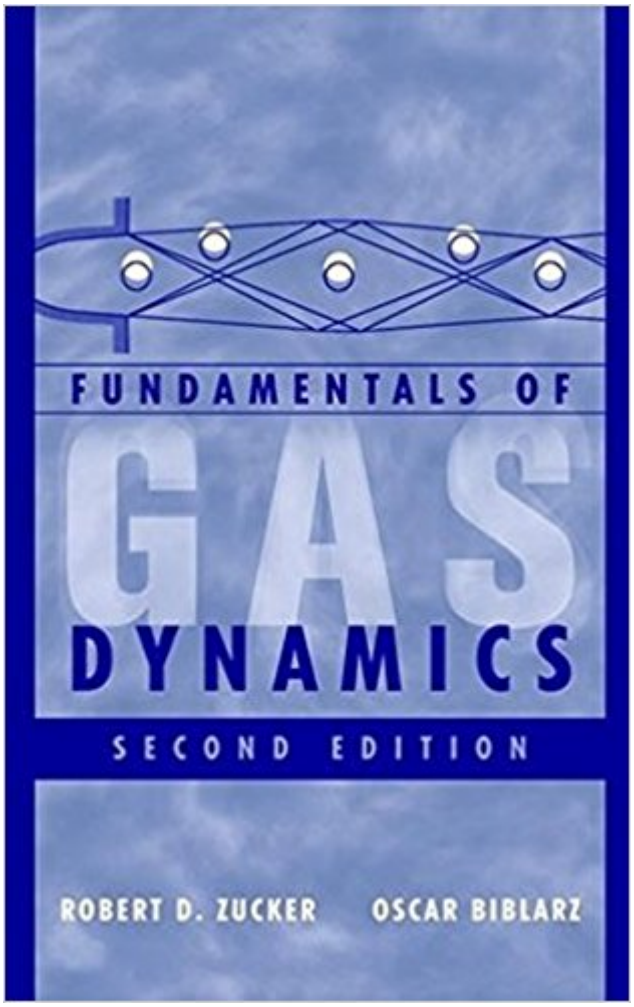
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Fundamentals Of Gas Dynamics



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Synopsis

Provides all necessary equations, tables, and charts as well as self tests. Included chapters cover reaction propulsion systems and real gas effects. Written and organized in a manner that makes it accessible for self learning.

Book Information

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The primary aspects of gas dynamics, meticulously covered and easy to understand Fundamentals of Gas Dynamics provides the essential applications and problem-solving techniques used in gas dynamics. Written in an accessible but rigorous style, this book includes all the equations, tables, and charts necessary to approach the problems and exercises in each chapter. Temperature-entropy diagrams and the role of entropy are highlighted throughout to make this elusive property more understandable and useful. New to this Second Edition is a chapter covering real gas behavior. The information in this chapter provides a valuable bridge between the conventional types of lower-temperature applications and propulsion applications, both covered elsewhere in this book. Included in this new chapter on real gas behavior is a simplified technique for solving problems where the ratio of the heat capacities varies appreciably, as well as discussions and examples comparing this technique to more exact methods. Unique coverage also includes: * Updated information on propulsion applications and new engine photographs * Key parameter variations plotted as a function of Mach number * Updated material and appendixes on conical shocks * Appendixes containing information to treat air as a real gas * Enhanced gas property

tabular entries that are given in both English Engineering and SI units * Alternatives to using tabular information in calculations Fundamentals of Gas Dynamics, Second Edition is an indispensable book for students in mechanical, aerospace, and chemical engineering courses, as well as aerospace engineers.

ROBERT D. ZUCKER, PhD, is Professor Emeritus of Aeronautics and Astronautics at the Naval Postgraduate School in Monterey, California. OSCAR BIBLARZ, PhD, is Professor of Aeronautics and Astronautics at the Naval Postgraduate School in Monterey, California. He is coauthor (with George Sutton) of Rocket Propulsion Elements, published by Wiley.

I wish the course I took was as easy as this book was to read and follow. It is a bit lacking in the coverage of the analysis of over/under expanded nozzles regarding how to predict the behavior of expansion and compression patterns at the nozzle exit (as the cover of the book illustrates). Most of the book serves well as an independent study with the exception of this topic, which really requires a guided lesson in how to apply Prandtl-Meyer analysis.

I bought this book for a class, but find it very informative and know this will be a part of my permanent library.

Was recommended this reading from lab personnel. Since I never had a course in Gas Dynamics and was 10 years out of Thermo working in compressible and detonation flow needed a heavy course of self-study. This book is was a very good rapid on-ramp into this field with about 3 evenings of solid study. It develops the material and equations in a very physically grounded fashion, reviews the basics of thermo well for the reader as needed, and the complexity of the material flows well as one proceeds through the chapters. Highly recommended for someone finding themselves having to segue into this area with no prior experience and classwork....

I took a class in compressible fluid flow, that used this book. The book is one of the best resources for introductory compressible flow, let alone one of the best textbooks to learn from period. From the basics that comprise the beginning chapters, to an introduction to the speed of sound, shock waves, diffusers and nozzles, and ending with frictional and heated pipe flow, the amount of information presented and the manner of presentation makes this book an invaluable asset in any physics or engineering science. All chapter problems have very good and easy-to-follow examples, and the

answers in the back of the book help check your application of the theory presented. There are also tables that are built from the theory presented in each chapter, as well as properties of some common gasses that can be used for preliminary calculations of an experiment. All in all, if you are interested in any subject relating to rockets, Jet aircraft, or turbine engines, this books for you!

Good introduction to compressible flow. The text is very readable and suited for self-study. The authors begin with a review of thermodynamics and fluid mechanics. Then, there is a chapter dedicated to each of the classical topics of gas dynamics:flow through a nozzle, normal shock wave, oblique shock wave, Prandtl-Meyer Flow, Fanno Flow, Rayleigh Flow. At the end, there is a chapter about real effect and a application chapter about propulsion systems.

An excellent book covering compressible flow for anyone with a basic knowledge of thermodynamics and fluid mechanics.Fundamentals of Gas Dynamics

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