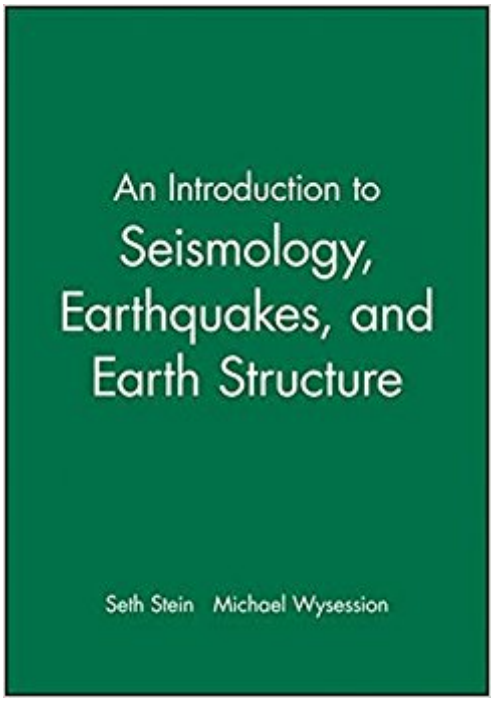
An Introduction To Seismology, Earthquakes And Earth Structure



Synopsis

An Introduction to Seismology, Earthquakes and Earth Structures is an introduction to seismology and its role in the earth sciences, and is written for advanced undergraduate and beginning graduate students. The fundamentals of seismic wave propagation are developed using a physical approach and then applied to show how refraction, reflection, and teleseismic techniques are used to study the structure and thus the composition and evolution of the earth. The book shows how seismic waves are used to study earthquakes and are integrated with other data to investigate the plate tectonic processes that cause earthquakes. Figures, examples, problems, and computer exercises teach students about seismology in a creative and intuitive manner. Necessary mathematical tools including vector and tensor analysis, matrix algebra, Fourier analysis, statistics of errors, signal processing, and data inversion are introduced with many relevant examples. The text also addresses the fundamentals of seismometry and applications of seismology to societal issues. Special attention is paid to help students visualize connections between different topics and view seismology as an integrated science. An Introduction to Seismology, Earthquakes, and Earth Structure gives an excellent overview for students of geophysics and tectonics, and provides a strong foundation for further studies in seismology. Multidisciplinary examples throughout the text - catering to students in varied disciplines (geology, mineralogy, petrology, physics, etc.). Most up to date book on the market - includes recent seismic events such as the 1999 Earthquakes in Turkey, Greece, and Taiwan). Chapter outlines - each chapter begins with an outline and a list of learning objectives to help students focus and study. Essential math review - an entire section reviews the essential math needed to understand seismology. This can be covered in class or left to students to review as needed. End of chapter problem sets - homework problems that cover the material presented in the chapter. Solutions to all odd numbered problem sets are listed in the back so that students can track their progress. Extensive References - classic references and more current references are listed at the end of each chapter. A set of instructor's resources containing downloadable versions of all the figures in the book, errata and answers to homework problems is available at: http://levee.wustl.edu/seismology/book/. Also available on this website are PowerPoint lecture slides corresponding to the first 5 chapters of the book.

Book Information

Paperback: 498 pages
Publisher: Wiley-Blackwell; 1 edition (September 2002)
Language: English

ISBN-10: 0865420785

ISBN-13: 978-0865420786

Product Dimensions: 8.7 x 1 x 10.9 inches

Shipping Weight: 2.8 pounds (View shipping rates and policies)

Average Customer Review: 3.9 out of 5 stars 12 customer reviews

Best Sellers Rank: #107,058 in Books (See Top 100 in Books) #22 inÃ Â Books > Science & Math > Earth Sciences > Geophysics #22 inÃ Â Books > Science & Math > Earth Sciences > Seismology #28 inÃ Â Books > Science & Math > Earth Sciences > Earthquakes & Volcanoes

