation and air transport pilots, and aircraft maintenance engineers.

CRC Press
April 2020 : 266pp
Hb: 978-0-367-18854-2 : **£115**
eBook: 978-0-429-26115-2
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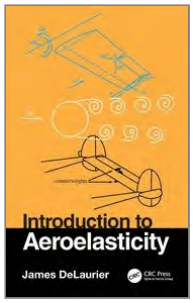
Introduction to Aeroelasticity



James DeLaurier

This book introduces the classical topics of aeroelasticity, beginning with elastic structural modeling and the way that wing and tail structures can diverge and deform due to aerodynamic, inertial, and control-surface deflections. After describing flutter, first with an airfoil example with increasing complexity, and then for flutter predictions of finite wings with and without control surfaces, the book expands into single-degree-of-freedom flutter. It introduces cable "galloping," Aeolian flutter, plunging and pitching stall flutter. The book is intended for senior undergraduate and graduate aerospace engineering students taking introductory courses in Aeroelasticity.

CRC Press
December 2024 : 196pp
Hb: 978-1-032-70906-2 : **£99.99**
eBook: 978-1-032-70909-3
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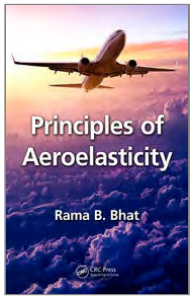
Principles of Aeroelasticity



Rama B. Bhat Concordia University, Montreal, Canada

Aeroelasticity deals with the fluid-structure interaction problems in general, even though the subject traditionally evolved because of the special need in the design of aerospace structures. This book covers aeroelasticity along with some non-aerospace topics. It requires no prior courses on the theory of vibrations. The book provides the background of mechanics and strength of materials as well as solutions of differential equations. It contains extensive examples and case studies regarding aeroelasticity.

CRC Press
April 2016 : 186pp
Hb: 978-1-498-72472-2 : **£80.99**
eBook: 978-1-315-37061-3
* For **full contents** and more information, visit: **www.routledge.com/9781498724722**

Aerospace Project Management Handbook

Edited by **M. Ann Garrison Darrin** The Johns Hopkins University, Laurel, Maryland, USA**, Patrick A. Stadter** The Johns Hopkins University, Laurel, Maryland, USA

The Aerospace Project Management Handbook focuses on space systems, exploring intricacies rarely seen in land-based projects. These range from additional compliance requirements from Earned Value Management requirements and regulations (ESA, NASA, FAA), to criticality and risk factors for systems where repair is impossible. Aerospace project management has become a pathway for success in harsh space environments, as the Handbook demonstrates. With chapters written by experts, this comprehensive book offers a step-by-step approach emphasizing the applied techniques and tools, and is a prime resource for program managers, technical leads, systems engineers, and principle payload leads.

CRC Press
May 2017 : 442pp
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2ND EDITION

Aircraft Performance

An Engineering Approach

Mohammad H. Sadraey Southern New Hampshire University, Manchester, NH

Aircraft Performance: An Engineering Approach, Second Edition introduces flight performance analysis techniques of fixed-wing air vehicles, particularly heavier-than-aircraft. It covers maximum speed, absolute ceiling, rate of climb, range, endurance, turn performance, and takeoff run. The book is intended for senior undergraduate aerospace students taking courses in Aircraft Performance, Flight Dynamics, and Flight Mechanics. The second edition features new content on vertical takeoff and landing, UAV launch, UAV recovery, use of rocket engine as the main engine, range for electric aircraft, electric engine, endurance for electric aircraft, gliding flight, and climb-turn.

CRC Press
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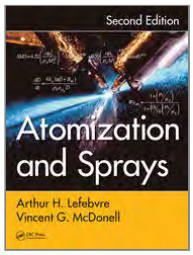
Atomization and Sprays



Arthur H. Lefebvre , Vincent G. McDonell University of California, Irvine, USA

The second edition of this long-time bestseller provides a framework for designing and understanding sprays for a wide array of engineering applications. The text contains correlations and design tools that can be easily understood and used in relating the design of atomizers to the resulting spray behavior. Written to be accessible to readers with a modest technical background, the emphasis is on application rather than in-depth theory. Numerous examples are provided to serve as starting points for using the information in the book. Overall, this is a thoroughly updated edition that still retains the practical focus and readability of the original work by Arthur Lefebvre.

CRC Press
April 2017 : 300pp
Hb: 978-1-498-73625-1 : **£185**
eBook: 978-1-315-12091-1
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Foreign Object Debris and Damage in Aviation

Ahmed F. El-Sayed Zagazig University, Egypt

Foreign Object Debris and Damage in Aviation discusses biological and non-biological Foreign Object Debris (FOD) and associated Foreign Object Damage (FOD) in aviation. Written for aviation industry personnel, aircraft transport and ground operators, and aircraft pilots, readers will learn to manage FOD to guarantee air traffic safety with minimum costs to airlines and airports. Management control for the debris begins at the aircraft design phase, and the book includes numerical analyses for estimating damage caused by strikes. It explores aircraft operation in adverse weather conditions and inanimate FOD management programs for airports, airframe, and engine manufacturers.

CRC Press
October 2024 : 544pp
Pb: 978-0-367-67843-2 : **£55.99**
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3RD EDITION

Safety Management Systems in Aviation

Alan J Stolzer , Robert L Sumwalt , John J Goglia

Safety Management Systems in Aviation, Third Edition presents the quality management underpinnings of SMS, the four components, risk management, reliability engineering, SMS implementation, and the scientific rigor that must be designed into proactive safety. The book is intended for undergraduate aviation students taking Safety Management and Aviation Safety courses. It also functions as a valuable reference tool for SMS practitioners. Including coverage on the cultures of regulatory organizations and expanded coverage on culture assessment, the book considers the nexus between cultural maturity and safety management performance.

CRC Press
April 2023 : 364pp
Pb: 978-1-032-26020-4 : **£54.99**
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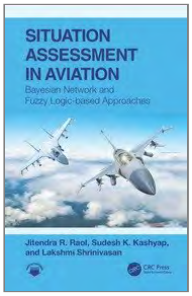
Situation Assessment in Aviation

Bayesian Network and Fuzzy Logic-based Approaches



Jitendra R. Raol Ramaiah Institute of Technology, India**, Sudesh K. Kashyap** CSIR-NAL, India**, Lakshmi Shrinivasan** Ramaiah Institute of Technology, India

Situation Assessment in Aviation new aspects of soft computing technologies for evaluation and assessment of situations in aviation scenarios. It considers using technologies, emerging from: multisensory data fusion (MSDF), Bayesian networks (BN), and fuzzy logic (FL), to assist pilots in their decision-making. The book is intended for aerospace R&D engineers, systems engineers, aeronautical engineers, and aviation training professionals. It will also be useful for aerospace and electrical engineering students taking courses in Air Traffic Management, Aviation Management, Aviation Operations, and Aviation Safety Systems.

CRC Press
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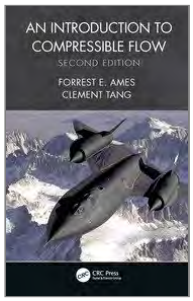
An Introduction to Compressible Flow



Forrest E. Ames University of North Dakota, USA**,**
Clement C. Tang University of North Dakota, USA

An Introduction to Compressible Flow, Second Edition covers the material typical of a single-semester course in compressible flow. The book begins with a brief review of thermodynamics and control volume fluid dynamics, then proceeds to cover isentropic flow, normal shock waves, shock tubes, oblique shock waves, Prandtl-Meyer expansion fans, Fanno-line flow, Rayleigh-line flow, and conical shock waves. The book is intended for senior undergraduate engineering students studying thermal-fluids and practicing engineers in the areas of aerospace or energy conversion. It also provides supplemental coverage of compressible flow material in gas turbine and aerodynamics courses.

