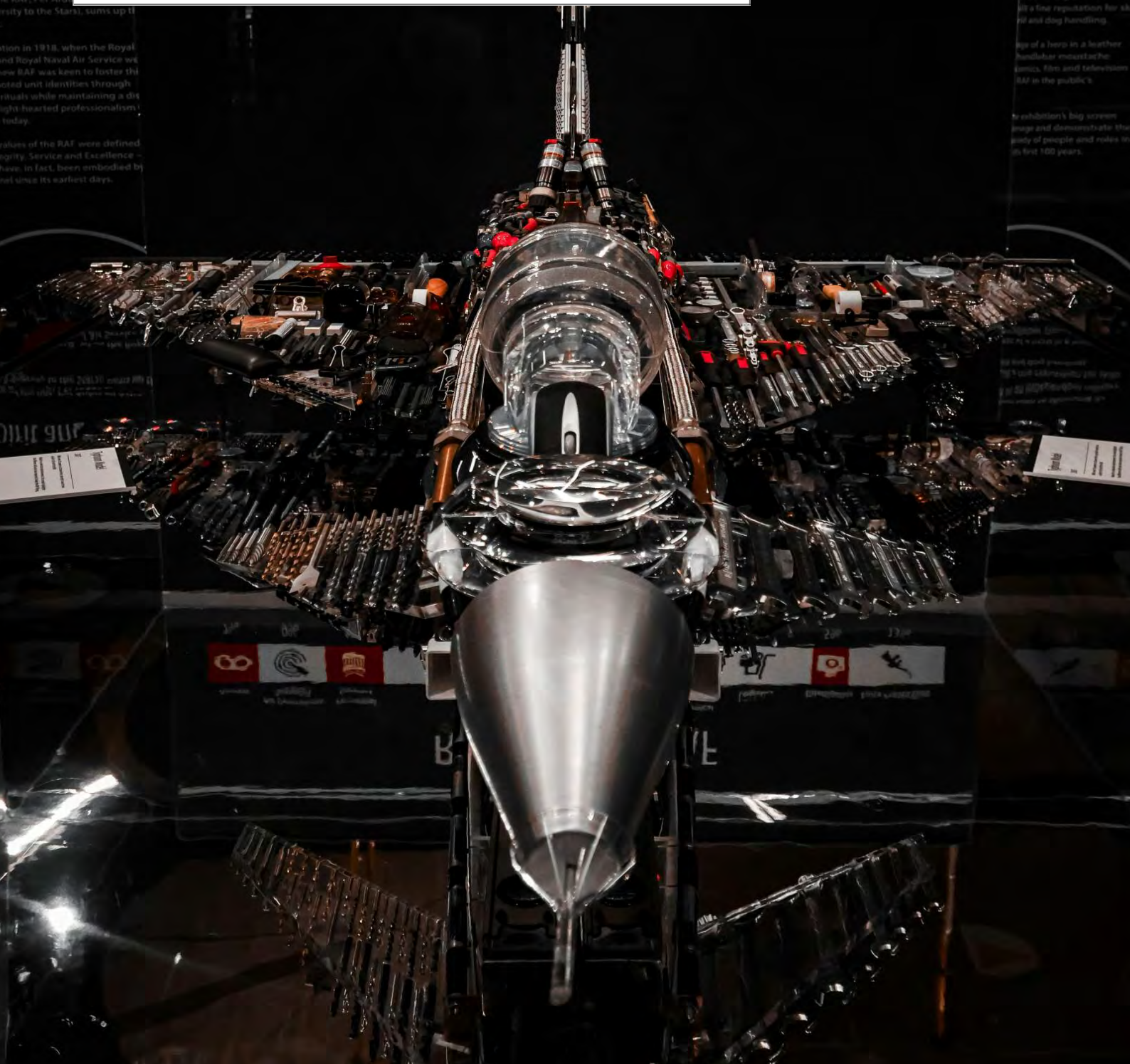


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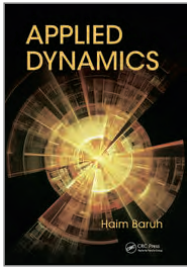
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## Applied Dynamics



**Haim Baruh** Rutgers University, Piscataway, New Jersey, USA

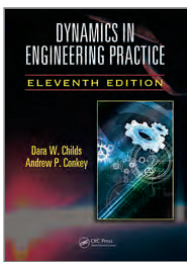
This modern study of engineering dynamics covers an array of topics, from basic principles to two- and three-dimensional motion, general kinematics and kinetics, analytical mechanics, vehicle motion, vibration response, and stability. By including examples from everyday life, the book makes concepts 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 : £165  
eBook: 978-0-429-09044-8

\* For full contents and more information, visit: [www.routledge.com/9781482250732](http://www.routledge.com/9781482250732)

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.

