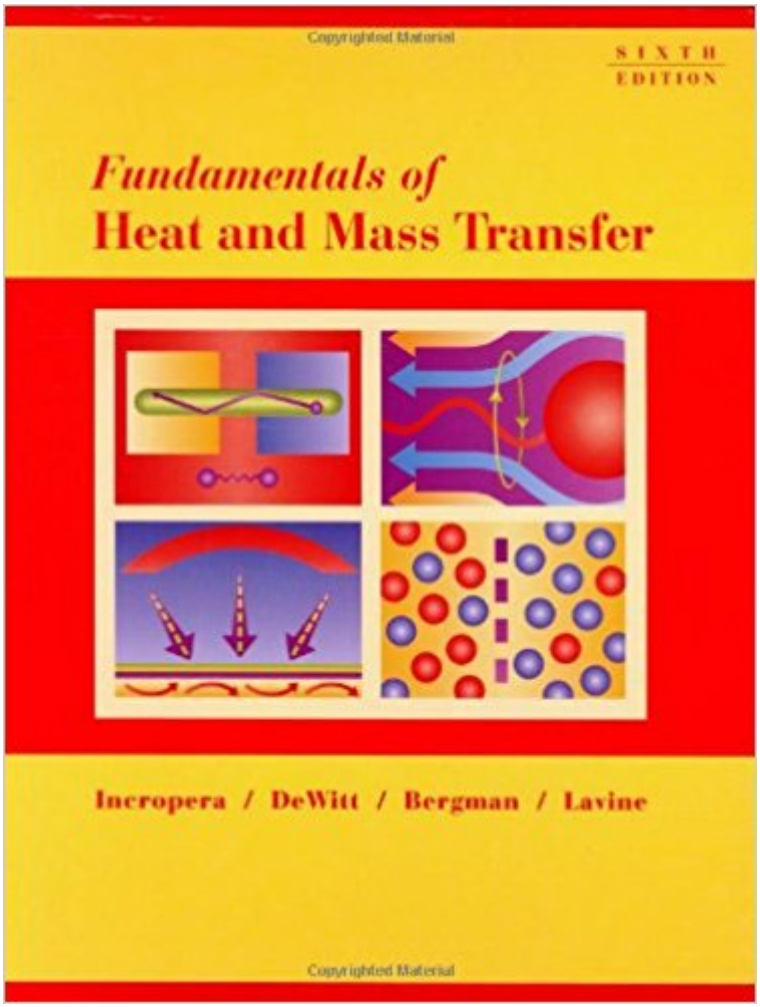
Fundamentals Of Heat And Mass Transfer



Synopsis

This bestselling book in the field provides a complete introduction to the physical origins of heat and mass transfer. Noted for its crystal clear presentation and easy-to-follow problem solving methodology, Incropera and Dewitt's systematic approach to the first law develops reader confidence in using this essential tool for thermal analysis. Readers will learn the meaning of the terminology and physical principles of heat transfer as well as how to use requisite inputs for computing heat transfer rates and/or material temperatures.

Book Information

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Customer Reviews

The standard for mastering heat and mass transfer Respected for its readability, comprehensiveness, and relevance, Incropera and DeWittâ ™s text is the recognized standard for learning heat and mass transfer. This text combines detailed coverage with the resources students need to learn the concepts and apply them to solving realistic and relevant problems.Â Using a rigorous and systematic problem-solving methodology, the text is filled with examples and problems that reveal the richness and beauty of the discipline. The 6th Edition introduces coauthors Ted Bergman and Adrienne Lavine, who bring their record of success in teaching and research in heat and mass transfer to the text. New Features Expanded coverage of areas of recent interest in heat transfer, including fuel cells and alternative energy devices, electronics cooling, micro-scale heat transfer, and biological as well as bioheat transfer. New examples and homework problems are included for each area. Introduction to the concepts of nano-scale transport and unified treatment of

transient conduction. New material on two-phase heat transfer and enhanced internal forced convection. New and revised presentation of mass transfer including applications in materials science and biological engineering. New, revised, and updated problems and examples. Model, solve, and explore heat transfer problems: Interactive Heat Transfer and Finite Element Heat Transfer software with Userâ ™s Guide CD and print booklet, ISBN: 0-471-76115-X Completely updated with a modern graphical user interface and better graphing tools, Interactive Heat Transfer (IHT) software will help you learn how to build thermal models, solve specific conditions, and explore the effects of multiple parameter variations. IHT is now capable of solving 300+ equations. The Finite Element Heat Transfer software enhances capabilities for treating steady-state and transient one- and two-dimensional conduction problems.

