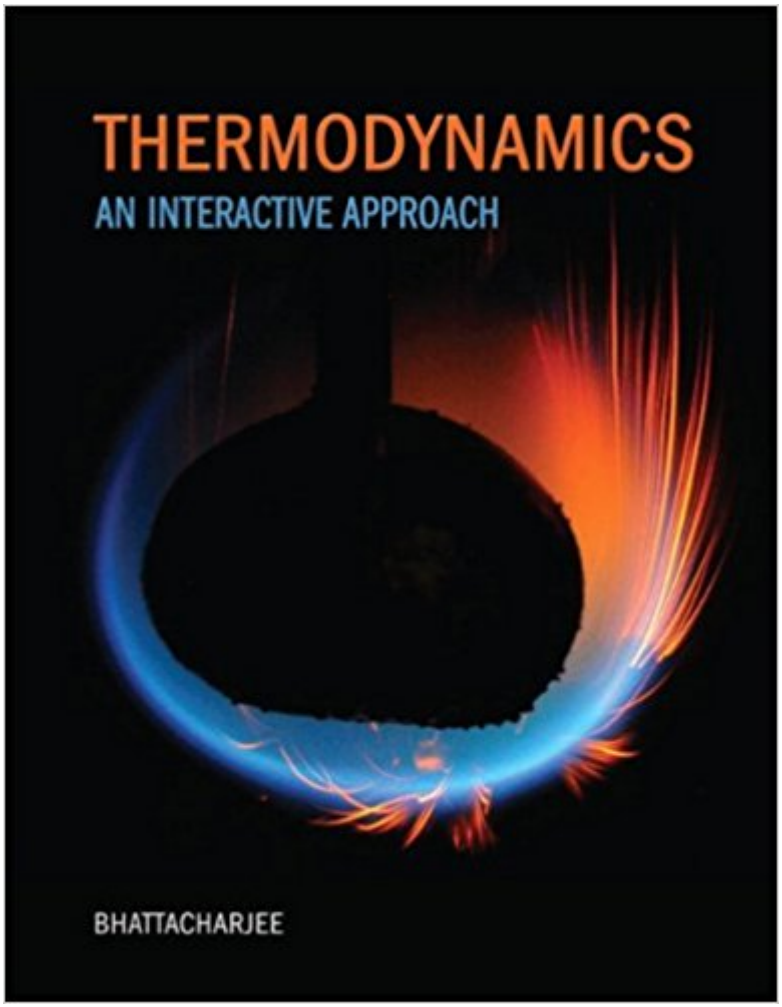
Thermodynamics: An Interactive Approach



Synopsis

For the thermodynamics course in the Mechanical & Aerospace Engineering department. This text also serves as a useful reference for anyone interested in learning more about thermodynamics. Â¿ Thermodynamics: An Interactive Approach employs a layered approach that introduces the important concepts of mass, energy, and entropy early, and progressively refines them throughout the text. To create a rich learning experience for todayâ ™s thermodynamics student, this book melds traditional content with the web-based resources and learning tools of TEST: The Expert System for Thermodynamics (www.pearsonhighered.com/bhattacharjee)â “an interactive platform that offers smart thermodynamic tables for property evaluation and analysis tools for mass, energy, entropy, and exergy analysis of open and closed systems. Â¿ Beside the daemonsâ “web-based calculators with a friendly graphical interfaceâ “other useful TEST modules include an animation library, rich Internet applications (RIAs), traditional charts and tables, manual and TEST solutions of hundreds of engineering problems, and examples and problems to supplement the textbook. The book is written in a way that allows instructors to decide the extent that TEST is integrated with homework or in the classroom. Â¿ MasteringEngineering for Thermodynamics is a total learning package. This innovative online program emulates the instructorâ ™s officeâ ”hour environment, guiding students through engineering concepts from Thermodynamics with self-paced individualized coaching. Â¿ Teaching and Learning Experience To provide a better teaching and learning experience, for both instructors and students, this program will: Personalize Learning with Individualized Coaching: MasteringEngineering emulates the instructorâ ™s office-hour environment using self-paced individualized coaching. Introduce Fundamental Theories Early: A layered approach introduces important concepts early, and progressively refines them in subsequent chapters to lay a foundation for true understanding. Engage Students with Interactive Content: To create a rich learning experience for todayâ ™s thermodynamics student, this book melds traditional content with web-based resources and learning tools. Â¿ Note: You are purchasing the standalone text. MasteringEngineering does not come automatically packaged with the text. To purchase MasteringEngineering, search for ISBN-10: 0133807975 / ISBN-13: 9780133807974. That package contains ISBN-10: 0130351172 / ISBN-13: 9780130351173 and ISBN-10: 0133810844 / ISBN-13: 9780133810844. MasteringEngineering is not a self-paced technology and should only be purchased when required by an instructor. Â¿