CRC Press
July 2023 : 296pp
Pb: 978-0-367-69779-2 : **£45.99**
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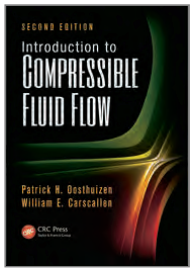
Introduction to Compressible Fluid Flow



Patrick H. Oosthuizen Queen's University, Kingston, Ontario, Canada**, William E. Carscallen** Institute for Aerospace Research, Ottawa, Ontario, Canada

Series: Heat Transfer

Highlighting aspects of compressible fluid dynamics often missed in undergraduate courses, this text reviews background material and lays the foundation for more advanced and specialized courses such as Hypersonic Flow and Low Density Flows. With a wealth of updated and expanded material, this second edition includes numerical results obtained using a modern commercial computer fluid dynamics code, focuses on supporting software and practical applications, provides additional numerical and non-numerical problems, replaces BASIC with MATLAB® routines, and offers COMPROP2 software for compressible flow computation.

CRC Press
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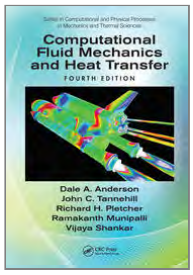
Computational Fluid Mechanics and Heat Transfer



Dale Anderson University of Texas at Arlington, USA**, John C. Tannehill** Iowa State University, USA**, Richard H. Pletcher** Iowa State University, Ames, USA**., Ramakanth Munipalli** HyPerComp, Inc., USA**, Vijaya Shankar** HyPerComp, Inc., USA

Series: Computational and Physical Processes in Mechanics and Thermal Sciences

This book is a fully updated version of the classic text on finite-difference and finite-volume computational methods. As an introductory text for advanced undergraduates and first-year graduate students, the new edition provides the background necessary for solving complex problems in fluid mechanics and heat transfer. Divided into two parts, the text covers essential concepts in the first part, and then moves on to fluids equations in the second. Designed as a valuable resource for practitioners and students, new examples and homework problems have been added to further enhance the student's understanding of the fundamentals and applications.

CRC Press
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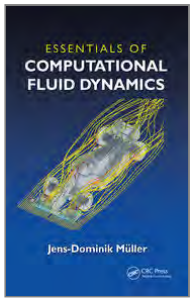
Essentials of Computational Fluid Dynamics



Jens-Dominik Mueller Queen Mary University of London, England, UK

Approaching the material from the viewpoint of a user of a commercial flow package, this book initially limits the description of the mathematics to the level that is strictly needed to make the correct choices when setting up a case in a commercial flow solver. It discusses the sources of errors in FD solutions using simple examples with finite differences, and they are demonstrated with mesh convergence studies. It focuses on the understanding of how the flow physics interact with a typical finite-volume discretization.

CRC Press
November 2015 : 238pp
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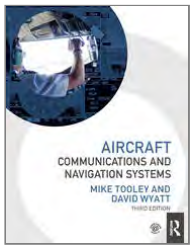
Aircraft Communications and Navigation Systems



Mike Tooley Brooklands College, UK**, David Wyatt** Gama Aviation, UK

This introduces the principles for aircraft maintenance engineering especially for Air Transport Association of America chapters 23/34, and modules 11 and 13 of part-66 of the European Aviation Safety Agency syllabus. It supports any EASA or FAR-147-approved course in aerospace engineering. It includes a new chapter on EMC, with examples of EMI, and covers antenna configuration and matching; the Smith Chart; Virtual Network Analysis; Software Defined Radio technology; precision-area navigation (P-RNAV); phased array radar technology; and ADS-B and FANS mandates. With self-test questions, exercises and multiple choice questions, and interactive materials on the book's website

Routledge
March 2024 : 390pp
Pb: 978-1-032-51808-4 : **£49.99**
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eBook: 978-1-032-62613-0 : **£44.99**
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Crew Resource Management Training

A Competence-based Approach for Airline Pilots

Norman MacLeod Cathay Pacific Airways, Hong Kong, China

The book provides a data-driven approach to real-world CRM applicable to commercial pilot performance. It addresses the shift to a systems-based resilience thinking that aims to understand how worker performance provides a buffer against failure. Airlines, pilots, and aviation industry professionals will benefit from the insights into organisational design and alternative approaches to training. Taking a competence-based approach offers a more coherent, relevant approach to CRM. The book presents relevant, real world examples of the concepts and outlines a change in thinking around pilot performance and interpretation of data that is overdue.

CRC Press
May 2023 : 325pp
Pb: 978-0-367-68732-8 : **£45.99**
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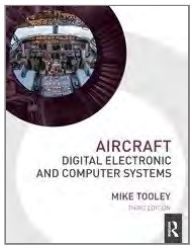
Aircraft Digital Electronic and Computer Systems



Mike Tooley Brooklands College, UK

This text is a thorough introduction to the principles and practice of aircraft digital electronic, avionic and computer systems. It particularly suits maintenance engineer students on an EASA Part-66 or FAR-147 approved course, and those on related City & Guilds, National or Higher National Units, or First/Foundation degree courses in aircraft engineering and similar. New topics in this third edition include integrated modular avionics, cabin systems, and aircraft information systems; together with examples from the latest Airbus and Boeing systems, and updates to data buses and integrated circuits. The companion website www.66web.co.uk offers additional resource material.

Routledge
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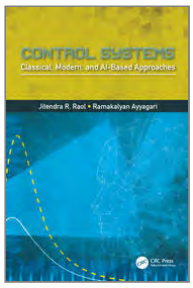
Classical, Modern, and AI-Based Approaches



Jitendra R. Raol Ramaiah Institute of Technology, India**, Ramakalyan Ayyagari** National Institute of Technology (NIT), India

This book provides a broad and comprehensive study of the principles, mathematics, and applications for studying basic control in Mechanical, Electrical, Aerospace, and other engineering disciplines. The text builds a strong mathematical foundation of control theory, introducing linear, non-linear, digital, optimal, and robust control systems, and builds upon that foundation to address applications in emerging areas such as unmanned aicraft systems, robotic systems, and spacecraft. Numerical coverage with MATLAB® is integrated, and numerous examples and exercises are included in each chapter; and MATLAB® code will be available.

CRC Press
July 2019 : 668pp
Hb: 978-0-815-34630-2 : **£140**
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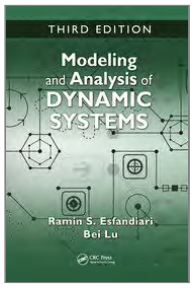
Modeling and Analysis of Dynamic Systems



Ramin S. Esfandiari California State University, Long Beach, USA**, Bei Lu** California State University, Long Beach, USA**, Bei Lu**

Modeling and Analysis of Dynamic Systems, Third Edition introduces MATLAB®, Simulink®, and Simscape™ and then utilizes them to perform symbolic, graphical, numerical, and simulation tasks. Written for senior level courses/modules, the textbook meticulously covers techniques for modeling a variety of engineering systems, methods of response analysis, and introductions to mechanical vibration, and to basic control systems. These features combine to provide students with a thorough knowledge of the mathematical modeling and analysis of dynamic systems. The Third Edition now includes Case Studies, expanded coverage of system identification, and updates to the computational tools included.

CRC Press
February 2018 : 617pp
Hb: 978-1-138-72642-0 : **£120**
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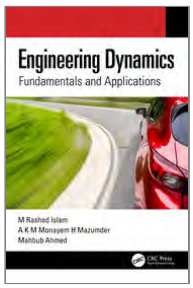
Engineering Dynamics

Fundamentals and Applications



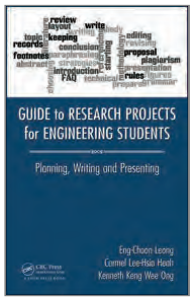
M Rashad Islam , A K M Monayem H Mazumder , Mahbub Ahmed

This textbook is intended for the first course of engineering dynamics for undergraduate students. Engineering dynamics is a rigorous topic that typically involves the intensive use of vector mathematics and calculus. This book, however, uses plain language with less vector mathematics and calculus to introduce these topics of mathematics to students with a high school physics background. Numerous practical examples are provided with their step-by-step worked out solutions, as well as case studies to reflect the interests of new engineering and applied engineering students.

