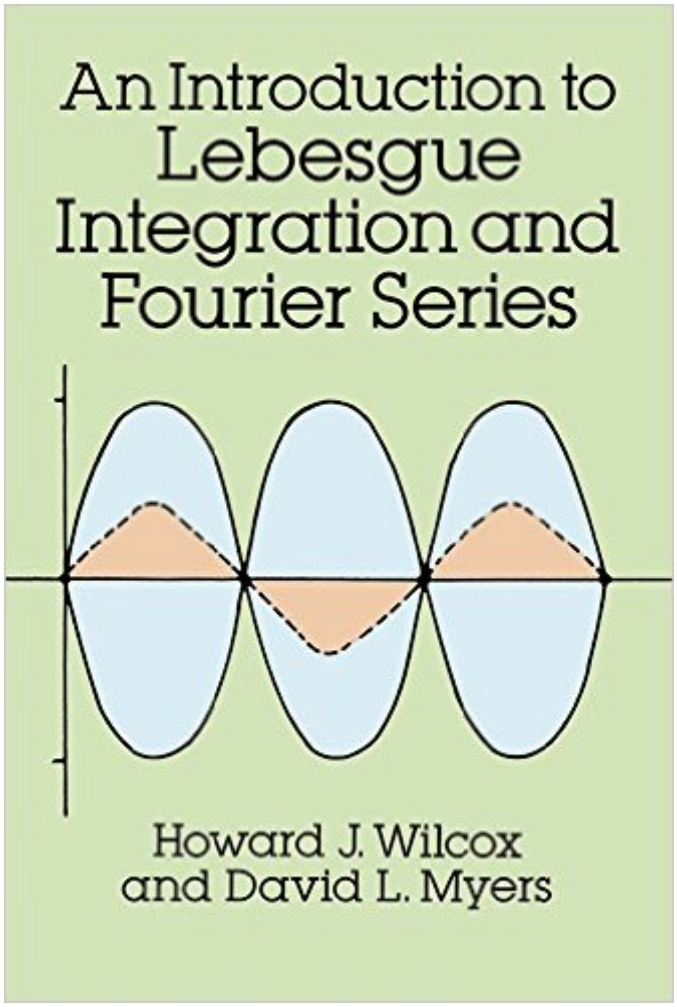
An Introduction To Lebesgue Integration And Fourier Series (Dover Books On Mathematics)



Synopsis

This book arose out of the authors' desire to present Lebesgue integration and Fourier series on an undergraduate level, since most undergraduate texts do not cover this material or do so in a cursory way. The result is a clear, concise, well-organized introduction to such topics as the Riemann integral, measurable sets, properties of measurable sets, measurable functions, the Lebesgue integral, convergence and the Lebesgue integral, pointwise convergence of Fourier series and other subjects.The authors not only cover these topics in a useful and thorough way, they have taken pains to motivate the student by keeping the goals of the theory always in sight, justifying each step of the development in terms of those goals. In addition, whenever possible, new concepts are related to concepts already in the student's repertoire.Finally, to enable readers to test their grasp of the material, the text is supplemented by numerous examples and exercises. Mathematics students as well as students of engineering and science will find here a superb treatment, carefully thought out and well presented , that is ideal for a one semester course. The only prerequisite is a basic knowledge of advanced calculus, including the notions of compactness, continuity, uniform convergence and Riemann integration.

Book Information

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Customer Reviews

This book was my first contact with measure theory. I read this for self study -- more or less as a leisure book. The material is aimed at undergrads, and probably doesn't assume much past plain ol'

college calculus. However, the more you know, the easier it will be to read. Any experience with analysis, and proofs will be helpful. And, in chapter 7, "Function Spaces", a linear algebra course will come in very handy.Anyway, it’s not a hard book to read, but it is very dry. Because the book is so short, there is not much room for anything other than a list of definitions, lemmas and theorems. There isn’t really much insight. All the way through chapter 7 I was basically plodding along, simply because I wanted to finish the book. However, I’m glad that I did, because I found chapter 8 really fascinating. I think this chapter (Fourier Series in L^2) really ties the book together because you get to see measure theory and lebesgue integration working in harmony with linear algebra. I never really liked linear algebra that much until I read this chapter.Unfortunately, chapter 9 was a let down and I actually quit reading a few pages before the end of the book. I had already got what I needed out of it. It’s a good intro to measure theory if you just want to see what it is, and not really go into detail with it. A lot of the lemmas, propositions and corollaries are left as exercises. I tried to do a handful of problems from every chapter, especially the ones that fill in the text, and had little or no difficulty with any of them.I would have given this 3 stars if not for chapter 8. For the price, I would recommend it, especially if you love calculus, but never liked linear algebra, because it will hopefully tie them together for you. Now I can’t get enough linear algebra!

I should mention my own history in approaching this book; last year I took a yearlong graduate analysis class out of Rudin, and now I’m taking a similar analysis class elsewhere, and I read this yesterday for review. In that context it served its purpose very well; in what it presents it’s clear and concise, with a good idea of what to detail and what to leave to the reader (many of the proofs are delegated to the exercises). Having said that, "in what it presents" is an important qualifier to use; it’s somewhat limited in scope, even given that it’s a relatively short book (

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