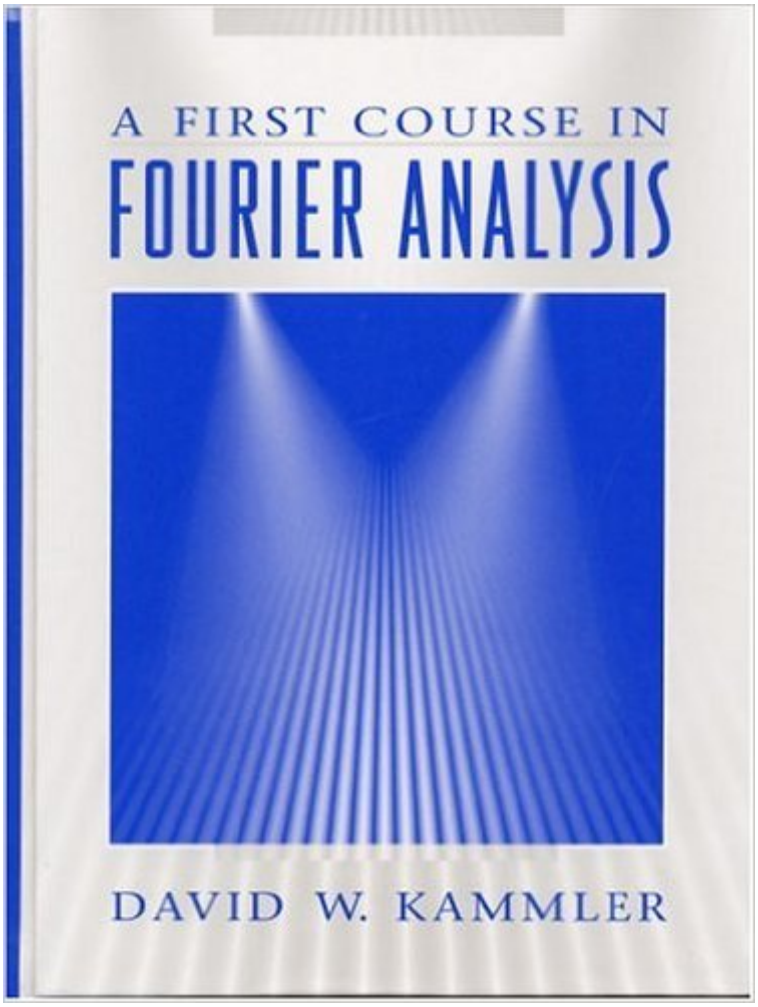
First Course In Fourier Analysis, A



Synopsis

This unique book provides a meaningful resource for applied mathematics through Fourier analysis. It develops a unified theory of discrete and continuous (univariate) Fourier analysis, the fast Fourier transform, and a powerful elementary theory of generalized functions and shows how these mathematical ideas can be used to study sampling theory, PDE's, probability, diffraction, musical tones, and wavelets. Providing unified development of (univariate) Fourier analysis for functions on R, T, Z, and P, the book also includes an unusually complete presentation of the Fourier transform calculus. It uses concepts from calculus to present an elementary theory of generalized functions. It also uses the FT calculus and generalized functions to study the (univariate) wave equation, diffusion equation, and diffraction equation. In addition, fine points of the theory are developed. The book also demonstrates real-world applications of Fourier analysis in the chapter on musical tones. A valuable reference on Fourier analysis for a variety of scientific professionals, including Mathematicians, Physicists, Chemists, Geologists, Electrical Engineers, Mechanical Engineers, and others.

Book Information

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Customer Reviews

I have been interested in the Mathematics of Fourier Series/Fourier Transform methods for well over 15 years. I own already well over 10 books on this subject. The book by David Kammler strikes me as having a particularly good balance between theory and applications as well as taking a modern computer approach to this ever relevant subject. Important topics such as sampling theory and the Fast Fourier Transform (FFT) are well covered and explained in detail. Also, chapters that apply

Fourier Analysis to important physical areas (heat conduction, light diffraction, wave propagation, musical sound, etc.) illustrate and higlight the relevance of Fourier Methods in the real worls. There is also a nice summary at the end of the book that explains the histoy and most important application of Fourier Analyis (very nice). Ample computer excerices and the traditional proof/derivation homework problems are included. The book also seems to prepare the reader well for the increasingly subject of Wavelets and applying them musical sound. Also, what makes the book stand out from more traditional ones is the emphasis on Numerical Method and using the computer to solve or illustrate some of the powers of Fourier Analysis. Readers considering using this text should best have a background in calcus, differential equations and Matrix methods. This probably puts it at the junior/senior undergradudate level. 1st year graduate students might also benefit from the text.In a nutshell this is an excellent textbook for anyone serious about Fourier Analysis and applying those methods via computer (or pencil) to real world situation. This is probably one of the best books yet on this very important subject. Highly Recommended!

I used this book as part of a class at the University of Maryland. What I have discovered is that Kammler didn't really write a very good book for a first course in Fourier analysis. I am a math/physics major and found the book to be very scattered for a FIRST course. For example, the first chapter just dumps a whole bunch of information without presenting much background or context. That being said, I do think the book contains a lot of valuable information and might be good for students already familiar with Fourier analysis (I should note that I was familiar with Fourier series and Fourier transforms prior to the class).

I'm an electrical engineer, with a focus in signal processing. This is the book I learned Fourier analysis from, and once I did, the classes that EEs usually dread were relatively easy for me. This is the only textbook I actually read every chapter of (and we only covered the first half in the Fourier analysis course). Kammeler writes in a conversational style, which I like in a text, and goes through many practical examples in math, physics, and engineering. I appreciated the rigor devoted to generalized functions (Dirac deltas are almost always glossed over in engineering texts, and thus remain mysterious and sometimes non-sensical), yet Kammeler always keeps intuition close by so it's relatively easy to follow if you're not a mathematician. The parts I didn't like were when Kammeler fell back on more elementary yet more complicated presentations to avoid introducing too many new concepts. For example, I think the FFT is most easily understood with Z-transforms and multirate systems, and that Fourier analysis in general is more easily understood in terms of

Hilbert spaces. It's hard to fault him for it though, because it's primarily a math book and needs to be mostly self-contained. It's also typeset in LaTeX, and looks beautiful.

Great book. Have got a A+ with this in university.

Overblown and even absurd in places this is one to pass by.Try dover instead - loads of proven titles available at a fractionof the price.

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