CRC Press
November 2024 : 276pp
Pb: 978-1-032-25561-3 : **£45.99**
Hb: 978-1-032-25557-6 : **£115**
eBook: 978-1-003-28395-9
* For **full contents** and more information, visit: **www.routledge.com/9781032255613**

Guide to Research Projects for Engineering Students

Planning, Writing and Presenting



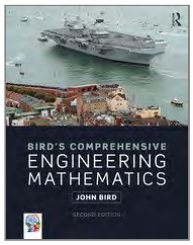
Eng Choon Leong Nanyang Technological University, Singapore**, Carmel Lee-Hsia Heah** Nanyang Technological University, Singapore**, Kenneth Keng Wee Ong** Nanyang Technological University, Singapore

For students embarking on their first research project, sieving through the vast amount of information on the Internet can be a daunting and time consuming task. Research projects require not just understanding of the research methodology, but also complementary skills including information search, technical writing, oral presentation, and software knowledge. This book is written especially for students who need a quick and concise handbook to support them in conducting research so that they can devote most of their time to their research.

CRC Press
July 2015 : 253pp
Pb: 978-1-482-23877-8 : **£39.99**
Hb: 978-1-138-42428-9 : **£190**
eBook: 978-0-429-15768-4
* For **full contents** and more information, visit: **www.routledge.com/9781482238778**

2ND EDITION

Bird's Comprehensive Engineering Mathematics

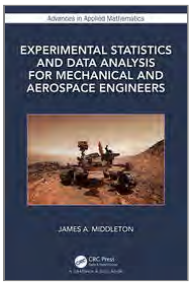


John Bird

This comprehensive textbook covers the key mathematical principles for real-life engineering problems. Along with its companion website it provides simple explanations, supported by 1600 worked problems and over 3200 further problems contained within 384 exercises throughout the text. With 34 Revision tests together with 9 Multiple-choice tests -- and detailed solutions to 3200 further problems.

Routledge
June 2018 : 1226pp
Pb: 978-0-815-37814-3 : **£56.99**
Hb: 978-0-815-37815-0 : **£160**
eBook: 978-1-351-23287-6
* For **full contents** and more information, visit: **www.routledge.com/9780815378143**

Experimental Statistics and Data Analysis for Mechanical and Aerospace Engineers



James A. Middleton

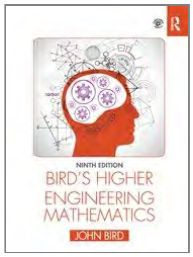
Series: Advances in Applied Mathematics

This text will introduce students to key concepts in probability and statistics with applications in mechanical and aerospace engineering. Emphasis is placed on modelling variation in observations, characterizing its distribution, and making inferences with regards to quality assurance and control. Fitting multivariate models, experimental design and hypothesis testing are all critical skills developed in the course. All topics are developed utilizing data from engineering projects, simulations, and laboratory experiences. MatLab is used throughout.

Chapman & Hall
November 2021 : 586pp
Hb: 978-0-367-55596-2 : **£115**
eBook: 978-1-003-09422-7
* For **full contents** and more information, visit: **www.routledge.com/9780367555962**

9TH EDITION

Bird's Higher Engineering Mathematics

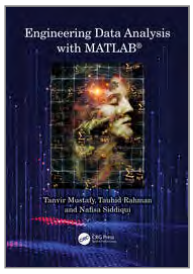


John Bird Defence College of Technical Training, UK

Higher Engineering Mathematics has helped thousands of students to succeed in their exams by developing problem-solving skills, It is supported by over 600 practical engineering examples and applications which relate theory to practice. The extensive and thorough topic coverage makes this a solid text for undergraduate and upper-level vocational courses. Its companion website provides resources for both students and lecturers, including lists of essential formulae, and full solutions to all 2,000 further questions contained in the 277 practice exercises; and illustrations and answers to revision tests for adopting course instructors.

Routledge
March 2021 : 934pp
Pb: 978-0-367-64373-7 : **£49.99**
Hb: 978-0-367-64375-1 : **£115**
eBook: 978-1-003-12422-1
* For **full contents** and more information, visit: **www.routledge.com/9780367643737**

Engineering Data Analysis with MATLAB®



Tanvir Mustafy Military Inst. of Science and Tech, BD**,**
Tauhid Rahman Military Inst. of Science and Tech, BD**,**
Nafisa Siddiqui Military Inst. of Science and Tech, BD

This book provides a concise overview of a variety of techniques for analyzing statistical, scientific, and financial data, using MATLAB® to integrate several approaches to data analysis and statistics. Chapters offer a broad review of computational data analysis, illustrated with many examples and applications. Each chapter combines theoretical concepts with practical MATLAB® applications and includes practice exercises, ensuring a comprehensive understanding of the material. With coverage of both basic and more complex ideas in applied statistics, the book has broad appeal for undergraduate students up to practicing engineers.

CRC Press
December 2024 : 902pp
Pb: 978-1-032-50771-2 : **£71.99**
Hb: 978-1-032-50658-6 : **£145**
eBook: 978-1-003-39958-2
* For **full contents** and more information, visit: **www.routledge.com/9781032507712**

Engineering Statics

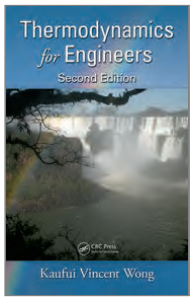
M. Rashad Islam , M. Abdullah Al Faruque , Bahar Zoghi , Sylvester A. Kalevela

Engineering Statics presents the cutting-edge topics in engineering statics, focusing on practical applications knowledge, with numerous real-world examples, practice problems, and case studies throughout. It covers theory concisely and uses plain language and coverage that can be completed in a one-semester course. It also covers the related concepts required to take the Fundamentals of Engineering (FE) exam.

CRC Press
August 2024 : 308pp
Pb: 978-0-367-56521-3 : **£45.99**
Hb: 978-0-367-56106-2 : **£105**
eBook: 978-1-003-09815-7
* For **full contents** and more information, visit: **www.routledge.com/9780367565213**

2ND EDITION

Thermodynamics for Engineers



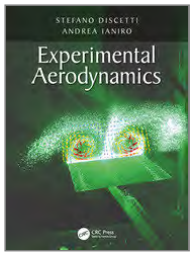
Kaufui Vincent Wong University of Miami, Coral Gables, Florida, USA

Series: Mechanical and Aerospace Engineering Series

This second edition presents a comprehensive treatment of engineering thermodynamics from a classical point of view to prepare engineering students for professional practice. Taking an accessible, straightforward, and cohesive approach, the book exposes readers to the "big picture" of thermodynamics, and its streamlined presentation allows glimpses into important concepts and methods rarely offered by texts at this level. This edition includes a new chapter on thermodynamic property relations and every chapter has updated, expanded problem sets. The author has developed a unique, practical guide to classical thermodynamics that can be used for reference or for a one-semester course.

CRC Press
August 2011 : 450pp
Hb: 978-1-439-84559-2 : **£145**
eBook: 978-0-429-18488-8
* For **full contents** and more information, visit: **www.routledge.com/9781439845592**

Experimental Aerodynamics



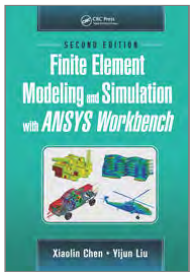
Edited by **Stefano Discetti** Universidad Carlos III de Madrid, Spain**, Andrea Ianiro** Universidad Carlos III de Madrid, Spain

Experimental Aerodynamics provides an up to date study of this key area of aeronautical engineering. The field has undergone significant evolution with the development of 3D techniques, data processing methods, and the conjugation of simultaneous measurements of multiple quantities. Written for undergraduate and graduate students in Aerospace Engineering, the text features chapters by leading experts, with a consistent structure, level, and pedagogical approach. Fundamentals of measurements and recent research developments are introduced, supported by numerous examples, illustrations, and problems. The text will also be of interest to those studying mechanical systems, such as wind turbines.

