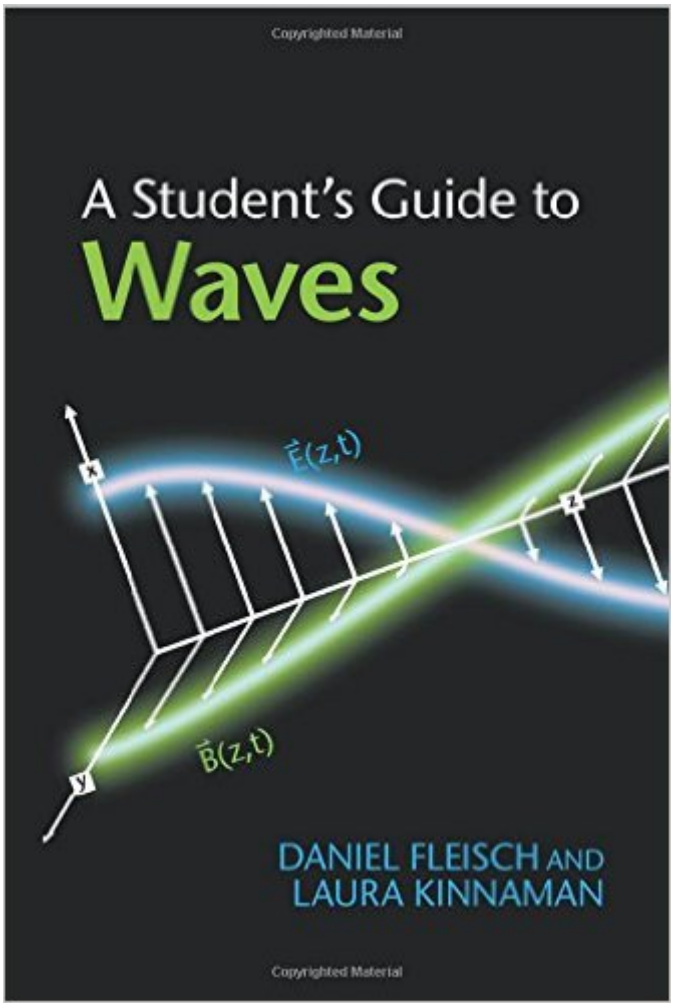
A Student's Guide To Waves



Synopsis

Waves are an important topic in the fields of mechanics, electromagnetism, and quantum theory, but many students struggle with the mathematical aspects. Written to complement course textbooks, this book focuses on the topics that students find most difficult. Retaining the highly popular approach used in Fleisch's other Student's Guides, the book uses plain language to explain fundamental ideas in a simple and clear way. Exercises and fully-worked examples help readers test their understanding of the concepts, making this an ideal book for undergraduates in physics and engineering trying to get to grips with this challenging subject. The book is supported by a suite of online resources available at www.cambridge.org/9781107643260. These include interactive solutions for every exercise and problem in the text and a series of video podcasts in which the authors explain the important concepts of every section of the book.

Book Information

Paperback: 227 pages

Publisher: Cambridge University Press; 1 edition (June 9, 2015)

Language: English

ISBN-10: 1107643260

ISBN-13: 978-1107643260

Product Dimensions: 6 x 0.4 x 9 inches

Shipping Weight: 14.4 ounces (View shipping rates and policies)

Average Customer Review: 4.9 out of 5 starsÂ Â See all reviewsÂ (23 customer reviews)

Best Sellers Rank: #31,330 in Books (See Top 100 in Books) #5 inÂ Books > Science & Math > Physics > Waves & Wave Mechanics #69 inÂ Books > Textbooks > Science & Mathematics > Physics #9443 inÂ Books > Reference

Customer Reviews

I am a retired chemical engineer (Delft, Holland) revamping his knowledge of maths, in order to rediscover physics.Like the other "Student's guides" written by Daniel Fleisch, this one caused a sentiment of "why didn't they tell me this before" ? Why are there so many textbooks full of unnecessary, non relevant detail, clobbering the main issues and just impeding true understanding ? Where the authors seem to concentrate on impressing their audience by their own knowledge, rather than fostering real understanding with their readers.Great book, highly recommended ! (needless to say: I bought all Students's guides written by Fleisch)