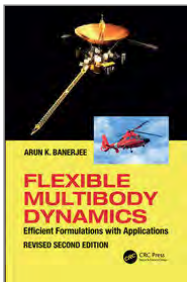
CRC Press  
April 2015 : 474pp  
Hb: 978-1-482-25025-1 : £155  
eBook: 978-0-429-16210-7

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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.

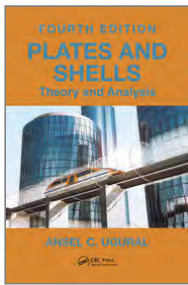
CRC Press  
August 2024 : 406pp  
Pb: 978-1-032-13928-9 : £48.99  
Hb: 978-1-032-13919-7 : £105  
eBook: 978-1-003-23152-3

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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

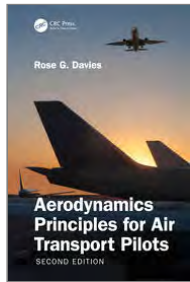
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eBook: 978-1-315-10462-1

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2ND EDITION

## Aerodynamics Principles for Air Transport Pilots



**Rose G Davies** Massey University, New Zealand

This book provides a thorough understanding of the forces acting on an aircraft across a range of speeds and their effects on the aircraft's performance. The second edition features new content on aircraft performance as a part of the applications of analysis of aerodynamic forces, new sections on features of aerofoil on aerodynamic forces, and force feedback on control of PCATD. The book is intended for senior undergraduates studying to obtain their Airline Transport Pilot License (ATPL)/Airline Transport Pilot (ATP) certificate. Aviation and air transport pilots and aircraft maintenance engineers will also benefit from the content.

CRC Press

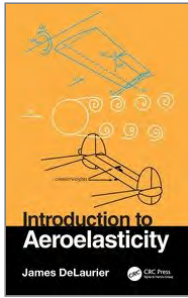
September 2025 : 262pp

Hb: 978-1-032-69286-9 : **£130**

eBook: 978-1-032-69288-3

\* For full contents and more information, visit: [www.routledge.com/9781032692869](http://www.routledge.com/9781032692869)

## 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

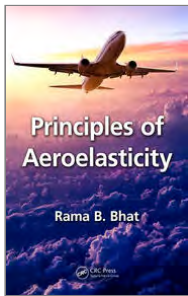
December 2024 : 196pp

Hb: 978-1-032-70906-2 : £105

eBook: 978-1-032-70909-3

\* For full contents and more information, visit: [www.routledge.com/9781032709062](http://www.routledge.com/9781032709062)

## 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 : £86.99

eBook: 978-1-315-37061-3

\* For full contents and more information, visit: [www.routledge.com/9781498724722](http://www.routledge.com/9781498724722)

## Aerospace Project Management Handbook



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

Hb: 978-1-498-77652-3 : **£205**

eBook: 978-1-315-15488-6

\* For full contents and more information, visit: [www.routledge.com/9781498776523](http://www.routledge.com/9781498776523)

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

July 2023 : 692pp

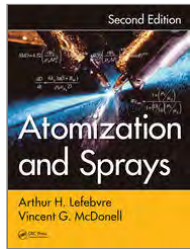
Hb: 978-1-032-24515-7 : £145

eBook: 978-1-003-27906-8

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2ND EDITION

## 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 : £195

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 : **£58.99**  
Hb: 978-0-367-67841-8 : **£170**  
eBook: 978-1-003-13308-7

\* For full contents and more information, visit: [www.routledge.com/9780367678432](http://www.routledge.com/9780367678432)

3RD EDITION

## Safety Management Systems in Aviation



**Alan J Stolzer , Robert L Sumwalt , John J Goglia**

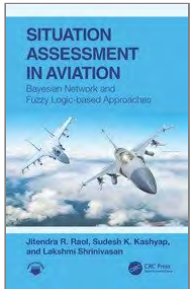
Safety Management Systems in Aviation, Third Edition presents the quality management underpinnings of SMS, the four components, risk management, reliability engineering, SMS implementation, and the scientific rigor that must be designed into proactive safety. The book is intended for undergraduate aviation 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 : **£57.99**  
Hb: 978-1-032-26021-1 : **£155**  
eBook: 978-1-003-28612-7

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## Situation Assessment in Aviation

Bayesian Network and Fuzzy Logic-based Approaches



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

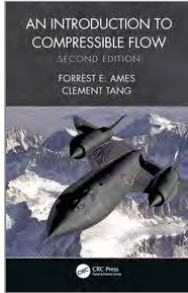
Situation Assessment in Aviation new aspects of soft computing technologies for evaluation and assessment of situations in aviation scenarios. It considers using technologies, emerging from: multisensory data fusion (MSDF), Bayesian networks (BN), and fuzzy logic (FL), to assist pilots in their decision-making. 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  
February 2024 : 434pp  
Hb: 978-1-032-44093-4 : **£175**  
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**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 : £48.99