CRC Press
March 2017 : 484pp
Hb: 978-1-498-70401-4 : **£190**
eBook: 978-1-315-37173-3
* For **full contents** and more information, visit: **www.routledge.com/9781498704014**

2ND EDITION

Finite Element Modeling and Simulation with ANSYS Workbench, Second Edition



Xiaolin Chen Washington State University, Vancouver, USA**, Yijun Liu** University of Cincinnati, Ohio, USA

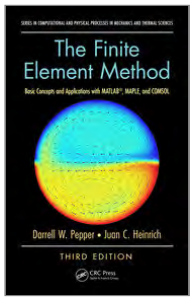
Finite Element Modeling and Simulation with ANSYS Workbench 18, Second Edition, combines finite element theory with real-world practice. Providing an introduction to finite element modeling and analysis for those with no prior experience, and written by authors with a combined experience of 30 years teaching the subject, this text presents FEM formulations integrated with relevant hands-on instructions for using ANSYS Workbench 18. Incorporating the basic theories of FEA, simulation case studies, and the use of ANSYS Workbench in the modeling of engineering problems, the book also establishes the finite element method as a powerful numerical tool in engineering design and analysis.

CRC Press
September 2018 : 472pp
Hb: 978-1-138-48629-4 : **£145**
eBook: 978-1-351-04587-2
* For **full contents** and more information, visit: **www.routledge.com/9781138486294**

3RD EDITION

The Finite Element Method

Basic Concepts and Applications with MATLAB, MAPLE, and COMSOL, Third Edition



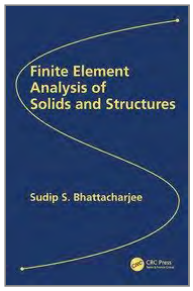
Darrell W. Pepper University of Nevada, Las Vegas, USA**, Juan C. Heinrich** University of New Mexico, Albuquerque, USA

Series: Computational and Physical Processes in Mechanics and Thermal Sciences

The third edition of the book introduces the fundamentals of the finite element method through simple examples and an applications-oriented approach using the latest computational tools. Using the transport equation for heat transfer as the foundation for the governing equations, text demonstrates the versatility of the method of weighted residuals for a wide range of applications including structural analysis and fluid flow. It introduces the boundary element method and meshless, or mesh-free, methods through two additonal chapters. User-friendly computer codes written in MATLAB, MAPLE and FORTRAN are listed.

CRC Press
March 2017 : 628pp
Hb: 978-1-498-73860-6 : **£145**
eBook: 978-1-315-39510-4
* For **full contents** and more information, visit: **www.routledge.com/9781498738606**

Finite Element Analysis of Solids and Structures



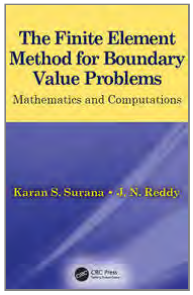
Sudip S. Bhattacharjee

This textbook combines the theory of elasticity (advanced analytical treatment of stress analysis problems) and finite element methods (numerical details of finite element formulations) into one academic course derived from author's teaching, research, and applied work in automotive product development as well as in civil structural analysis. This work contains 12 discrete chapters that can be covered in a single semester university graduate course on linear elastic finite element analysis methods. The book also serves as a reference for practicing engineers working on design assessment and analysis of solids and structures.

CRC Press
October 2024 : 340pp
Pb: 978-1-032-04158-2 : **£45.99**
Hb: 978-0-367-43705-3 : **£110**
eBook: 978-1-003-02784-3
* For **full contents** and more information, visit: **www.routledge.com/9781032041582**

The Finite Element Method for Boundary Value Problems

Mathematics and Computations



Karan S. Surana University of Kansas, USA**, J. N. Reddy**
Texas A&M University, College Station, USA

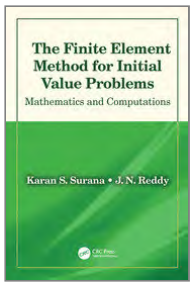
Series: Applied and Computational Mechanics

Written by two well-respected experts in the field, The Finite Element Method for Boundary Value Problems: Mathematics and Computations bridges the gap between applied mathematics and application-oriented studies of FEM. Mathematically rigorous, it uses examples, applications, and illustrations from various areas of engineering, applied mathematics, and the physical sciences. Readers are able to grasp the mathematical foundations of FEM, as well as its versatility; unlike many finite element texts this work is not limited to solid mechanics problems. Based around use of the finite element method for solving boundary values problems (BVPs), the text is organized around three categories of differential operators: self-adjoint, non-self adjoint, and non-linear. These operators are utilized with various methods of approximation, including the Galerkin, Petrov-Galerkin, and other methods.

CRC Press
November 2016 : 824pp
Hb: 978-1-498-78050-6 : **£190**
eBook: 978-1-315-36571-8
* For **full contents** and more information, visit: **www.routledge.com/9781498780506**

The Finite Element Method for Initial Value Problems

Mathematics and Computations

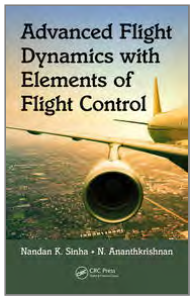


Karan S. Surana University of Kansas, USA**, J. N. Reddy**
Texas A&M University, College Station, USA

Unlike most finite element books that cover time dependent processes (IVPs) in a cursory manner, The Finite Element Method for Initial Value Problems: Mathematics and Computations focuses on the mathematical details as well as applications of space-time coupled and space-time decoupled finite element methods for IVPs. Space-time operator classification, space-time methods of approximation, and space-time calculus of variations are used to establish unconditional stability of space-time methods during the evolution. Space-time decoupled methods are also presented with the same rigor.

CRC Press
October 2017 : 630pp
Hb: 978-1-138-57637-7 : **£195**
eBook: 978-1-351-27000-7
* For **full contents** and more information, visit: **www.routledge.com/9781138576377**

Advanced Flight Dynamics with Elements of Flight Control



Nandan K. Sinha , N. Ananthkrishnan IDEA Research Co. LTD, Pune, India

Advanced Flight Dynamics highlights the revised and corrected aerodynamic modeling. It uses bifurcation and continuation theory, especially the Extended Bifurcation Analysis (EBA) procedure, to blend the subjects of aircraft performance, trim and stability, and flight control into a unified whole. Present book is based exclusively on the use of bifurcation and continuation methods for flight dynamic analysis. Furthermore, it uses the generalized Nonlinear Dynamic Inversion (NDI) methodology to illustrate the fundamental principles of flight control. The NDI methodology when used with the EBA procedure allows us to demonstrate trim and stability in the closed-loop in a convenient manner.

CRC Press
June 2017 : 366pp
Pb: 978-1-138-74603-9 : **£81.99**
Hb: 978-1-498-74604-5 : **£160**
eBook: 978-1-315-15197-7
* For **full contents** and more information, visit: **www.routledge.com/9781138746039**

2ND EDITION

Flight Dynamics, Simulation, and Control

For Rigid and Flexible Aircraft

Ranjan Vepa School of Engineering and Material Science, Queen Mary, University of London, England, UK

Flight Dynamics, Simulation, and Control of Aircraft: For Rigid and Flexible Aircraft, Second Edition explains the basics of nonlinear aircraft dynamics and the principles of control configured aircraft design, as applied to rigid and flexible aircraft, drones, and UAVs. The book is intended for senior undergraduate and graduate engineering students taking Flight Dynamics and Flight Control courses. The book covers the conventional dynamics of rigid aircraft and examines the use of linear and non-linear model-based techniques and their applications to flight control. It also includes an updated Solutions Manual and PowerPoint slides for instructor use.

CRC Press
April 2023 : 642pp
Hb: 978-1-032-21003-2 : **£135**
eBook: 978-1-003-26631-0
* For **full contents** and more information, visit: **www.routledge.com/9781032210032**

Aircraft Design Concepts

An Introductory Course

James DeLaurier

Aircraft Design Concepts: An Introductory Course introduces the principles of aircraft design through a quantitative approach developed from the author's extensive experience in teaching aircraft design. Building on prerequisite courses, the text develops basic design skills and methodologies, while also explaining the underlying physics. Written for senior undergraduate and graduate students taking a single-semester course on Aircraft Design or Aircraft Performance, the book imparts both the technical knowledge and creativity needed for aircraft design. It addresses conventional tail-aft monoplanes, "flying-wing", biplane, and canard configurations.

