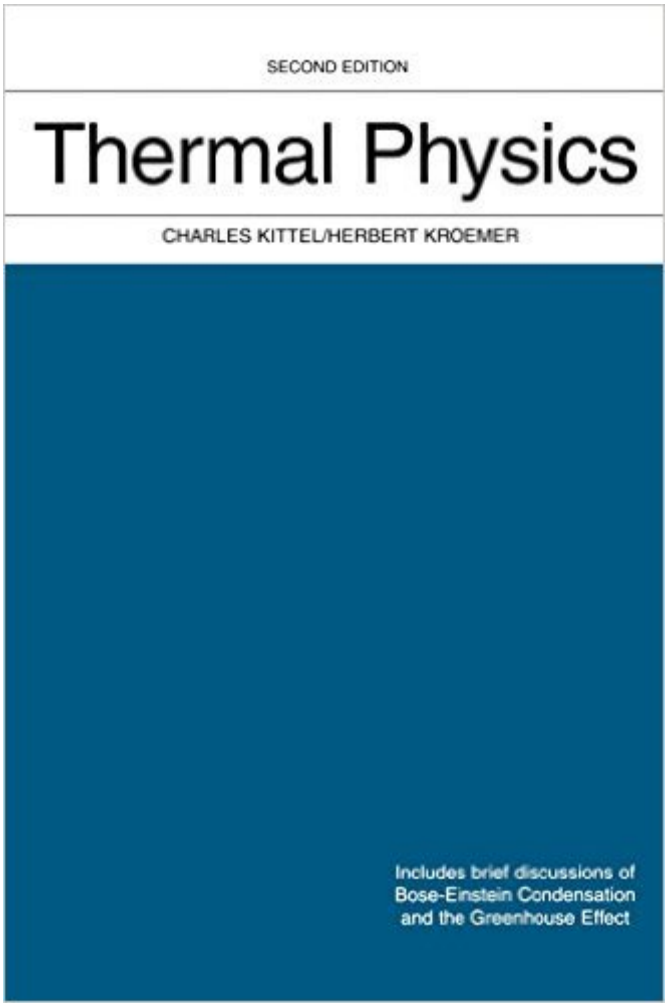
Thermal Physics (2nd Edition)



Synopsis

CONGRATULATIONS TO HERBERT KROEMER, 2000 NOBEL LAUREATE FOR PHYSICSÂ For upper-division courses in thermodynamics or statistical mechanics, Kittel and Kroemer offers a modern approach to thermal physics that is based on the idea that all physical systems can be described in terms of their discrete quantum states, rather than drawing on 19th-century classical mechanics concepts.

Book Information

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Customer Reviews

This is by far THE BEST textbook on the subject. As many people say, thermodynamics is a subject that one has to learn at least three times. I can easily understand the very negative review from the undergraduate student at Berkely. The subject itself is hard, and simply is not for everyone, not for the first run at least. I say this from experience. I earned a Ph.D. degree over ten years ago, and took courses on thermodynamics at both undergraduate and graduate levels. I didn’t understand the subject at all, and didn’t find much use in my thesis work. However, something about the subject has kept me going back to it ever since. I now own about 40 books on the subject, and use the ideas almost daily in my research. I discovered Kittel-Kroemer only recently, and have found it absolutely great. The book took an unconventional approach, as the authors explained well in the Preface and the Introduction. This approach makes the central concept, the entropy, as well as the derived ideas, the temperature, the chemical potential and the Boltzmann factor, so clear that one has to wonder why they are obscure in many other books. I find this approach the most direct and satisfying. The book contains a wonderful collection of examples. The book is written with authority

and great care. It is beautifully produced, and a joy to read. (My copy hasn’t fall apart, and doesn’t look it ever will!) If there is a new edition, I’d like to see more links to thermodybnamics in practice. Some rudimentary description of measurements of basic quantities will further enhance the book. A few device examples, in addition to the battery, will help to make the connection. The beautiful logic structure notwithstanding, thermodyanmics is an experimental sceince. Some quantities are easy to calculate, others are easy to measure. The division of labor, an idea so natural in research and everyday life, is often missed in textbooks. I recommend this book most strongly, and wish more people will discover its beauty.