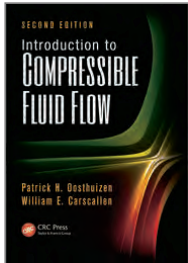
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eBook: 978-1-003-04294-5

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2ND EDITION

## 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

July 2013 : 580pp

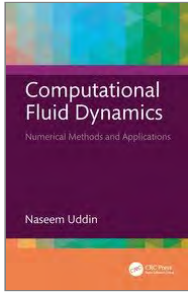
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**Naseem Uddin** Universiti Teknologi Brunei

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CRC Press

February 2026 : 666pp

Hb: 978-1-041-12136-7 : £125

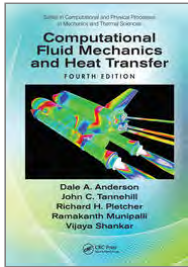
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**Dale Anderson** University of Texas at Arlington, USA,  
**John C. Tannehill** Iowa State University, Ames, USA,  
**Richard H. Pletcher** Iowa State University, Ames, USA,  
**Ramakanth Munipalli** HyPerComp, Inc., USA, **Vijaya Shankar** HyPerComp,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

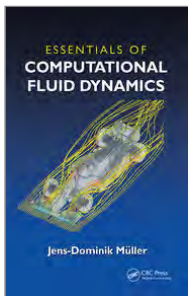
December 2020 : 974pp

Hb: 978-0-815-35712-4 : £155

eBook: 978-1-351-12402-7

\* For full contents and more information, visit: [www.routledge.com/9780815357124](http://www.routledge.com/9780815357124)

## Essentials of Computational Fluid Dynamics



**Jens-Dominik Müller** 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

Pb: 978-1-482-22730-7 : £115

Hb: 978-1-138-40130-3 : £195

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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 : **£52.99**

Hb: 978-1-032-53415-2 : **£145**

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**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](http://www.66web.co.uk) offers additional resource material.

Routledge

July 2022 : 412pp

Pb: 978-1-032-10480-5 : **£51.99**

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## Control Systems

Classical, Modern, and AI-Based Approaches



**Jitendra R. Raol** Ramaiah Instof Tech, 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 aircraft 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

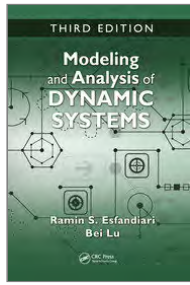
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Modeling and Analysis of Dynamic Systems, Third Edition introduces MATLAB®, Simulink®, and Simscape™ and then utilizes them to perform symbolic, graphical, numerical, and simulation tasks. Written for senior level courses/modules, the textbook meticulously 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

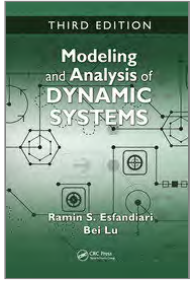
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## Modeling and Analysis of Dynamic Systems



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

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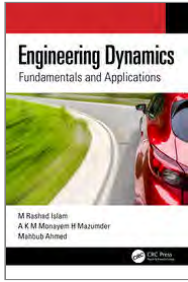
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**M Rashad Islam , A K M Monayem H Mazumder ,  
Mahbub Ahmed**

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CRC Press

November 2024 : 276pp

Pb: 978-1-032-25561-3 : **£48.99**

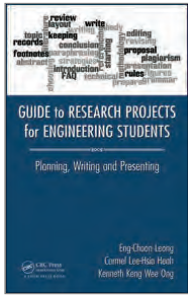
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**Eng Choon Leong** Nanyang Technological University, Singapore, **Carmel Lee-Hsia Heah** Nanyang Technological University, Singapore, **Kenneth Keng Wee Ong** Nanyang Technological University, Singapore

For students embarking on their first research project, sifting 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 : £41.99

Hb: 978-1-138-42428-9 : £200

eBook: 978-0-429-15768-4

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CRC Press

November 2025 : 271pp

Pb: 978-1-032-84374-2 : £47.99

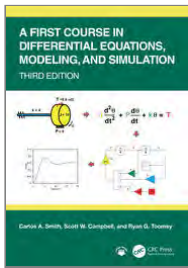
Hb: 978-1-032-84375-9 : £160

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**Carlos A. Smith** University of South Florida, Tampa, USA,  
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This textbook shows how differential equations arise from applying basic physical principles and experimental observations to engineering systems. Avoiding overly theoretical explanations, the textbook also discusses classical and Laplace transform methods for obtaining the analytical solution of differential equations. In addition, the authors explain how to solve sets of differential equations where analytical solutions cannot easily be obtained. Incorporating valuable suggestions from mathematicians and mathematics professors, the Third Edition provides students with a practical understanding of how to apply differential equations in modern engineering and science.