CRC Press
May 2022 : 581pp
Hb: 978-1-138-03339-9 : **£145**
eBook: 978-1-315-22816-7
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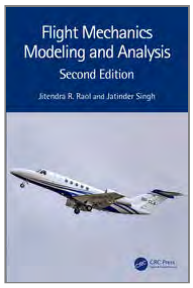
2ND EDITION

Flight Mechanics Modeling and Analysis



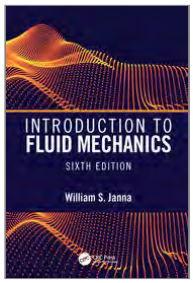
Jitendra R. Raol National Aerospace Laboratories (CSIR-NAL), India**, Jatinder Singh** CSIR-NAL, India

Flight Mechanics Modeling and Analysis comprehensively covers flight mechanics and flight dynamics using a systems approach. The book focuses on applied mathematics and control theory in its discussion of flight mechanics to build a strong foundation for solving design and control problems. The book is intended for senior undergraduate aerospace students taking Aircraft Mechanics, Flight Dynamics & Controls, and Flight Mechanics courses. The second edition includes two new chapters and coverage of aeroservoelastic topics, including concepts, control, and estimation. It also features end-of-chapter exercises and examples with a MATLAB® based approach.

CRC Press
March 2023 : 566pp
Hb: 978-1-032-27609-0 : **£110**
eBook: 978-1-003-29351-4
* For **full contents** and more information, visit: **www.routledge.com/9781032276090**

6TH EDITION

Introduction to Fluid Mechanics, Sixth Edition



William S. Janna University of Memphis, Tennessee, USA

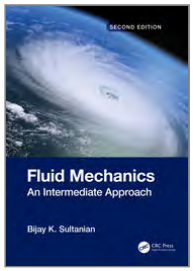
Introduction to Fluid Mechanics, Sixth Edition, is intended for a first course in Fluid Mechanics, as taken by a range of engineering majors. Beginning with dimensions, units, and fluid properties, the text continues with explanation of key equations and coverage of the control-volume approach.

CRC Press
April 2020 : 754pp
Hb: 978-0-367-34127-5 : **£165**
eBook: 978-0-429-32453-6
* For **full contents** and more information, visit: **www.routledge.com/9780367341275**

2ND EDITION

Fluid Mechanics

An Intermediate Approach



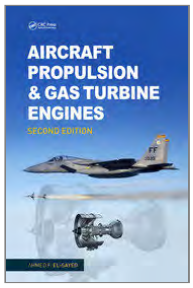
Bijay K. Sultanian University of Central Florida, FL

Fluid Mechanics: An Intermediate Approach helps readers develop a physics-based understanding of complex flows and mathematically model them with accurate boundary conditions for numerical predictions. The book includes numerous worked examples and end-of-chapter problems for student practice. It also discusses how to numerically model compressible flow over all Mach numbers in a variable-area duct, accounting for friction, heat transfer, rotation, internal choking, and normal shock formation. The book is intended for graduate mechanical and aerospace engineering students taking courses in Fluid Mechanics and Gas Dynamics.

CRC Press
January 2025 : 390pp
Hb: 978-1-032-35079-0 : **£110**
eBook: 978-1-003-32519-2
eBook: 978-1-003-32519-2
* For **full contents** and more information, visit: **www.routledge.com/9781032350790**

2ND EDITION

Aircraft Propulsion and Gas Turbine Engines



Ahmed F. El-Sayed Zagazig University, Egypt**, Ahmed F. El-Sayed**

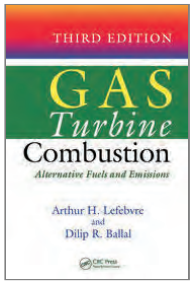
This edition exhibits major and minor changes compared with the first edition. Major changes include the addition of three new topics: namely, piston engines together with integrated propeller coverage, pumps, and rocket propulsion. Rocket propulsion has been added to serve courses that include aerospace topics as well as aircraft. The book is divided into three parts rather than two as in its first edition. The first two parts are devoted to air breathing engines, while the third part covers non-air breathing or rocket engines.

CRC Press
June 2017 : 1476pp
Hb: 978-1-466-59516-3 : **£175**
eBook: 978-1-315-15674-3
* For **full contents** and more information, visit: **www.routledge.com/9781466595163**

3RD EDITION

Gas Turbine Combustion

Alternative Fuels and Emissions, Third Edition

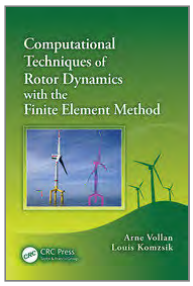


Arthur H. Lefebvre , Dilip R. Ballal

Reflecting the developments in gas turbine combustion technology that have occurred in the last decade, this third edition of a bestseller provides an up-to-date design manual and research reference on the design, manufacture, and operation of gas turbine combustors in applications ranging from aeronautical to power generation. Self-contained and only requiring a moderate amount of prior knowledge of physics and chemistry, the book covers aircraft engines and industrial gas turbines used in power generation. This edition discusses recent emissions regulations, explores how pollutants can be reduced, and includes a new chapter on alternative fuels and emissions.

CRC Press
April 2010 : 558pp
Hb: 978-1-420-08604-1 : **£220**
eBook: 978-0-429-14104-1
* For **full contents** and more information, visit: **www.routledge.com/9781420086041**

Computational Techniques of Rotor Dynamics with the Finite Element Method

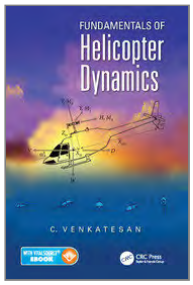


Arne Vollan AeroFEM GmbH, Beckenried, Switzerland**,**
Louis Komzsik Siemens, Cypress, California, USA

This book covers using practical computational techniques for simulating behavior of rotational structures and then using the results to improve fidelity and performance. Applications of rotor dynamics are associated with important energy industry machinery, such as generators and wind turbines, as well as airplane engines and propellers. This book presents techniques that employ the finite element method for modeling and computation of forces associated with the rotational phenomenon. The authors also discuss state-of-the-art engineering software used for computational simulation, including eigenvalue analysis techniques used to ensure numerical accuracy of the simulations.

CRC Press
March 2017 : 296pp
Pb: 978-1-138-07347-0 : **£81.99**
Hb: 978-1-439-84770-1 : **£205**
eBook: 978-0-429-11016-0
* For **full contents** and more information, visit: **www.routledge.com/9781138073470**

Fundamentals of Helicopter Dynamics



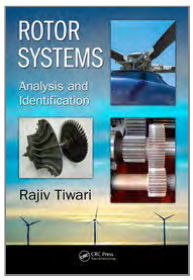
C. Venkatesan

This is an introductory book on helicopter dynamics. The aim of this book is to introduce the students/engineers to the basic principles of helicopter dynamics. The book focuses on three major topics: (i) rotor blade idealization and blade dynamics in flap, lag, and torsion modes; (ii) rotor blade aeroelastic stability (coupled flap-lag and coupled flap-torsion); (iii) coupled rotor-fuselage dynamics. It covers hover, forward flight, and other maneuver flights. Starting from basic physics of rotating systems, the equations of motion have been derived in vector form.

CRC Press
March 2017 : 338pp
Pb: 978-1-138-07438-5 : **£61.99**
Hb: 978-1-466-56634-7 : **£160**
eBook: 978-0-429-19019-3
* For **full contents** and more information, visit: **www.routledge.com/9781138074385**

Rotor Systems

Analysis and Identification

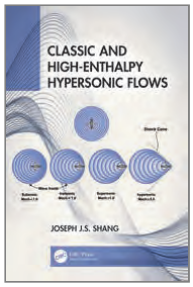


Rajiv Tiwari Department of Mechanical Engineering, Indian Institute of Technology, Guwahati, India

With focus on understanding of rotor dynamics, the book starts with introductory material for finite element methods and moves to linear and non-linear vibrations, continuous systems, vibration measurement techniques, signal processing and error analysis, general identification techniques in engineering systems, including MATLAB analysis of simple rotors.