Frank P. Incropera is currently Matthew H. McCloskey Dean of the College of Engineering at Univeristy of Notre Dame. Professor Incropera received his B.S.M.E.Â from M.I.T. and his M.S.M.E.Â and Ph.D. from Stanford University, all in mechanical engineering.Â In 1998, he became theÂ Clifford and Evelyn Brosey Professor of Mechanical Engineering. Professor Incropera has received four major Purdue teaching awards and was the 1982 recipient of theÂ ASEE Ralph Coats Roe Award for excellence in teaching. He was the 1983 recipient of the ASEE George Westinghouse Award for achievements in teaching and research. In 1984 he became a Fellow of theÂ ASME, and in 1988 he received the ASME Heat Transfer Memorial Award for twenty years of research accomplishments in the fields of plasma heat transfer, radiative transfer in participating media, and double-diffusive and mixed convection. In 1988 he was also recipient of the Senior Scientists Award of the Alexander von Humboldt Foundation and recipient of the Melville Medal for the best original paper published by ASME. In 1995 he received the Worcester Reed Warner Medal of ASME for contributions to the fundamental literature of heat transfer and his textbooks on the subject.

I find this book very annoying. Although it reads reasonably well, the authors bury significant concepts in unexpected areas of the text. I have found it tremendously confusing when to use film temperature, mean temperature, surface temperature, etc. When to use them is not listed in the equations, sometimes they are buried in an example problem several pages later. One of the biggest annoyances for me is in chapter 7 (page 440). For heat flow through banks of tubes, they say to use the mean of the inlet and outlet temps to calculate the Nusselt number (eq 7.64). They make no mention as to how to solve if you do not know the outlet temp. Buried in example 7.7, you

might notice that they use the inlet temperature to solve for the Nusselt number! This is not what the description of equation 7.64 says. Buried in the fine print of example 7.7 on page 446 is that you may need to iterate values until you get the desired accuracy (and if you do not know the outlet temp - they do not say this). Why don't they just come out and say this in the discussion and theory, rather than bury big ideas in the examples? Another example is in chapter 9 for vertical channels. They do not say anything about how to come up with a basic spacing, S. If you look at example 9.1 an equation is provided for thermal boundary layer thickness. Is "S" equal to twice this value? The reason I am on-line is I am looking for another textbook that can explain concepts better. Much of this book is ok to read, so I would not give it a terrible rating. It is a difficult subject that could be made easier. I also find it ridiculous that they do not provide any problems with answers in the back of the book. What good does it do to spend hours on a problem and not know if you have a good answer? At least a handful of problems would be helpful.

This book is definatly for a mechanical engineer. I used it for a biomedical engineering thermodynamics course, and damn was it hard to read. I don't know why, but they show you about ten different ways to represent equations, and some are helpful and some or not. Very very confusing unless your professor points out which to use. The calculus isnt too heavy in the book but is used in long complicated derivations that skip steps. A few sections do require integration. The concepts aren't too bad and are well defined, but my god the math behind it is presented so skewed that it's a wonder anyone would publish it. 99% of the material in this book is useless. At least to a BME like me, so I'm probably biased here. Whoever wrote it was smart, but can't teach....kinda familiar with my college experiences.

This is a terrific book! I purchased it for a mechanical engineering heat transfer course. It was essential for understanding the material that is covered in lecture. Whether you are a student or a professional needing to refresh the topic, this textbook provides clear and relevant information that makes the complex subject of heat and mass transfer much easier to understand. It is a bit expensive, but I have found it to be well worth the price for such a quality textbook. I would highly recommend this book to anyone interested in the topic of heat transfer.StyleThe text is well written and clearly explains the theory behind heat transfer phenomena. There are times when it is easy to get lost in long paragraphs of highly technical reading, but there are many pictures and graphs that bring meaning and clarity to these sections. The derivations they include generally have a description after each step, which is not always the case for textbooks I have used.The layout of this

textbook is consistent from cover to cover and I found this to be very helpful. All the colors for graphs, charts, tables and equations are the same throughout the book, making them easy to identify without causing a distraction from the text while reading.Helpful ExamplesThere are worked-out examples with explanations throughout each chapter. They include schematics of the problems as well as the assumptions for that particular type of problem. I found these to be very helpful since they were included at the end of the corresponding topic that related to the problem.There are also hundreds of practice problems that range from easy to very difficult. The easier problems helped my understanding of how to apply the concepts from the chapter while the more difficult problems connected several topics into one problem. It would have been helpful to have the answers in the back of the book to make sure I did the problems correctly, but I was able to check with my professor and I am sure there are many places online where they can be found.

The text is very readable and the illustrations help to visualize the physical phenomena. The example problems are very easy to follow and all variables are well defined (which is not always the case with some engineering texts). I brought this book with me to take my Chemical Engineering PE and it was very useful.

Awesome book. Even though it is old, the material is so good that it is still relevant in today’s engineering courses. Awesome book, would recommend.

This book saved me a ton of money! Instead of buying the newest edition of this book at the University bookstore I got this one and it was pretty much the same content and same problems.If you want to save money on cheap heat transfer book this one is the right one for you.Thank you hope you guys enjoyed this review

I love this book and I loved this class. The book is well written and someone with a good handle on calculus (including multivariable calculus) should be able to follow most of the arguments. About midway through the book, some series solutions to differential equations are used for estimation purposes, but we didn’t cover too much of that in my course. The book is beautifully written with a big emphasis on the physical understanding of the three transfer processes (i.e., conduction, convection, radiation), rather than just memorization of a bunch of equations.

Great place to purchase the book, but I would say that the example problems are hard for someone

completely new to heat transfer.

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