CRC Press  
September 2025 : 534pp  
Hb: 978-1-041-02421-7 : **£94.99**  
eBook: 978-1-003-61916-1

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## A Mathematics Boot Camp for Science and Engineering Students



**Ying Ma**

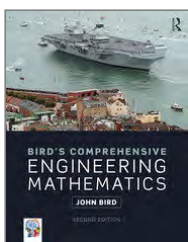
Many students have difficulty applying mathematical techniques to solve problems in science and engineering, even after completing Calculus I and II. Students who are beginning core coursework in their field of study often need additional guidance on practicing, learning, and improving their problem-solving skills for application. This book offers a solution to this issue and is specifically designed to address common errors in mathematical problem-solving for undergraduate science and engineering students. This concise and practical text offers "basic training" in mathematical problem-solving skills for undergraduate students in science and engineering disciplines.

CRC Press  
March 2025 : 323pp  
Pb: 978-1-032-44294-5 : **£56.99**  
Hb: 978-1-032-44295-2 : **£130**  
eBook: 978-1-003-37148-9

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2ND EDITION

## Bird's Comprehensive Engineering Mathematics



**John Bird**

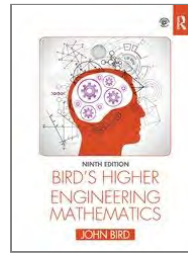
This comprehensive textbook covers the key mathematical principles for real-life engineering problems. Along with its companion website it provides simple explanations, supported by 1600 worked problems and over 3200 further problems contained within 384 exercises throughout the text. With 34 Revision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

Routledge  
June 2018 : 1226pp  
Pb: 978-0-815-37814-3 : **£59.99**  
Hb: 978-0-815-37815-0 : **£170**  
eBook: 978-1-351-23287-6

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9TH EDITION

## Bird's Higher Engineering Mathematics



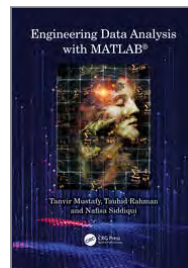
**John Bird** Defence College of Technical Training, UK

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 : **£52.99**  
Hb: 978-0-367-64375-1 : **£125**  
eBook: 978-1-003-12422-1

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## Engineering Data Analysis with MATLAB®



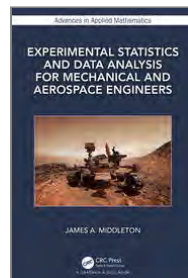
**Tanvir Mustafy** Military Inst. of Science and Tech, BD,  
**Tauhid Rahman** Military Inst. of Science and Tech, BD,  
**Nafisa Siddiqui** Military Inst. of Science and Tech, BD

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 : **£75.99**  
Hb: 978-1-032-50658-6 : **£155**  
eBook: 978-1-003-39958-2

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## Experimental Statistics and Data Analysis for Mechanical and Aerospace Engineers



**James A. Middleton**

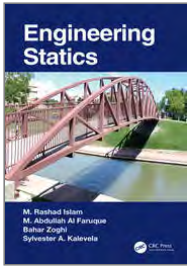
*Series: Advances in Applied Mathematics*

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 : **£125**  
eBook: 978-1-003-09422-7

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## 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 : **£48.99**

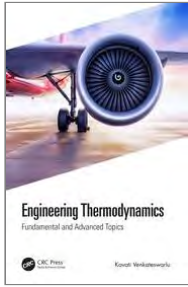
Hb: 978-0-367-56106-2 : **£125**

eBook: 978-1-003-09815-7

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## Engineering Thermodynamics

Fundamental and Advanced Topics



**Kavati Venkateswarlu** RAK Research and Innovation Center, American University of Ras Al Khaimah", Ras Al Khaimah, United Arab Emirates.

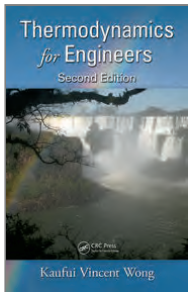
The proposed textbook covers fundamental and advanced concepts of engineering thermodynamics with the help of pedagogical features including solved problems and unsolved exercises. It presents detailed discussion of vapor power cycles including reheat Rankine cycle, regenerative Rankine cycle and Carnot vapor cycle. It will be a valuable resource for senior undergraduate and graduate students in the field of mechanical engineering, civil engineering and aerospace engineering.