CRC Press
December 2017 : 1092pp
Hb: 978-1-138-03628-4 : **£190**
eBook: 978-1-315-23096-2
* For **full contents** and more information, visit: **www.routledge.com/9781138036284**

Classic and High-Enthalpy Hypersonic Flows



Joseph J.S. Shang Wright State University, USA

Classic and High-Enthalpy Hypersonic Flows presents a complete look at high-enthalpy hypersonic flow from a review of classic theories to future advances centering around the Born-Oppenheim approximation, potential energy surface, and critical point for transition. The book is intended for graduate students studying advanced aerodynamics and aerospace and mechanical engineers researching high-speed aerospace vehicles and propulsion system, design, and evaluation. The state-of-the art hypersonic flows are defined by a seamless integration of the classic gas dynamic kinetics with nonequilibrium chemical kinetics, quantum transitions, and radiative heat transfer.

CRC Press
April 2023 : 326pp
Hb: 978-1-032-07981-3 : **£100**
eBook: 978-1-003-21236-2
* For **full contents** and more information, visit: **www.routledge.com/9781032079813**

High-Lift Aerodynamics

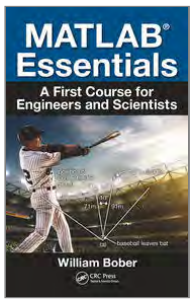
Jochen Wild DLR, Germany

The book presents a detailed look at high-lift aerodynamics from various approaches. It discusses the physical limits of lift generation giving the lift generation potential, explains what is needed for an aircraft to fly safely, and analyzes how to improve its performance during take-off, approach, and landing. The book is intended for graduate students in aerospace programs studying advanced aerodynamics and aircraft design. It serves as a professional reference for practicing aerospace and mechanical engineers who are working on aircraft design issues related to take-off and landing. It includes a special chapter that is dedicated to the aerodynamic design of high-lift systems.

CRC Press
October 2024 : 307pp
Pb: 978-1-032-11559-7 : **£45.99**
Hb: 978-1-032-11546-7 : **£110**
eBook: 978-1-003-22045-9
* For **full contents** and more information, visit: **www.routledge.com/9781032115597**

MATLAB® Essentials

A First Course for Engineers and Scientists



William Bober Florida Atlantic University, Boca Raton, USA

All disciplines of science and engineering use numerical methods for complex problem analysis, due to the highly mathematical nature of the field. Analytical methods alone are unable to solve many complex problems engineering students and professionals confront. Introduction to MATLAB® Programming for Engineers and Scientists examines the basic elements of code writing, and describes MATLAB® methods for solving common engineering problems and applications across the range of engineering disciplines. The text uses a class-tested learning approach and accessible two-color page design to guide students from basic programming to the skills needed for future coursework and engineering practice.

CRC Press
September 2017 : 275pp
Pb: 978-1-138-03237-8 : **£145**
Hb: 978-1-138-56328-5 : **£160**
eBook: 978-1-315-16200-3
* For **full contents** and more information, visit: **www.routledge.com/9781138032378**

2ND EDITION

Aircraft Engineering Principles

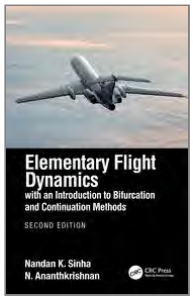
Lloyd Dingle , Mike Tooley Brooklands College, UK

The essential text for anyone studying for licensed A&P mechanic or Aircraft Maintenance Engineering status The book covers modules 1, 2, 3, 4, and 8 of JAR-66/ECAR-66 in full and to a depth appropriate for Aircraft Maintenance Certifying Technicians, and will also be a valuable reference for those taking programmes in JAR-147/ECAR-147 and FAR-147. The necessary mathematics, aerodynamics and electrical principles have been included to meet the requirements of introductory aerospace engineering courses. Numerous written and multiple-choice questions are provided at the end of each chapter to aid learning. Solutions are available to instructors.

Routledge
August 2013 : 624pp
Pb: 978-0-080-97084-4 : **£71.99**
Hb: 978-1-138-42909-3 : **£190**
eBook: 978-0-080-97085-1
* For **full contents** and more information, visit: **www.routledge.com/9780080970844**

2ND EDITION

Elementary Flight Dynamics with an Introduction to Bifurcation and Continuation Methods



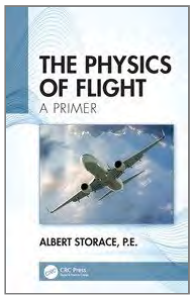
Nandan K. Sinha , N. Ananthkrishnan IDEA Research Co. LTD, Pune, India

This book uses an optimal mix of physical insight and mathematical presentation to illustrate core concepts of professional aircraft flight dynamics. Updated version of the aerodynamic model is presented with the corrected definition of the rate (dynamic) derivatives, supported with examples of real-life airplanes and related data, supported by open-source computational tool. It introduces bifurcation and continuation methods as a tool for flight dynamic analysis. Second edition covers wind effects on aircraft modal dynamics and case studies of an airship dynamics, effects of morphing characteristics on the dynamic modes of a model rigid fixed-wing UAV with added data and solved examples.

CRC Press
September 2023 : 389pp
Pb: 978-0-367-56211-3 : **£59.99**
Hb: 978-0-367-56207-6 : **£120**
eBook: 978-1-003-09680-1
* For **full contents** and more information, visit: **www.routledge.com/9780367562113**

The Physics of Flight

A Primer



Albert Storace The American Society of Mechanical Engineers, United States

The Physics of Flight provides a comprehensive explanatory reference on the basic physics of flight with a clear presentation of the underlying mathematics. It presents a momentum-based explanation of lift without using Bernoulli's theorem. The book is for undergraduate aviation and aerospace students taking courses in Flight Dynamics, Introduction to Flight, and Physics of Flight. Disproving misconceptions, such as identifying centrifugal force experienced in an airplane undergoing maneuvers as a fictitious force, the book does not attribute weightlessness during airplane pitch over or experienced in an airplane performing a parabolic flight path to the effects of free fall.

CRC Press
December 2023 : 84pp
Hb: 978-1-032-48815-8 : **£92.99**
eBook: 978-1-003-39091-6
* For **full contents** and more information, visit: **www.routledge.com/9781032488158**

2ND EDITION

Introduction to Materials Science and Engineering

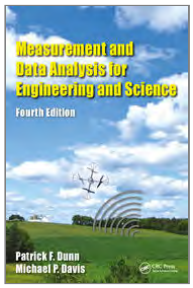
Yip-Wah Chung Northwestern University, Evanston, Illinois, USA**, Monica Kapoor**

Updated to reflect the many societal and technological changes in the field since publication of the first edition, Introduction to Materials Science and Engineering, Second Edition offers an interdisciplinary view, emphasizing the importance of materials to engineering applications, and builds the basis needed to select, modify, and create materials to meet specific criteria. Written for advanced undergraduate students and readers interested in introductory materials science and engineering concepts, this concise textbook provides a strong foundation in MSE and its applications. The textbook offers a solutions manual and PowerPoint lecture slides for adopting professors.

CRC Press
April 2022 : 386pp
Hb: 978-1-032-10144-6 : **£89.99**
eBook: 978-1-003-22344-3 : **£84.99**
* For **full contents** and more information, visit: **www.routledge.com/9781032101446**

4TH EDITION

Measurement and Data Analysis for Engineering and Science



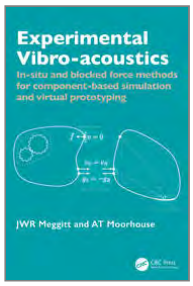
Patrick F Dunn , Michael P. Davis

Measurement and Data Analysis for Engineering and Science, Fourth Edition, provides up-to-date coverage of experimentation methods in science and engineering. This edition adds five new "concept chapters" to introduce major areas of experimentation generally before the topics are treated in detail, to make the text more accessible for undergraduate students. These feature Measurement System Components, Assessing Measurement System Performance, Setting Signal Sampling Conditions, Analyzing Experimental Results, and Reporting Experimental Results. More practical examples, case studies, and a variety of homework problems have been added; and MATLAB and Simulink resources have been updated.

