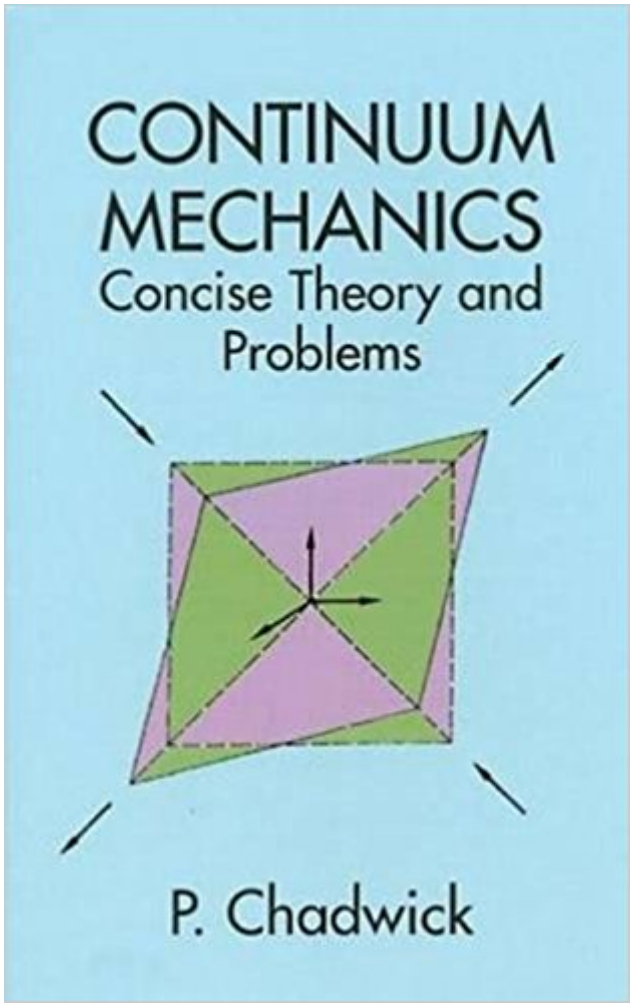
Continuum Mechanics: Concise Theory And Problems (Dover Books On Physics)



Synopsis

Written in response to the dearth of practical and meaningful textbooks in the field of fundamental continuum mechanics, this comprehensive treatment offers students and instructors an immensely useful tool. Its 115 solved problems and exercises not only provide essential practice but also systematically advance the understanding of vector and tensor theory, basic kinematics, balance laws, field equations, jump conditions, and constitutive equations.Readers follow clear, formally precise steps through the central ideas of classical and modern continuum mechanics, expressed in a common, efficient notation that fosters quick comprehension and renders these concepts familiar when they reappear in other contexts. Completion of this brief course results in a unified basis for work in fluid dynamics and the mechanics of solid materials, a foundation of particular value to students of mathematics and physics, those studying continuum mechanics at an intermediate or advanced level, and postgraduate students in the applied sciences. "Should be excellent in its intended function as a problem book to accompany a lecture course." Ã¢â ¬â • Quarterly of Applied Math.

Book Information

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Customer Reviews

Concise is an understatement. This book is very dense. Beyond grouping topics into chapters, there is little organizational sense. Each section is a bit of "theory" and then several worked "problems," which aren’t really problems...they are more proofs and theory. Not to say that the problems aren’t useful. Chadwick covers general continuum mechanics, and takes brief detours into both the solid

side and the fluid side, so everyone will get something out of the book. Take note, all you engineers like me: Chadwick lets the physics fall out of the math, as opposed to using math to describe the physics, and in that regard, I find the book very cumbersome.I think this book is best used as a supplement to a course and/or another mechanics book, or a "quick reference" kind of thing. The discussions are too brief to be of use to the initial student of mechanics. Because the apparent emphasis is on conciseness, you need to read very carefully...and flip back and forth to results in other parts of the book. The obligatory "mathematical preliminaries" section of mechanics books is here for precisely that reason- it's obligatory. It's pretty easy to see why this book is fawned over by many mechanicians...if you need to revisit some basic theory or proof as part of some other later work with modern mechanics, this is probably exactly what you're looking for.

EXCELLENT...

For learning continuum mechanics without another solid resource, this book is awful (a really unfortunate choice for an introductory course). That said, it could potentially be a good reference as it does seem to contain quite a bit of info presented VERY tersely.

It is concise, however it is not a book for selfstudy, more like an expansion of the class notes. Not limited to solid mechanics and written to provide general insight

I originally bought this book as a reference when I was taking my FEA graduate school course to supplement some of the concepts, namely tensors. I found the book hard to follow since it did not have detailed examples worked out; this may be suitable for more advanced graduate level courses (i.e. doctorate level).

It's a mathematical viewpoint for continuum mechanics derived from linear algebra. Not very practical for engineers that don't need to prove the mathematics involved.

This book can be a good supplement for a continuum mechanics text. Some parts are really good (for example the derivation of energy balance). A very good part of this book is the part in kinematics(second chapter) where he derives the transport equation in a very neat manner. This comes to good use later in the chapter on balance laws. The section on jump conditions is a good addition which is not found in many similar books. The last chapter on constitutive relations is really

good. Just that chapter is worth the price.There are two things that I did not like from this book. The first one is the author glosses over the Cauchy theorem (traction = stress tensor*normal vec.) by just giving a reference to another book. Come on!!! This is a very important component of stress analysis. He should have derived it in the book. In the later editions he puts it in the appendix and doesn't say anything about that in the main text. Poor organisation! The other one is he relies almost entirely on dyadic notation. I would have liked if he gave the equivalent forms in index notation which many people, including myself, tend to understand better.Use this book together with Ogden's "Non-linear Elastic Deformations" and you got your self a good continuum mechanics library for less than USD 40.

Maybe it has some use for reference, but for first time studying, this book is too concise to really explain things clearly for readers.Besides, the notation is also not in accordance with that used by today's researchers.Don't buy it. Buy Malvern's book instead. 'Introduction To The Mechanics Of A Continuous Medium' is the best book for studying this subject and also for future reference.

Physics (Dover Books on Chemistry) Group Theory and Quantum Mechanics (Dover Books on Chemistry)