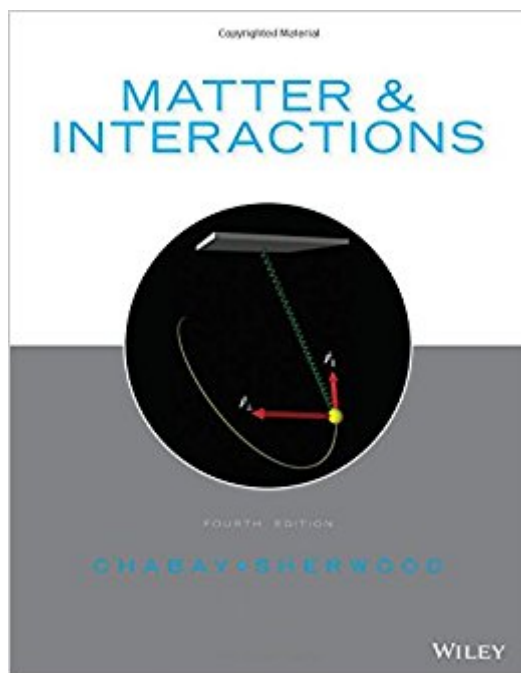


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Matter And Interactions



Synopsis

Matter and Interactions, 4th Edition offers a modern curriculum for introductory physics (calculus-based). It presents physics the way practicing physicists view their discipline while integrating 20th Century physics and computational physics. The text emphasizes the small number of fundamental principles that underlie the behavior of matter, and models that can explain and predict a wide variety of physical phenomena. Matter and Interactions, 4th Edition will be available as a single volume hardcover text and also two paperback volumes.

Book Information

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Customer Reviews

I am a student, I love this textbook. I used it at a community college with a very harsh professor, and this book carried me through, and I was one of two people in the class to get an A. This book carried me through. This makes every thing simple because everything in Physics is based on the three principles, which this book emphasizes! I am now at a university for Physics 2 where the required textbook is a different one, but I still use this one and just completely discarded the other one. This breaks the concepts down and gives plenty of useful examples to demonstrate those concepts. It is not just a bunch of formulas. It actually makes me understand the meaning behind the formulas!

I'm a coauthor of this textbook. I'm surprised by the review that was unhappy about the large number of errors in the problem answers at the back of the book. During the last two semesters (fall 2015 and spring 2016) the book has been used in many universities, 4-year colleges, community colleges, and high schools, and only eleven such errors have been reported. Corrections are

available on the student web site.

Tremendously good book for physics. Very good explanations with practice problems and checkpoints. It also shows you how to use the programming language python for the iterative problems where it would be impossibly long to calculate by hand a planet's revolution around a star for example.

A very modern introduction to the subject! I expect to use it as a base for more contemporary introduction to Physics. Bravo!

Well bound and great explanations relative to many other physics texts.

New book. Has both volumes. Absolutely recommend it to anyone searching for this book at a relatively low cost.

Great BOOK!

I have been teaching physics for 25 years. I have used Matter and Interactions for the past 9 years, since the second edition. M&I is the only introductory textbook that caused me to think deeply about the connections we make in physics and the principles that we espouse as most important. By emphasizing principles and process over content, M&I provides students the tools to adapt to the numerous sub-disciplines of physics and other disciplines of science. Since adopting M&I, I have found students spend more time seeking connections and less time memorizing factoids. By being exposed to problems that can either lack data or provide excess amounts of information, that require students to identify assumptions in problem solving, students who use M&I become comfortable with the ambiguity found in doing science. Given that we provide multiple tracks toward upper division physics courses, it is easy for me to identify students in my upper division courses who use a principles first approach vs. a memorize the technique approach when solving problems – especially when they start analyzing a novel system. Emphasizing principles over content in studying physics has been most important in our integrated introductory science curriculum where biology, chemistry and physics are taught as part of a full year science core. M&I includes direct connections between physics principles and topics of importance in biochemistry even though this is a text that is not aimed at the life science major. As a consequence, students value physics as a

way to understand biochemical reactions and physiological outcomes. And by emphasizing a handful of principles, e.g., forces, energy, fields, I have had no difficulty teaching physics using this text completely out of order. For example, I start with chapter 12, followed by parts 1, then 13, 14, 15, 20, 17, etc. while integrating parts of 2 and 3. Students have had no difficulty following this non-traditional approach. Possibly the most important and unappreciated aspect to a textbook these days is the set of problems and exercises provided. It is wonderful that more of the problems and exercises found in today's texts are modeled after results from physics education research. However, while I do find these exercises highly useful, they are often quite dull and provide little sense of connection to the real world. M&I does contain many good pedagogical problems, but also includes a number of astonishingly elegant problems that require students to make connections and provide real world interesting results using crude approximations. The problem of solving for the interatomic spring constant using only weights and a meter stick is one example. Indeed, the text is rich with the number hands-on examples that cost little to implement and go beyond the scotch tape Coulomb's law example. My only disappointment is that I can't find enough time in the class or in homework to do all the science found in these examples. In short, M&I is a wonderful text that may educate the physics instructor as much as it does the student.

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