CRC Press
December 2017 : 588pp
Hb: 978-1-138-05086-0 : **£165**
eBook: 978-1-315-16858-6
* For **full contents** and more information, visit: **www.routledge.com/9781138050860**

Experimental Vibro-acoustics

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



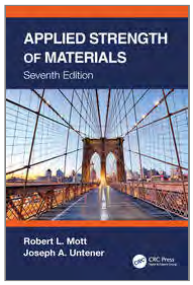
Andrew Moorhouse University of Salford, UK**, Joshua Meggitt** University of Salford, UK

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 : 384pp
Hb: 978-1-032-47971-2 : **£165**
* For **full contents** and more information, visit: **www.routledge.com/9781032479712**

7TH EDITION

Applied Strength of Materials



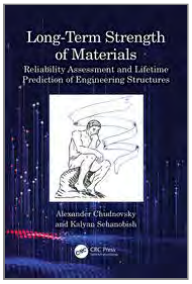
Robert L. Mott University of Dayton, USA**, Joseph A. Untener** University of Dayton, USA

Introducing the theoretical background of the subject, with a strong visual component, the book equips the reader with problem-solving techniques. The updated seventh edition incorporates new technologies, with a pedagogical approach. It emphasizes realistic engineering applications for the analysis and design of structural members. A "Big Picture" section starts each chapter to help students grasp the overall objectives and their application in industrial applications. Step-by-step problem-solving approaches are included throughout the book. While calculus is used sparingly, detailed developments of important design-related formulas are provided.

CRC Press
July 2021 : 1172pp
Pb: 978-1-032-00222-4 : **£65.99**
Hb: 978-0-367-82078-7 : **£165**
eBook: 978-1-003-17320-5
* For **full contents** and more information, visit: **www.routledge.com/9781032002224**

Long-Term Strength of Materials

Reliability Assessment and Lifetime Prediction of Engineering Structures



Alexander Chudnovsky University of Illinois at Chicago, USA**, Kalyan Sehanobish** The Dow Chemical Company, USA

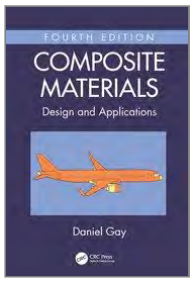
This textbook introduces the thermodynamics of irreversible processes along with entropy to address the time dependency of fracture. Working from observations of structural failure, the book identifies the principal failure types such as brittle damage and ductile failure. It then addresses the life of a structure in a specific environment and load condition, using irreversible thermodynamics and the entropy criterion to address cooperative fracture, and novel statistical fracture mechanics to address solo fracture. The book is ideal for graduate students and design engineers in civil and materials engineering, as well as mechanical and chemical engineering.

CRC Press
August 2023 : 224pp
Pb: 978-1-032-41813-1 : **£49.99**
Hb: 978-1-032-41814-8 : **£135**
eBook: 978-1-003-35984-5
* For **full contents** and more information, visit: **www.routledge.com/9781032418131**

4TH EDITION

Composite Materials

Design and Applications



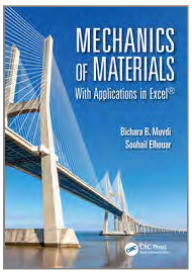
Daniel Gay Institut Clément Ader, University of Toulouse, France

For decades, Composite Materials: Design and Applications has guided readers on the efficient design of structural composite parts and has illustrated challenges encountered in modern engineering practice. The Fourth Edition of this best-seller retains its pedagogical structure, featuring a technical level that rises in difficulty as the text progresses, while allowing each part to be explored independently, but has been updated to mirror recent advances and developments in manufacturing processes and applications. This book serves as a textbook for advanced students studying composite materials design, as well as a handy reference for industry professionals working with composite materials.

CRC Press
September 2022 : 640pp
Hb: 978-1-032-04308-1 : **£130**
eBook: 978-1-003-19578-8
* For **full contents** and more information, visit: **www.routledge.com/9781032043081**

Mechanics of Materials

With Applications in Excel



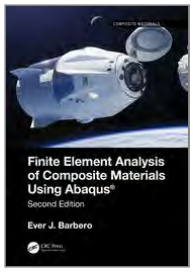
Bichara B. Muvdi Bradley University, Peoria, Illinois, USA**, Souhail Elhouar** Bradley University, Peoria, Illinois, USA

This text covers the fundamentals of the mechanics of materials—or strength of materials—in a clear and easily understandable way, incorporating numerous examples, homework problems, and review problems to ensure comprehension. It also instills practical skills for developing Microsoft® Excel® applications to solve mechanics of materials problems using numerical techniques. The book includes editable Excel spreadsheets representing all the examples featured in the text, PowerPoint® lecture slides, multimedia simulations, graphics files, and a solutions manual with qualifying course adoption.

CRC Press
June 2016 : 723pp
Hb: 978-1-466-57071-9 : **£125**
eBook: 978-1-315-37431-4
* For **full contents** and more information, visit: **www.routledge.com/9781466570719**

2ND EDITION

Finite Element Analysis of Composite Materials using Abaqus®



Ever J. Barbero , Ever J. Barbero West Virginia University, Morgantown, USA

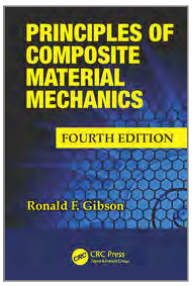
Series: Composite Materials

Developed from the author's course on advanced mechanics of composite materials, Finite Element Analysis of Composite Materials with Abaqus™ shows how powerful finite element tools address practical problems in the structural analysis of composites. This Second Edition updates all examples, sample code, and problems to Abaqus 2020. Aimed at advanced students and professional engineers, this text features 60+ fully developed examples, 80+ end-of-chapter exercises, and 50+ pieces of Abaqus pseudo-code that illustrate solutions to example problems. A companion website offers relevant model files for download, enabling readers to easily reproduce the examples and complete the exercises.

CRC Press
May 2023 : 571pp
Hb: 978-0-367-62145-2 : **£100**
eBook: 978-1-003-10815-3
* For **full contents** and more information, visit: **www.routledge.com/9780367621452**

4TH EDITION

Principles of Composite Material Mechanics



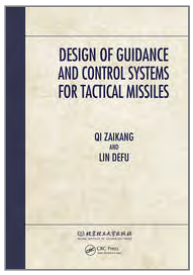
Ronald F. Gibson University of Nevada, Reno, USA

Series: Mechanical Engineering

This book covers a unique blend of classical and modern mechanics of composites technologies. The fourth edition reflects the current state of the art, fresh insight gleaned from the author's ongoing composites research, and pedagogical improvements based on feedback from students, colleagues, and the author's own course notes. New worked-out examples and homework problems are added in most chapters, example problems and homework problems are now integrated within the chapters, and answers to selected homework problems are featured in the back of the book.

CRC Press
February 2016 : 698pp
Hb: 978-1-498-72069-4 : **£130**
eBook: 978-0-429-19058-2
* For **full contents** and more information, visit: **www.routledge.com/9781498720694**

Design of Guidance and Control Systems for Tactical Missiles



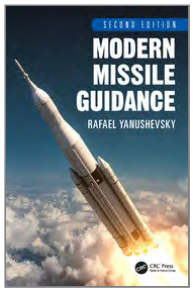
Qi Zaikang , Lin Defu

This book presents a modern, comprehensive study of the latest design methods for tactical missile guidance and control. It analyzes autopilot designs, seeker system designs, guidance laws and theories, and the internal and external disturbances affecting the performance factors of missile guidance control systems. The text combines detailed examination of key theories with practical coverage of methods for advanced missile guidance control systems. It is valuable both for college professors and students, as well as engineers and researchers around the world who work in the area of tactical missile guidance and control.

CRC Press
September 2019 : 254pp
Hb: 978-0-367-26041-5 : **£145**
eBook: 978-0-429-29120-3
* For **full contents** and more information, visit: **www.routledge.com/9780367260415**

2ND EDITION

Modern Missile Guidance



Rafael Yanushevsky Research & Technology Consulting, Bethesda, Maryland, USA

Missile Guidance, Second Edition provides a timely survey of missile control and guidance theory, based on extensive work the author has done using the Lyapunov approach. This new edition also presents the Lyapunov-Bellman approach for choosing optimal parameters of the guidance laws, and direct and inverse optimal problems are considered. This material is important for readers working in the areas of optimization and optimal theory. This edition also contains updated coverage of guidance and control system components, since the efficiency of guidance laws depends on their realization. The text concludes with information on the new generation of intercept systems now in development.