CRC Press  
October 2024 : 487pp  
Pb: 978-0-367-65210-4 : **£54.99**  
Hb: 978-0-367-64628-8 : **£155**  
eBook: 978-1-003-12836-6

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2ND EDITION

## Thermodynamics for Engineers



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

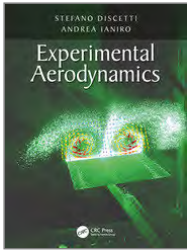
*Series: Mechanical and Aerospace Engineering Series*

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 : **£155**  
eBook: 978-0-429-18488-8

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## 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

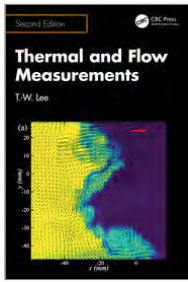
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CRC Press

December 2025 : 386pp

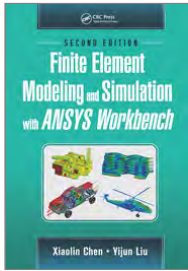
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CRC Press

September 2018 : 472pp

Hb: 978-1-138-48629-4 : £155

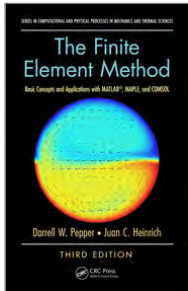
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The third edition of the book introduces the fundamentals of the finite element method through simple examples and an applications-oriented approach using the latest computational tools. Using the transport equation for heat transfer as the foundation 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 additional chapters. User-friendly computer codes written in MATLAB, MAPLE and FORTRAN are listed.

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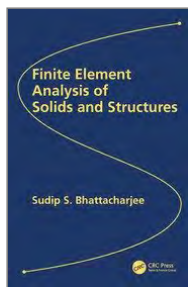
March 2017 : 628pp

Hb: 978-1-498-73860-6 : £155

eBook: 978-1-315-39510-4

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## Finite Element Analysis of Solids and Structures



**Sudip S. Bhattacharjee**

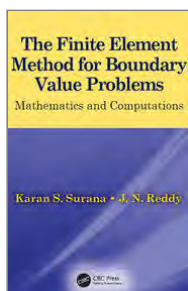
This textbook combines the theory of elasticity (advanced analytical treatment of stress analysis problems) and finite element methods (numerical details of finite element formulations) into one academic course derived from author's teaching, research, and applied work in automotive product development 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 : £48.99  
Hb: 978-0-367-43705-3 : £125  
eBook: 978-1-003-02784-3

\* For full contents and more information, visit: [www.routledge.com/9781032041582](http://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*

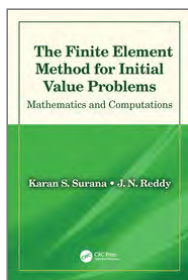
Written by two well-respected experts in the field, *The Finite Element Method for Boundary Value Problems: Mathematics and Computations* bridges the gap between applied mathematics and application-oriented studies of FEM. Mathematically rigorous, it uses examples, applications, and illustrations from 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 value 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 : £200  
eBook: 978-1-315-36571-8

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## 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 : £205  
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## 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 : **£86.99**

Hb: 978-1-498-74604-5 : **£170**

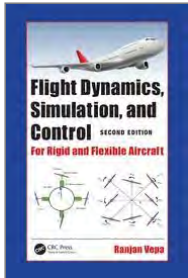
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## Flight Dynamics, Simulation, and Control

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 : **£145**

eBook: 978-1-003-26631-0

\* For full contents and more information, visit: [www.routledge.com/9781032210032](http://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 2025 : 581pp

Pb: 978-1-032-11104-9 : **£52.99**

Hb: 978-1-138-03339-9 : **£155**

eBook: 978-1-315-22816-7

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**Jitendra R. Raol** Ramaiah Instof Tech, India, **Jatinder Singh** CSIR-NAL, India

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CRC Press

March 2023 : 566pp

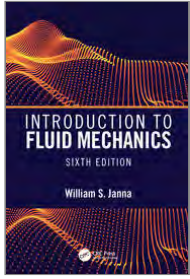
Hb: 978-1-032-27609-0 : **£120**

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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 : £175

eBook: 978-0-429-32453-6

\* For full contents and more information, visit: [www.routledge.com/9780367341275](http://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

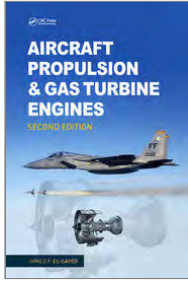
Hb: 978-1-032-35079-0 : £120

eBook: 978-1-032-88318-2 : £99.99

\* For full contents and more information, visit: [www.routledge.com/9781032350790](http://www.routledge.com/9781032350790)

2ND EDITION

## Aircraft Propulsion and Gas Turbine Engines



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

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.