As a textbook for an undergraduate course on thermal physics, this offering is quite poor. The authors lack the gift of clearly communicating their (obviously quite good) understanding of thermal physics; the writing, particularly when explaining what should be simple concepts, is dense and opaque. Figures often function as nothing more than page-fillers, and do not serve to clarify the text. Important results are scattered, in many cases not even set off from the main text with any sort of visual cue. The problems for each section (and the text itself) will frequently bring in detailed information from other areas of physics or chemistry without making any attempt to explain its relation to the subject at hand. The authors often use the problems as extensions to the text, adding a half page of extraneous commentary after asking a question that takes a single line to state. As another reviewer remarked, the problems in general can take an hour to interpret and five minutes to solve. Overall, the book is very wordy when it doesn’t need to be, confusing, and difficult to use.If you are an undergraduate taking a first class in thermal physics, it will be a tremendous chore to learn it from this book.

I used this book for a junior/senior level undergrad physics course (for majors). The professor loved the book however many of the students, with only exposure to Halliday/Resnick/Krane intro physics, found it difficult to follow the abbreviated treatment of stat-mech... there seemed to be a large gap between the 2 approaches! With a good professor this can be an excellent text but beware...you may find yourself needing supplementary texts such as Reif’s "Statistical & Thermal Physics" and even his Berkeley Series sophomore level "statistical Physics" for an explanation of concepts.

After so many years in print, and being used by so many students, this book has become a classic in undergraduate statistical mechanics. It is indeed a fine book, and one that will no doubt remain as a standard text in statistical mechanics in years to come. The authors motivate the subject well, and

they at all times explain the physics behind the mathematics. So often in textbooks, even at the undergraduate level, the physical intuition gets lost behind the mathematical formalism. Although the book is addressed to an audience of undergraduate physics majors, it could be read profitably by those in other fields, particularly in the biological sciences. Some of the parts I found particularly well-writtten include the discussions on: 1. The sharpness of the multiplicity function and its connection with the stability of physical properties. 2. The zipper problem as a model of the unwinding of the DNA molecule (an assigned problem). 3. The ascent of sap in trees (an assigned problem). 4. Bose-Einstein distribution function and the Einstein condensation temperature. Given the exciting developments in this area, this discussion is particularly enlightening. 5. Quasiparticles and superfluidity. This is a nice job here, given the level of the text. 6. The Landau theory of phase transitions. 7. Semiconductor statistics. 8. The Boltzmann transport equation. Because of its immense importance, it is great that the authors have chosen to include a discussion of this in a book at this level. The treatment is very understandable and prepares the reader for more advanced reading on the subject. 9. The heat conduction equation. The diffusive solutions of the equation are discussed in terms of the time development of a temperature pulse, giving the reader a first glimpse of the "Green's function" methods.

I am taking a course that uses this book as its text, and I have to say, I am sorely unimpressed. In agreement with a previous review, I would say that the problms set out by kittel have two dominant themes; 1 they are painfully difficult to interpret as to what kittel expects you to learn from them, and 2, they are trivial to complete once you pierce the fog of the question. A message to prospective future instructors of a stat-mech course, PLEASE DO NOT USE THIS TEXT, YOUR STUDENTS WILL THANK YOU!

II: The New Millennium Edition: Mainly Electromagnetism and Matter (Feynman Lectures on Physics (Paperback)) (Volume 2) University Physics with Modern Physics (12th Edition) Learning Game Physics with Bullet Physics and OpenGL Sterling Test Prep GRE Physics Practice Questions: High Yield GRE Physics Questions with Detailed Explanations Sterling Test Prep MCAT Physics Practice Questions: High Yield MCAT Physics Questions with Detailed Explanations Conceptual Physics : The High School Physics Program Physics of Atoms and Ions (Graduate Texts in Contemporary Physics) Physics of Amphiphiles: Micelles, Vesicles and Microemulsions : Proceedings of the International School of Physics, Enrico Fermi, Course Xc Physics for Scientists and Engineers, Volume 2: Electricity, Magnetism, Light, and Elementary Modern Physics