CRC Press
October 2018 : 341pp
Hb: 978-0-815-38486-1 : **£185**
eBook: 978-1-351-20295-4
* For **full contents** and more information, visit: **www.routledge.com/9780815384861**

Mathematical Modelling of Aerospace Dynamic Systems with Practical Applications

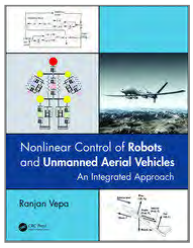
Jitendra R. Raol National Aerospace Laboratories (CSIR-NAL), India**, V.P.S. Naidu**

This book provides mathematical models for several aerospace dynamic systems: aircraft, rotorcraft, missile, UAVs, MAVs, autonomous underwater vehicles (AUWVs), and satellite-coordinate systems. It discusses numerous applications in aircraft/helicopter parameter estimation, guidance and navigation of these vehicles, underwater object search, aerial terrain mapping, and satellite orbit determination. The book is intended for senior undergraduate mechanical and aerospace engineering students taking courses in Aerospace Systems and Dynamics, Flight Dynamics and Control, and Dynamical Systems and Estimation.

CRC Press
March 2025 : 336pp
Hb: 978-1-032-55275-0 : **£110**
eBook: 978-1-003-42986-9
* For **full contents** and more information, visit: **www.routledge.com/9781032552750**

Nonlinear Control of Robots and Unmanned Aerial Vehicles

An Integrated Approach

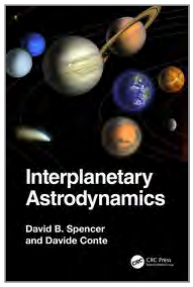


Ranjan Vepa School of Engineering and Material Science, Queen Mary, University of London, England, UK

Nonlinear Control of Robots and Unmanned Aerial Vehicles: An Integrated Approach provides a step-by step-approach to designing control systems for robot manipulators and unmanned aerial vehicles (UAVs). Integration of sophisticated control technology is vital to the design of new emerging mobile vehicles, such as personal air vehicles (PAVs) and the next generation of UAVs. Similar technologies are used in robotic manipulators, such as the PUMA range now used in automated manufacturing systems. This book shows the similarities within unmanned aerial vehicle and robotic system design, and will serve as a vital resource in the design of new products and systems.

CRC Press
August 2016 : 562pp
Hb: 978-1-498-76704-0 : **£190**
eBook: 978-1-315-36737-8
* For **full contents** and more information, visit: **www.routledge.com/9781498767040**

Interplanetary Astrodynamics



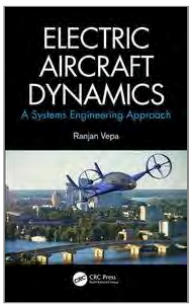
David B. Spencer The Pennsylvania State University, USA **, Davide Conte** Embry-Riddle Aeronautical University, USA

Focusing on the orbital mechanics tools and techniques necessary to design, predict, and guide a trajectory of a spacecraft traveling between two or more bodies in a solar system, this book covers the dynamical theory necessary for describing the motion of bodies in space, examines the N-body problem, and shows applications using this theory for designing interplanetary missions. Written for instructors and graduate students in Aerospace and Mechanical Engineering, the book provides advanced details of interplanetary trajectory design, navigation, and targeting.

CRC Press
May 2023 : 402pp
Hb: 978-0-367-75970-4 : **£94.99**
eBook: 978-1-003-16507-1
* For **full contents** and more information, visit: **www.routledge.com/9780367759704**

Electric Aircraft Dynamics

A Systems Engineering Approach



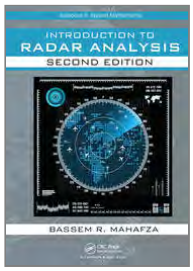
Ranjan Vepa Queen Mary, University of London, UK

This book surveys the engineering sciences that underpin the dynamics, control, monitoring, and design of electric propulsion systems for aircraft. It is structured to appeal to readers with a science and engineering background, and is modular in format. Taken as a whole, this ground-breaking text equips professional and student readers with a solid foundation for advanced work in this emerging field. The closely linked chapters present descriptive material and relevant mathematical modeling techniques, followed by numerous design exercises that cover the assembly of systems that deliver, synergistically, the desired performance outcomes.

CRC Press
January 2022 : 350pp
Pb: 978-0-367-51358-0 : **£54.99**
Hb: 978-0-367-19424-6 : **£140**
eBook: 978-0-429-20231-5
* For **full contents** and more information, visit: **www.routledge.com/9780367513580**

2ND EDITION

Introduction to Radar Analysis



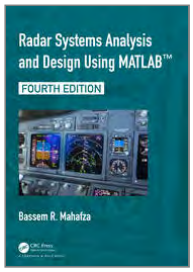
Bassem R. Mahafza

The 2nd Edition of this popular textbook is a major revision. It is written within the context of communication theory as well as the theory of signals and noise. Part I bridges the gap between communication theory, signals and noise and radar system analysis. Part II is on radar subsystems and associated topics and includes most common radar signal processing techniques, the theory of radar detection, coherent and non-coherent integration, and radar clutter analysis. Part III of this Edition will analyze special topics in radar systems. Many new exercises are included and the author provides comprehensive easy to follow mathematical derivations of all key equations and formulas.

CRC Press
January 2023 : 460pp
Pb: 978-1-032-47646-9 : **£46.99**
Hb: 978-1-498-76107-9 : **£145**
eBook: 978-1-315-11934-2
* For **full contents** and more information, visit: **www.routledge.com/9781032476469**

4TH EDITION

Radar Systems Analysis and Design Using MATLAB



Bassem R. Mahafza

Reorganized, expanded, and updated, the 4th edition, continues to help graduate students and engineers understand the many issues involved in radar systems design and analysis. It presents a top-level comprehensive overview of radar, radar components and radar functionality in the context of radar signal or waveform. Additionally, dedicated MATLAB functions/programs will be developed for each chapter to further enhance the understanding of the theory, and provide a source for establishing radar system design requirements.

Chapman & Hall
March 2022 : 690pp
Hb: 978-0-367-50793-0 : **£115**
eBook: 978-1-003-05128-2
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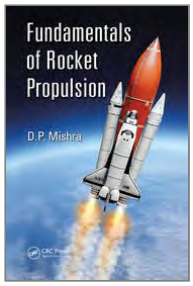
Fundamentals of Rocket Propulsion



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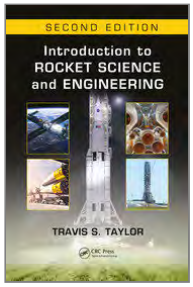

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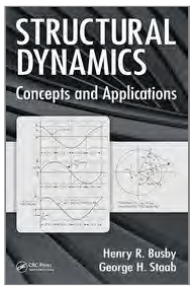

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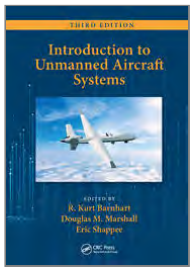

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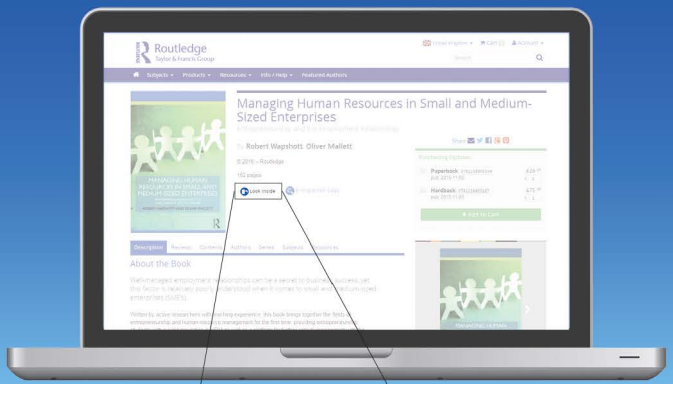

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