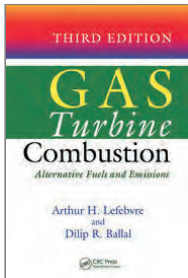
CRC Press  
June 2017 : 1476pp  
Hb: 978-1-466-59516-3 : £185  
eBook: 978-1-315-15674-3

\* For full contents and more information, visit: [www.routledge.com/9781466595163](http://www.routledge.com/9781466595163)

3RD EDITION

## Gas Turbine Combustion

Alternative Fuels and Emissions, Third Edition



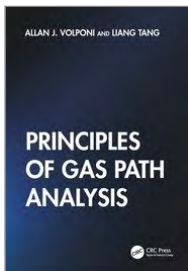
**Arthur H. Lefebvre, Dilip R. Ballal**

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 : £235  
eBook: 978-0-429-14104-1

\* For full contents and more information, visit: [www.routledge.com/9781420086041](http://www.routledge.com/9781420086041)

## Principles of Gas Path Analysis



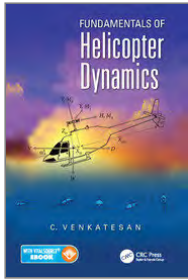
**Allan J. Volponi, Liang Tang**

Principles of Gas Path Analysis offers a self-contained reference of the concept and theory of Gas Path Analysis (GPA), as both a diagnostic and prognostic methodology for gas turbine engines. It provides a chronological account of the methodology as it evolved over the past 50 years. The text further introduces essential parameter corrections important for understanding the foundational principles of GPA. This book is intended for professional engineers engaged in the gas turbine industry and engine health management, including aircraft operators and maintainers. It will also benefit researchers studying gas turbine engine diagnostics and prognostics.

CRC Press  
December 2025 : 448pp  
Hb: 978-1-041-09267-4 : £170  
eBook: 978-1-003-64927-4

\* For full contents and more information, visit: [www.routledge.com/9781041092674](http://www.routledge.com/9781041092674)

## 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 : £66.99

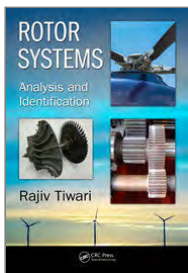
Hb: 978-1-466-56634-7 : £170

eBook: 978-0-429-19019-3

\* For full contents and more information, visit: [www.routledge.com/9781138074385](http://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

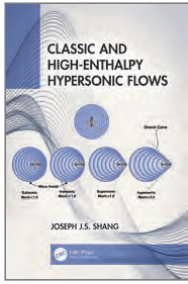
December 2017 : 1092pp

Hb: 978-1-138-03628-4 : £200

eBook: 978-1-315-23096-2

\* For full contents and more information, visit: [www.routledge.com/9781138036284](http://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-Oppenheimer 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 : **£105**

eBook: 978-1-003-21236-2

\* For full contents and more information, visit: [www.routledge.com/9781032079813](http://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

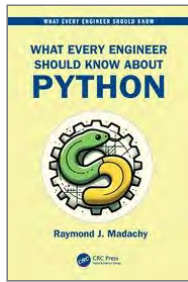
Pb: 978-1-032-11559-7 : **£48.99**

Hb: 978-1-032-11546-7 : **£125**

eBook: 978-1-003-22045-9

\* For full contents and more information, visit: [www.routledge.com/9781032115597](http://www.routledge.com/9781032115597)

## What Every Engineer Should Know About Python



**Raymond J. Madachy** Naval Postgraduate School,  
Monterey, California, USA

*Series: What Every Engineer Should Know*

Engineers of all disciplines can benefit from knowledge of Python. This powerful programming language can help engineers better leverage their skill set and do more sophisticated work in a shorter time. What Every Engineer Should Know About Python provides engineering students and practitioners with a simple and practical introduction to Python for technical programming and other empowering uses for engineering and scientific work, without computer science jargon. This practical and concise book serves as a self-contained introduction to engineers and readers from scientific disciplines new to programming or new to Python.

CRC Press

May 2025 : 318pp

Pb: 978-1-032-35818-5 : **£52.99**

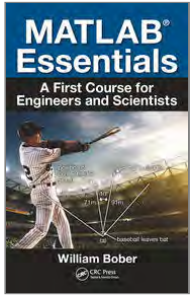
Hb: 978-1-032-35562-7 : **£130**

eBook: 978-1-003-33107-0

\* For full contents and more information, visit: [www.routledge.com/9781032358185](http://www.routledge.com/9781032358185)

## 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 : £155

Hb: 978-1-138-56328-5 : £170

eBook: 978-1-315-16200-3

\* For full contents and more information, visit: [www.routledge.com/9781138032378](http://www.routledge.com/9781138032378)

