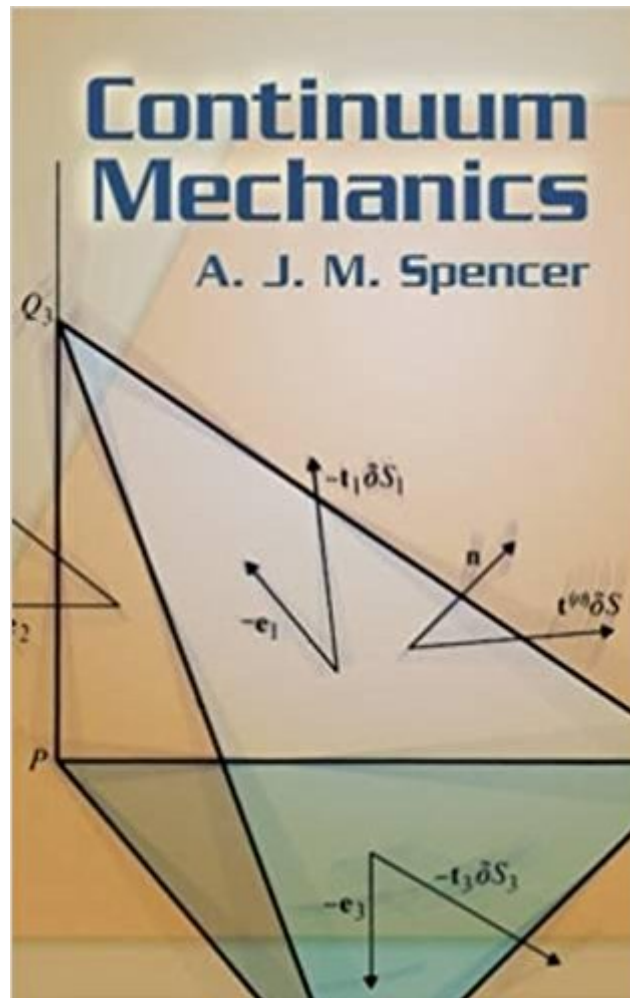The book was found

Continuum Mechanics (Dover Books On Physics)

Synopsis

The mechanics of fluids and the mechanics of solids represent the two major areas of physics and applied mathematics that meet in continuum mechanics, a field that forms the foundation of civil and mechanical engineering. This unified approach to the teaching of fluid and solid mechanics focuses on the general mechanical principles that apply to all materials. Students who have familiarized themselves with the basic principles can go on to specialize in any of the different branches of continuum mechanics. This text opens with introductory chapters on matrix algebra, vectors and Cartesian tensors, and an analysis of deformation and stress. Succeeding chapters examine the mathematical statements of the laws of conservation of mass, momentum, and energy as well as the formulation of the mechanical constitutive equations for various classes of fluids and solids. In addition to many worked examples, this volume features a graded selection of problems (with answers, where appropriate). Geared toward undergraduate students of applied mathematics, it will also prove valuable to physicists and engineers.

Book Information

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Customer Reviews

Continuum mechanics (CM) is a beautiful and infinitely useful branch of mathematics, but the learning curve is relatively steep. Once you scale the cliff, you are able to do simply amazing things and gain a deeper appreciation for the deformation of materials. However, most textbooks do not make for decent guides- you need a competent professor to show you the ropes (which I fortunately had). CM is just one of those subjects where you need a lot of practice and study to get good at

it.My perspective and experience might make me slightly biased, so keep that in mind. Spencer's book is not like most. While not perfect, he does a remarkable job of explaining all of the basics of what you need to know to do CM, and then teases with things more complicated (the rabbit hole goes very deep- I promise). Rather than obstinately sticking to either Gibbs notation (boldface vectors and tensors) or indicial notation, he moves between both, and sometimes presents equations in both forms. The figures are as simple as they need to be to get the point across (and no simpler). The important high points are in the book- vector/tensor analysis, kinematics, balance laws, and constitutive equations. The most fleshed out examples come from Spencer's own research, finite elasticity, which is a great demonstration of all of the important concepts.The length and price certainly are right. Until something better comes along, I would recommend this as a good introductory book, probably supplemented with theÂ Schaum's Outline. The book byÂ Chadwick, also cheap and thin, isn't a good starter book- it's outstanding for quick reference once you know how to talk the talk.

This is the perfect introduction to continuum mechanics. I've looked at many other options and kept coming back to this book as it is written in a very methodical manner and doesn't try to hide details or skip fundamentals.For example, this book is superior to Chadwick's, which tries to be concise and instead ends up burying the reader in formalism rather than concrete understanding.That said, some parts of the book have some holes in their derivations but that's no barrier as you can readily derive the steps in between on your own with what is provided. The exercises are not optional in this book, you need to carry them out to understand the material and in some cases, in order to obtain a result you will use to apply the material.At a leisurely rate, it should take you about a month to get through everything but the last two chapters of the book, the last two which need a month on their own. Be prepared to take down notes summarising each of the physical quantities and tensor rules as you learn them, it will help so you don't have to keep going back and forth in the book.

If you are going to be doing any significant work with continuum mechanics, I would recommend picking up this book. I will not say that it is extremely easy to follow, but if you are taking courses where continuum mechanics come into play, your math skills should be developed enough.Most books/courses/projects that deal with continuum mechanics don't seem to take the time to really explain it. I can attest that it is possible to get by without a full understanding, but it is many times easier once you have these concepts down solidly. That is what this book did for me.

The author in this book is really concise, but it is also very clear. It is not an excelent reference to specific issues you can have while dealing with continuum problems, but it certainly gives you a good idea of the concepts. The problems are insufficient, but, again, the strenght of the book is that summarizes the whole continuum theory in a hundred pages.I bought it becuase I was taking a class that used continuum theory at some points and I had no background. Since it is a small book, I read some parts of it in a blink and ended up with the main notions.Finally: it is cheap, it is really a good investment, you're going to get more of it than what you spend.

For what it is worth, I am using this as a course textbook. I appreciate the inexpensiveness of this book and given the choice between buying this or another text, I would choose this text. However, there are times when as a student I find myself looking for more explanation and find myself consulting more in depth texts from our library. In short, would I buy it again given the price? Yes. Is it more than an intro? No.

Appears to be a good book. I had to leave a review so I could see the last few pages.

This is a good book for reader who learns continuum mechanics for the first time. It provides basic knowledge of the subject.

Excellent text! It explains the fundamentals clearly and succinctly.

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