Book Information

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Customer Reviews

Professor Subrata Bhattacharjee, known by his friends as Sooby, earned a B.Tech. degree in Mechanical Engineering from Indian Institute of Technology, Kharagpur in 1983 and his Ph.D. from Washington State University, Pullman, USA in 1988. After two years of post-doctoral work on a NASA project, he joined San Diego State University in 1991 and currently holds Professorship in Mechanical Engineering Department and Adjunct Professorship in Computer Science Department. Â Professor Bhattacharjee has been actively involved in research in radiation heat transfer, combustion, computational thermodynamics, and development of software for educational purposes. For his dissertation, he developed a modified two-flux method (Effective Angle Method) for calculating radiative source term and used this model to study two-way coupling between radiation and fluid dynamics in a laminar diffusion flame. Working on a project on jet flow in boundary layers, he came upon a new non-dimensional group that compares a known pressure drop with viscous forces. This number is being used in textbook and literature in connection with electronic cooling. Â Throughout his research career, Dr. Bhattacharjee has been interested in uncovering the mechanism of flame spread over solid fuels, especially in a microgravity environment. His work helped establish the dominance of radiation heat transfer in near quiescent environment. He has been a PI and co-PI of several projects funded by NASA. Some of his contributions include: 1. Discovery of the phenomenon that flame over thick fuel bed in a quiescent microgravity environment self-extinguishes irrespective of the oxygen level; 2. Development of a formula for a critical thickness that renders a fuel thick in such an environment; 3. Development of two formulas for flame spread rate, one in the thin limit and one in the thick limit, which are the only

flame spread formulas ever developed in the microgravity regime. Several of his experiments on flames over solids have been conducted aboard NASA's Space Shuttles, Sounding Rockets, and Russia's Mir Space Station. One of his recently proposed experiments is currently under design to be conducted in the International Space Station. Â Under a current grant from NASA, Prof. Bhattacharjee and his team is building a 10 m tall Flame Tower at SDSU to conduct some fundamental experiments to predict the behavior of flames in a gravity free environment of a spacecraft. These ground based work is in support of the proposed space based experiment. In this work, researchers from Gifu University, Japan, are collaborating with SDSU. Â Supported by NSF, Dr. Bhattacharjee has been developing a novel cyber infrastructure for multi-scale approach to thermodynamic data and chemical equilibrium services. Users can now plug in these services and "outsource" the data used in their thermofluids calculations. By simply altering key words such as NASA, NIST, or AB-INITIO, for example, they can change the source of data used in their research applications. Likewise, equilibrium calculations can be integrated into any CFD code written in FORTRAN, MATLAB, or any other language through a relatively new technology called web services. The chemical equilibrium program developed by Dr. Bhattacharjee's group is equally powerful as NASA's benchmark CEA and offers a built-in parallel architecture. Â Prof. Bhattacharjee's passion for making thermodynamics easier to master led to the development of a web based software called TEST, the Expert System for thermodynamics (www.pearsonhighered.com/bhattacharjee), which has been used by students, professionals and educators from around the world. Several articles and one book have been written about the use of TEST in thermodynamic education. Â Winner of Outstanding Faculty Award, Monty Award at SDSU, Most Influential Faculty award, Faculty Friend Award, Outstanding Engineering Educator award, Best Paper award, and ASME Fellow award, Professor Bhattacharjee can be contacted at prof.bhattacharjee@gmail.com

Book is in good conditions, but the content of it is not that great. I would recommend another book, especially if you’re taking thermodynamics for the first time. I rented it so I’m just going to return it. Definitely not worth buying it.

horrible. $200... for this? there are so many typos and errors in this book, i can hardly believe it was approved for publishing. this book is in dire need of a second edition

If you don’t have the access code this book is useless. Too many typos, including in important

formulas.

Needs a lot of work and the test calc/tables seem to be messed up. But still very good for getting the thermodynamic basics and test calc helps check your work

Not finished yet with the book

Teacher’s beware, it’s not even usable as toilet paper. Students, wait another semester until it’s replaced.

This is by far one of the worst engineering texts I have come across. Typos in this text are so frequent, with continuous paraphrasing. For lack of a better term the context is "fluffy"-repeating the same thing eight times within one paragraph with excellent use of synonyms doesn’t get the information across. Furthermore the tables in the back of the text that give data required for the better majority of the course have repeated values and missing values.Bottom line, rent this book if you "need" it. Don’t waste your money on buying the text.And if you’re fortunate enough to have a professor that uses the online homework paired with the text-prepare yourself for endless frustration. At least 20% of the problems are missing unit conversions for accepted answers compared to the actual proven answers. If that wasn’t enough, now you get to use the incorrect tables to answer the online problems, but of course your answers won’t be correct.

Aside from a fair number of typos in the first edition (including in the related MasteringEngineering content), I have found this to be the best Thermodynamics textbook for use in my course. The layered approach is very helpful. I’ve examined a handful of other popular texts, and this one stood out as having good descriptions of important concepts and a focus on applications. Other texts are either outdated or just plain boring. My students agreed. I hope to see this text in a second edition soon, and I will continue to use the MasteringEngineering and included TestCalcs and Animations.

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