Customer Reviews

"This outstanding book is without equal, and it will endure for many years as an indispensable reference for earth scientists and engineers as well as a great resource for students." (Choice, April 2003) "An Introduction to Seismology, Earthquakes, and Earth Structure belongs on the shelf of every seismologist...a fantastic resource for interesting examples, challenging problems, added coverage for selected topics, and as a general reference resource. This book is destined to become a classic." --Clifford Thurber, University of Wisconsin, Madison, EOS Transactions, June 2003 "All in all, it is an indispensable reference for serious students of solid-Earth geophysics." --Heidi Houston, UCLA, Physics Today, October 2003 "...the authors' methodical approach and transition through the subject make it a suitable text with which to build on undergraduate studies...If you have found seismology and earth structure an interesting aspect of your earth science studies this book is a valuable next step, supporting the authors' contention that seismology should be part of the education of every solid earth scientist." (The Open University Geological Society Journal, May 2004) "There is no doubt that the publication is a valuable learning tool for advanced undergraduate and beginning graduate students and a useful reference book not only for seismologists but also for solid earth scientists in general." (The Eggs.org (Newsletter of the EGU), September 2004) "This is an extremely well-written, innovative and well-received overview-cum-textbook for use by first-year graduate students. The approach is more modern and useful than other available seismology textbooks." (Natural Hazards, April 2005) "In spite of the fact that the book has been written as a textbook, it also makes a good addition to any geophysicist's bookshelf as a 'quick reference' as the clear writing makes it easy to absorb information quickly when reading out of sequence." (Surveys in Geophysics)

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and its role in the earth sciences, and is written for advanced undergraduate and beginning graduate students. The fundamentals of seismic wave propagation are developed using a physical approach and then applied to show how refraction, reflection, and teleseismic techniques are used to study the structure and thus the composition and evolution of the earth. The book shows how seismic waves are used to study earthquakes and are integrated with other data to investigate the plate tectonic processes that cause earthquakes. Figures, examples, problems, and computer exercises teach students about seismology in a creative and intuitive manner. Necessary mathematical tools including vector and tensor analysis, matrix algebra, Fourier analysis, statistics of errors, signal processing, and data inversion are introduced with many relevant examples. The text also addresses the fundamentals of seismometry and applications of seismology to societal issues. Special attention is paid to help students visualize connections between different topics and view seismology as an integrated science. AN INTRODUCTION TO SEISMOLOGY, EARTHQUAKES AND EARTH STRUCTURE gives an excellent overview for students of geophysics and tectonics, and provides a strong foundation for further studies in seismology.

I had a seismology class from a professor who was hard to learn from. He was just too smart to come down to the level of many undergraduate students. This book did a great job at helping us meet somewhere in between. It was a tough book to follow in some places. Often making leaps from one equation to the next that for anything short of a seismologist or mathematician took minutes and sometimes hours to follow, but when you finally got through a chapter it usually made sense and the book was well compiled.

This is one of the two or three best seismology text books currently on the market. It is aimed at upper level undergraduate students or graduate students in geophysics. Tough reading with all the mathematical background, but I haven’t had a question yet that I couldn’t find the answer to in Stein’s book.

Excellent introductory text with just the right amount of math, very readable style, good figures and graphs.

The book may say Introduction, but don’t expect a "Seismology for Dummies" type set up. This book is actually quite advanced and detailed, jumping right into intricate math formulas. This is a great book for those already familiar with the basic concepts of seimsology, however those with limited

math skills or no prior knowledge of seimsology will be turned away by the technicality of some aspects in the book.

Excelent product!

It was required for a class. I prefer the Shearer book as an intro to seismology. This is fine, but it’s too basic to be a very useful reference beyond an introductory course.

Bible of seismology . like it the way it puts lots of things together but not necessary best explanations

I rate this book for one star not because I don’t like the content of the book, but because the quality of the book I received is far from satisfaction! i.e. paper quality, text and figures quality are not even close to the ones I have seen before. I strongly suspect this book and the other two books I bought were produced in an inappropriate way!PS: I bought these books from Singapore.