Once again Professor Fleisch has delivered a great guide. I own his famous "A Students Guide to Maxwell Equations" and instantly fell in love with it, and now I bought this new book and it didnt disappoint me at all. I must say there are some differences, this book is borderline between being a guide and a textbook, Its not comprehensive enough to be an actual textbook but its not as concise as the Maxwell guide.The book felt a lot more verbose than the Maxwell guide, this one about waves is actually twice the size of the Maxwell guide. One could argue that its a more general topic, and it is, it will attract many different readers since it covers many different topics from mechanical motion, EM and even the SchrÃ¶dinger wave equation. The author will provide good introductions to such topics, which is nice to have, however I kind of miss the beauty and the simplicity of the Maxwell guide, in which whenever you want to check something out, you can quickly find what you are looking for, in this Waves guide you need to go through a lot more paragraphs(even pages) of explanations to get the info that you need.Overall I would say it was a great buy!

As a supplement to other waves book, it is as good as it gets. Clear, simple(it does not simplify things, just present each subject in a simple, clear way) and elegant. For anybody who wants a book to fill in some gaps in intuition, this is the place to go. It is also a very good place for somebody who has been out of (physics) action and wants to remember the basics of waves.This book treats the very basics of waves(either mechanical or electromagnetic waves), so don’t expect complicated phenomena that you might find in more advanced books(like Crawfor’s or Walter Smith’s)--although there is "complicated" material like Fourier analysis which I did not expect to find it in such detail in such a short book. This book will solidify you understanding of the most basic properties of waves.The book is full of graphs and visual illustrations to help the reader understand the physics very well. While it does not delve into "hard" mathematics, it tackles partial derivatives and more while not going very deep with them. But one thing that stands out is that the author builds a much needed intuition behind the mathematics(something that most authors don’t do because they take for granted that the reader understands WHY those particular mathematics are used to describe each phenomenon).So, to sum it up, get a good primary book like Crawford’s Waves or Walter Smith’s Waves and Oscillations or David Morin’s drafted chapters from his book of waves(they are in his website and they indicate that when his book finally comes out, it will be the best book on waves yet) and then buy this if you need a supplement.

This short book is an excellent course supplement for undergraduate students of engineering and physics. This guide includes some of the elementary material that is often left out of textbooks. The

first part of the book covers basic mathematical concepts up through partial differential equations. The remainder of the book provides examples of the wave equation in different fields such as electromagnetics and quantum physics. This is not a detailed treatment of waves and the wave equation but it is a good summary of the subject. I particularly liked the general approach to the subject that illustrates how mathematics can be applied to different topics in physics and engineering.

The book is far more comprehensive than I could have imagined. It covers the bare basics, first and foremost, and then it gets into the deeper aspects of wave theory, such as, Fourier analysis and even aspects of quantum mechanics which is a real treat to be exposed to seeing how important wave theory is to the subject. Also, for you Electrical Engineering students out there, the Smith Chart is also covered.

Very good coverage and descriptions of the mathematics of the wave equation. If you are a student trying to understand or a teacher trying to remember what was so troubling, this is well worth the price. Excellent descriptions of and comparison with various PDE'S related to the wave equation give you the intuition to see what's so special and what the different features that matter really are. Comparisons are carefully selected to illustrate important features one by one, from PDE order to linearity vs. Nonlinear equations. Very good coverage of Euler relation in multiple ways to drive home the importance of this to analysis of waves makes Fourier theory and concepts like negative frequency pop with that ..."duh, what was so confusing?"...clarity. Must read for anyone learning waves and wave equations.

Stone: How Waves, Earthquakes, and Other Forces Shape the Southern California Coast Waves, Tides and Shallow-Water Processes, Second Edition Incredible Waves: An Appreciation of Perfect Surf Physics for Scientists and Engineers, Vol. 1: Mechanics, Oscillations and Waves, Thermodynamics (Physics for Scientists & Engineers, Chapters 1-21) Brain Waves Puzzle Book