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# **Mechanics And Thermodynamics Of Propulsion (Addison-Wesley Series In Aerospace Science)**



## **Synopsis**

In this textbook, the authors show that a few fundamental principles can provide students of mechanical and aeronautical engineering with a deep understanding of all modes of aircraft and spacecraft propulsion. The book also demonstrates how these fundamental principles can lead directly to useful quantitative assessments of performance as well as possibilities for improvement. The second edition provides a wide range of new illustrative material on modern aircraft and rocket engines. The authors have also improved their explanations of pertinent physical phenomena and have introduced preliminary design procedures in this edition.

## **Book Information**

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## **Customer Reviews**

In this textbook, the authors show that a few fundamental principles can provide students of mechanical and aeronautical engineering with a deep understanding of all modes of aircraft and spacecraft propulsion. The book also demonstrates how these fundamental principles can lead directly to useful quantitative assessments of performance as well as possibilities for improvement. The second edition provides a wide range of new illustrative material on modern aircraft and rocket engines. The authors have also improved their explanations of pertinent physical phenomena and have introduced preliminary design procedures in this edition.

I first saw our Doctor using this book to teach us from it and then I looked into the reviews here and decided to buy it, and I wasn't disappointed, this book is really unique and amazing. This book is one

of the best books for understanding airbreathing and rocket propulsion topics, starts from the fundamentals of gas dynamics, boundary layer and thermodynamics and then starts talking about propulsion topics after connecting them to the previous topics. What I liked in this book is that it has very detailed explanation for many topics that are hard to find information about in similar books, for example Elements of Gas Turbine Propulsion is a good book but it's full of equations and there is little explanation of physical phenomenons and relationships. The book shows the fundamental equations and their derivation but it lacks solved examples, so it's not a very good book if you want to learn how to solve problems. Although there are some unsolved problems at the end of each chapter with an appendix with the answers for some of them. It has been said that it's not a self study book and I can say that but if you are interested in knowing more deep about propulsion and seek better understanding this is the book for you. The kind of problems in this book is the kind that if you solve you would know that you don't have a problem in understanding. The good thing about this book is that it has been released early so here you can find an explanation for almost everything. I really enjoy reading this book and the way of discussing these topics. The thing that I was really disappointed with is that this book has a very poor index, not showing all the words that the reader may be looking for, and I really hope that the authors could use a better index with more entries.

This book fails to do fundamental derivations, and often leaves out fundamental assumptions. I would consider this book to be highly irresponsible to use as a reference guide. In particular, the thrust derived equations often leave out important efficiencies, and have very little discussion of what those efficiencies should be.

Old book, but has lots of interesting stuff in it. I'd recommend Varberg, Purcell, and Rigidons Thermodynamics chapter 20 as a supplement to this book, it teaches concepts like compressible fluids and shock propagation in a more concise manner.

Bought it for class. Very dense material, I used this in conjunction with NASA's online tutorials to understand compressible flows.

I needed this book for a graduate course, but it reads very well. I felt as if every subject of jet engine propulsion was covered, and explained well. I have a lot of prior knowledge in this subject, but still feel like the author wasn't preachy as many textbooks tend to be.

Good: Covers the entire subject of turbine and rocket engines. This book actually covers the basics of thermodynamics, boundary layer theory, heat transfer, high-speed aerodynamics, flow in a duct, and basic combustion chemistry before launching into an in-depth discussion of turbines, compressors, inlets, diffusers, nozzles, rocket motors, and electric propulsion. Bad: Few example problems, few pictures, old edition does not take into account modern aircraft engine designs like geared fan engines. Book mentions how a combined turbojet/ramjet would be very efficient at high speed cruise but does not use the SR-71 as an example which makes me question if the aircraft was still secret when the book was originally written. Nevertheless, I would still recommend this book to anyone interested in in-depth knowledge of turbine engine design. Book was in perfect, used condition when ordered and showed no sign of actual use. I am an aerospace engineering student and will never sell this book. It will always stay on my shelf as a good reference.

Excellent book. Very in depth thermodynamics analysis and good illustrations and explanations. Excellent problems for study. A very vast topic of study covering; Basic Thermodynamics, Boundary Layer Heat Transfer Functions, Air Breathing Engines, Inlets and Nozzles, Rocket Dynamics, 1 and 2-D combustion analysis, Compressors, Turbines, Chemical Liquid and Electrical Rockets, and more.

The book was exactly as advertised; it was packaged well, and it was shipped promptly. \*\*\*\*\*  
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