2ND EDITION

## Aircraft Engineering Principles



**Lloyd Dingle, Mike Tooley** Brooklands College, UK

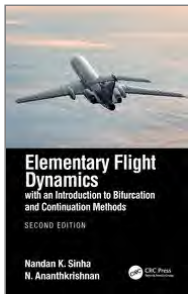
The essential text for anyone studying for licensed A&P mechanic or Aircraft Maintenance Engineering status. The book covers modules 1, 2, 3, 4, and 8 of JAR-66/ECAR-66 in full and to a depth appropriate for Aircraft Maintenance Certifying Technicians, and will also be a valuable reference for those 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 : **£75.99**  
Hb: 978-1-138-42909-3 : **£200**  
eBook: 978-0-080-97085-1

\* For full contents and more information, visit: [www.routledge.com/9780080970844](http://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

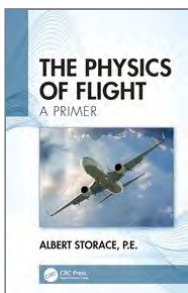
This book uses an optimal mix of physical insight and mathematical presentation to illustrate core concepts of professional aircraft flight dynamics. Updated version of the aerodynamic model is presented with the corrected definition of the rate (dynamic) derivatives, supported with examples of real-life 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 : **£62.99**  
Hb: 978-0-367-56207-6 : **£140**  
eBook: 978-1-003-09680-1

\* For full contents and more information, visit: [www.routledge.com/9780367562113](http://www.routledge.com/9780367562113)

## The Physics of Flight

A Primer



**Albert Storage** 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 : **£97.99**  
eBook: 978-1-003-39091-6

\* For full contents and more information, visit: [www.routledge.com/9781032488158](http://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

November 2025 : 386pp

Pb: 978-1-032-12175-8 : **£52.99**

Hb: 978-1-032-10144-6 : **£94.99**

eBook: 978-1-003-22344-3 : **£84.99**

\* For full contents and more information, visit: [www.routledge.com/9781032121758](http://www.routledge.com/9781032121758)

## Engineering Dimensions, Units, and Conversions



**Yongjian Gu** United States Merchant Marine Academy,  
New York

Engineering Dimensions, Units, and Conversions delves into the analysis and application of the dimensions, units, and unit conversions in engineering practical use. It demonstrates the importance of dimensional homogeneity and unit consistency. Offering a comprehensive exploration of both primary and secondary units, the book presents detailed portrayals of various unit systems in both the English system and the SI system. The book is a valuable reference for practicing engineers and researchers engaged in engineering research and development. It will also be of interest to undergraduate and graduate students in all major engineering disciplines.

CRC Press

February 2025 : 272pp

Pb: 978-1-032-83362-0 : £52.99

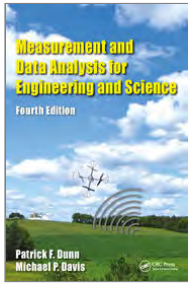
Hb: 978-1-032-83363-7 : £135

eBook: 978-1-003-50897-7

\* For full contents and more information, visit: [www.routledge.com/9781032833620](http://www.routledge.com/9781032833620)

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

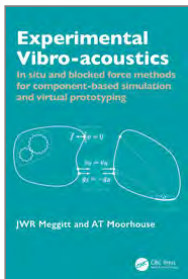
Hb: 978-1-138-05086-0 : £175

eBook: 978-1-315-16858-6

\* For full contents and more information, visit: [www.routledge.com/9781138050860](http://www.routledge.com/9781138050860)

## Experimental Vibro-acoustics

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



**Joshua Meggitt** University of Salford, UK, **Andrew Moorhouse** 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 : 490pp

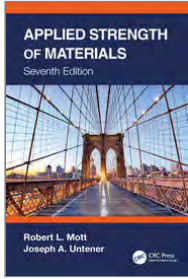
Hb: 978-1-032-47971-2 : £175

eBook: 978-1-003-39913-1

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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.

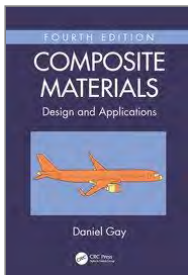
CRC Press  
July 2021 : 1172pp  
Pb: 978-1-032-00222-4 : £69.99  
Hb: 978-0-367-82078-7 : £175  
eBook: 978-1-003-17320-5

\* For full contents and more information, visit: [www.routledge.com/9781032002224](http://www.routledge.com/9781032002224)

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 2025 : 640pp  
Pb: 978-1-032-05048-5 : £52.99  
Hb: 978-1-032-04308-1 : £140  
eBook: 978-1-003-19578-8

\* For full contents and more information, visit: [www.routledge.com/9781032050485](http://www.routledge.com/9781032050485)

