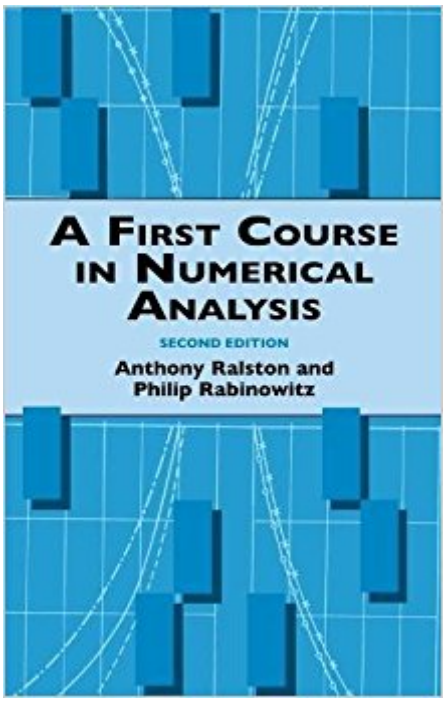
A First Course In Numerical Analysis: Second Edition (Dover Books On Mathematics)



Synopsis

This outstanding text by two well-known authors treats numerical analysis with mathematical rigor, but presents relatively few theorems and proofs. Oriented toward computer solutions of problems, it stresses errors in methods and computational efficiency, and it compares different solutions to the same problem.Following an introductory chapter on sources of error and computer arithmetic, the text covers such topics as approximation and algorithms, interpolation, numerical differentiation and numerical quadrature, the numerical solution of ordinary differential equations, functional approximation by least squares and by minimum-maximum error techniques, the solution of nonlinear equations and of simultaneous linear equations, and the calculation of eigenvalues and eigenvectors of matrices.This second edition also includes discussions of spline interpolation, adaptive integration, the fast Fourier transform, the simplex method of linear programming, and simple and double QR algorithms. Problems Ã¢â ¬â • some strictly mathematical, others requiring a computer Ã¢â ¬â • appear at the end of each chapter.

Book Information

Series: Dover Books on Mathematics

Paperback: 624 pages

Publisher: Dover Publications; 2 edition (February 6, 2001)

Language: English

ISBN-10: 048641454X

ISBN-13: 978-0486414546

Product Dimensions: 5.4 x 1.2 x 8.4 inches

Shipping Weight: 1.4 pounds (View shipping rates and policies)

Average Customer Review: 3.5 out of 5 stars 10 customer reviews

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Customer Reviews

great book, great seller!

Helpful and easy to follow.

This is the Bible of Numerical Analysis and ,as The Bible, it never gets obsolete.You can return to it, read it again and you will learn something new.Very comprehensive, deep and mathematically rigorous.

Last time i get a dover book to understand something from basics...the book is not for someone who wants to understand basics of numerical analysis

I strongly disagree with the title of this and feel it would be best suited as a second course. The reason being is that, nowadays, most people can be taught the basics of numerical theory without the actual theory. Whether that's a good thing or bad thing is irrelevant and a sign of the times; what matters is that this book assumes a knowledge of abstract thinking, if only a basic one, which today's undergraduates typically don't see for some time in their careers (assuming they're in a math department; it's entirely uncommon to not see theory at all in other programs).As a result, this book isn't the most accessible. And indeed, reading the text has been a nightmare to me. Everything is just jammed together on as little space as possible with no real breaks to rest the eyes. It's easy to lose your place on a page and allowing large sequences/series to roll over multiple lines really isn't the best format.It does offer some very good points, though. It has some of the best presentation of taking a "first" numerical algorithm and showing how it can be manipulated into a higher algorithm that's more in line with something people actually use. Compare it to Burden & Faires's Numerical Analysis text which doesn't do this very well at all, and this book clearly trains a student to think like a numerical analyst by thinking about the properties of the given function or set of data and the properties of common calculus/linear algebra techniques and how they can be handled.The problems support this approach by being VERY meaningful and worthwhile to solve for a book of this level. But some of them lack motivation and, to someone inexperienced thinking like an analyst, can come off as just "pretentious" or "unnecessarily difficult" in a sense. But rest assured, most every problem here is motivational for a later topic or for thinking like an analyst and a numerical analyst.Unfortunately, presentation counts, and as I said, this book lacks it in spades. It's definitely an academic book and not a very good reference at all, which is good but only temporarily so since you're more inclined to toss it when you're done and go find another text that has algorithms' pseudocode laid out rather than asking you to come up with them and "reinvent the wheel." So I just can't recommend it very strongly.

This is a good intermediate text on numerical analysis. The development of the underlying real

variable theory is much more rigorous than the closely related and more recent text "Numerical Recipes in C". Also, there is more attention paid to function theoretic considerations such as notions of continuity and compactness. This is basically an introductory numerical functional analysis textbook. There are numerous good examples sprinkled throughout the text. To get the most out of this book, you need a working knowledge of advanced calculus, real analysis and linear algebra.

This is the republication of the 2nd edition published by McGraw-Hill, 1978, with minor corrections. This Dover edition also includes 50 pages of Hints and Answers to Problems, which is very helpful. It is one of the 14 reference books listed in the Numerical Recipe in C: The Art of Scientific Computing, and the authors of the Recipe book says, of the 14 books, "These are the books that we like to have within easy reach." A. Ralston, of SUNY Buffalo, also co-wrote a book, Discrete Algorithmic Mathematics(DAM), which is easy and fun to read. But I am puzzled by the words - "Well-known and highly regarded even by those who have never used it." - on the back cover of the A K Peters edition of DAM. What do they mean?

If you are looking in to 3d Nurbs buy this book. If you are looking to build a robot from scratch buy this book. It may mean taking calculus and linear algebra but the algorithms are very advanced and quick. This is the math that every corporation would like you to have if you are an engineer. Plus it helps you understand many of the mathematicians. After reading this book you have excellent under pinning for your name.P.S. This may be good for white hatter as well but I don’t know since I am not into cryptography.P.P.S. Did you always think that Sin() was a magical function? Well you will learn more than you every thought possible with this book. The optimization on you code can go through the roof. Plus this seems to be (but I still have not confirmed) a good way of understanding O notation and not to mention NP complete algorithms (Such what classifies a NP Complete problem).

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