2ND EDITION

## Finite Element Analysis of Composite Materials using Abaqus®



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

*Series: Composite Materials*

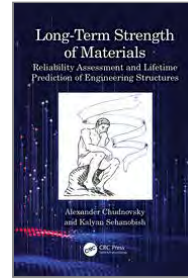
Developed from the author's course on advanced mechanics of composite materials, Finite Element Analysis of Composite Materials with Abaqus™ shows how powerful finite element tools address practical problems in the structural analysis of composites. This Second Edition updates all examples, sample code, 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 : £105  
eBook: 978-1-003-10815-3

\* For full contents and more information, visit: [www.routledge.com/9780367621452](http://www.routledge.com/9780367621452)

## 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

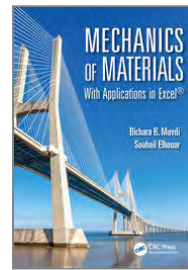
This textbook introduces the thermodynamics of irreversible processes along with entropy to address the time dependency of fracture. Working from observations of structural failure, the book identifies the principal failure types such as brittle damage and ductile failure. It then addresses the life 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 : £52.99  
Hb: 978-1-032-41814-8 : £145  
eBook: 978-1-003-35984-5

\* For full contents and more information, visit: [www.routledge.com/9781032418131](http://www.routledge.com/9781032418131)

## Mechanics of Materials

With Applications in Excel



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

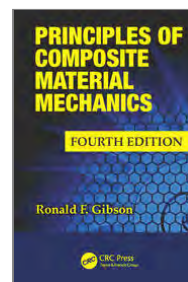
This text covers the fundamentals of the mechanics of materials—or strength of materials—in a clear and easily understandable way, incorporating numerous examples, homework problems, and review problems to ensure comprehension. It also instills practical skills for developing Microsoft® Excel® applications 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 : £135  
eBook: 978-1-315-37431-4

\* For full contents and more information, visit: [www.routledge.com/9781466570719](http://www.routledge.com/9781466570719)

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 : £140  
eBook: 978-0-429-19058-2

\* For full contents and more information, visit: [www.routledge.com/9781498720694](http://www.routledge.com/9781498720694)

## Design of Guidance and Control Systems for Tactical Missiles



**Qi Zaikang , Lin Defu**

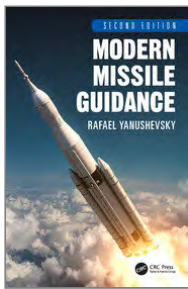
This book presents a modern, comprehensive study of the latest design methods for tactical missile guidance and control. It analyzes autopilot designs, seeker system designs, guidance laws and theories, and the internal and external disturbances affecting the performance factors of missile guidance control 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 : £155  
eBook: 978-0-429-29120-3

\* For full contents and more information, visit: [www.routledge.com/9780367260415](http://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 : £195  
eBook: 978-1-351-20295-4

\* For full contents and more information, visit: [www.routledge.com/9780815384861](http://www.routledge.com/9780815384861)

## Mathematical Modelling of Aerospace Dynamic Systems with Practical Applications



**Jitendra R. Raol** Ramaiah Instof Tech, 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

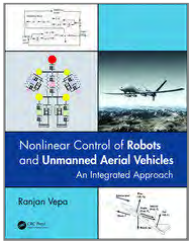
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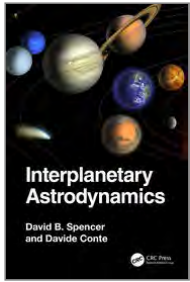
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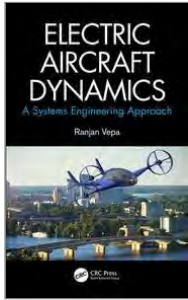
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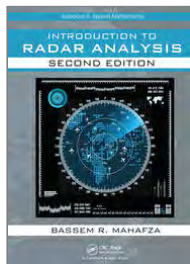
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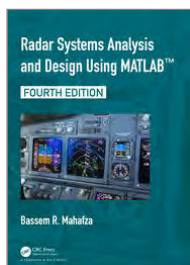
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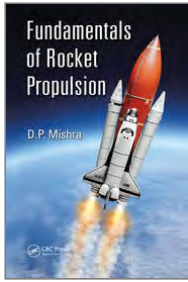
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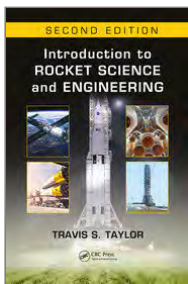
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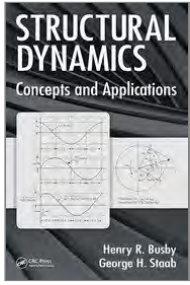
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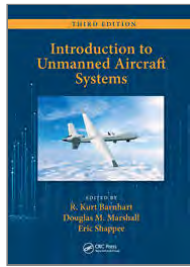
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