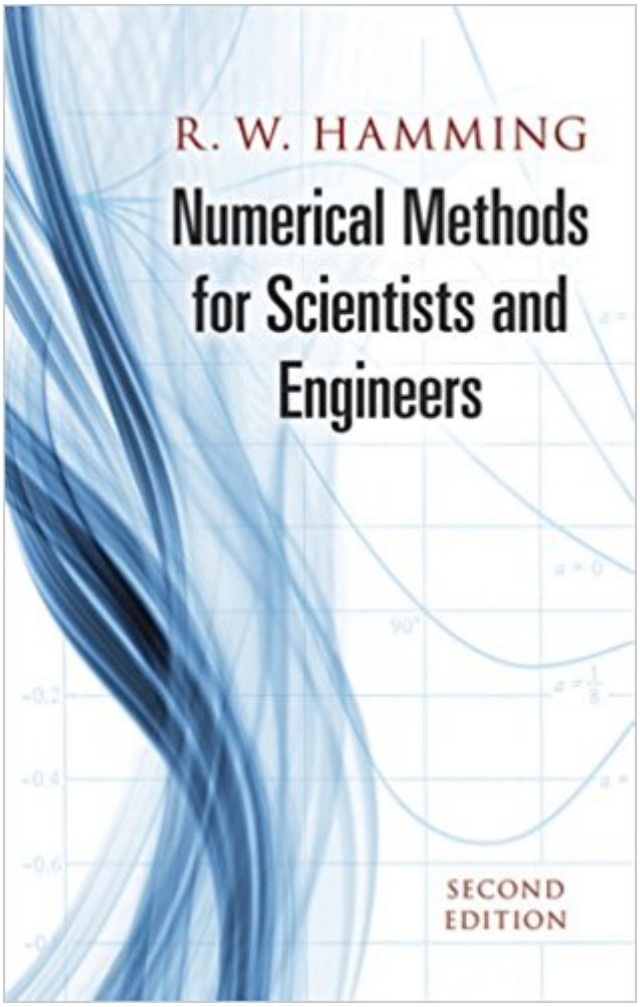
Numerical Methods For Scientists And Engineers (Dover Books On Mathematics)



Synopsis

Numerical analysis is a subject of extreme interest to mathematicians and computer scientists, who will welcome this first inexpensive paperback edition of a groundbreaking classic text on the subject. In an introductory chapter on numerical methods and their relevance to computing, well-known mathematician Richard Hamming ("the Hamming code," "the Hamming distance," and "Hamming window," etc.), suggests that the purpose of computing is insight, not merely numbers. In that connection he outlines five main ideas that aim at producing meaningful numbers that will be read and used, but will also lead to greater understanding of how the choice of a particular formula or algorithm influences not only the computing but our understanding of the results obtained.The five main ideas involve (1) insuring that in computing there is an intimate connection between the source of the problem and the usability of the answers (2) avoiding isolated formulas and algorithms in favor of a systematic study of alternate ways of doing the problem (3) avoidance of roundoff (4) overcoming the problem of truncation error (5) insuring the stability of a feedback system.In this second edition, Professor Hamming (Naval Postgraduate School, Monterey, California) extensively rearranged, rewrote and enlarged the material. Moreover, this book is unique in its emphasis on the frequency approach and its use in the solution of problems. Contents include:I. Fundamentals and AlgorithmsII. Polynomial Approximation- Classical TheoryIII. Fourier Approximation- Modern TheoryIV. Exponential Approximation ... and moreHighly regarded by experts in the field, this is a book with unlimited applications for undergraduate and graduate students of mathematics, science and engineering. Professionals and researchers will find it a valuable reference they will turn to again and again.

Book Information

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Customer Reviews

Richard W. Hamming: The Computer IconRichard W. Hamming (1915Ã¢â ¬â œ1998) was first a programmer of one of the earliest digital computers while assigned to the Manhattan Project in 1945, then for many years he worked at Bell Labs, and later at the Naval Postgraduate School in Monterey, California. He was a witty and iconoclastic mathematician and computer scientist whose work and influence still reverberates through the areas he was interested in and passionate about. Three of his long-lived books have been reprinted by Dover: Numerical Methods for Scientists and Engineers, 1987; Digital Filters, 1997; and Methods of Mathematics Applied to Calculus, Probability and Statistics, 2004. In the Author's Own Words:"The purpose of computing is insight, not numbers.""There are wavelengths that people cannot see, there are sounds that people cannot hear, and maybe computers have thoughts that people cannot think." "Whereas Newton could say, 'If I have seen a little farther than others, it is because I have stood on the shoulders of giants, I am forced to say, 'Today we stand on each other's feet.' Perhaps the central problem we face in all of computer science is how we are to get to the situation where we build on top of the work of others rather than redoing so much of it in a trivially different way." "If you don't work on important problems, it's not likely that you'll do important work." Ã¢â ¬â • Richard W. Hamming

Its easy to understand most of the methods included, the math theory or explanation is quite easy to understand in most cases as oppossed to "Numerical Analysis" by L. Burden which is extremely convoluted. However this last book I mentioned is also more complete which brings me to the only downside I noticed on this book, while some numerical methods are described with such elegance and simplicity, other methods are just mentiond and the author didnt provide examples to such methods, other methods are missing, some methods are not described in depth. There are no solutions to any of the excercises at the end of each method/chapter.That being said, overall I think this is the best numerical methods book Ive found so far. If you want a very complete book which include less common topics get Numerical Analysis by L. Burden, otherwise this book by R.W. Hamming is Just great!!!!!

Not a great book for self-studying but if you're having classes in the subject, it's really good.

Great resource.

I have been teaching numerical analysis for a long time now. I bought this book based on the author's name. I was not surprised to find out that my decision was totally correct. The book provides a clear and deep perception of basic concepts and techniques of numerical analysis that I hardly can find in texts on this subject matter.

Excellent reference.

Numerical methods for scientists and engineers is a fantastic textbook. I've always been interested in numerical analysis. Numerical analysis to me is the perfect combination: it has both mathematics and programming. A good example of this idea is Numerical Recipes in C, where you have both algorithms and their implementation. That being said, this book delivers where Numerical Recipes misses. It provides insight and understanding and explains the algorithms, not in a cookbook fashion, rather in a linear progressive method. There's not a single piece of code yet the algorithms are clearly expressed. It provides a clear understanding of methods I've used but didn't truly understand. It adds by discussing topics that aren't usually discussed in regular Numerical analysis textbooks, such as universal matrices, Stirling numbers, and Bernoulli numbers, generating functions, Riemann zeta function, Hermite interpolation, Chebyshev approximation, Adams-Bashforth and Milne methods and much, much more.The book can be read by anyone with graduate level math background: calculus, linear algebra and ordinary differential equations. Previous knowledge of numerical analysis is not required, the first chapters cover the basics extremely well.

Bought this book to replace hard cover textbook I somehow lost a while back. Serves as both a tutorial and reference and is well written. Classic book which is still relevant today.

It only covers some parts of modern numerical methods used in engineering and scientific areas. I personally think It is an out-of-date book. But it is still a good and classic book.

Engineers, Chapters 22-35) Physics for Scientists and Engineers with Modern Physics: Volume II (3rd Edition) (Physics for Scientists & Engineers) Numerical Methods for Engineers and Scientists Applied Numerical Methods with MATLAB for Engineers and Scientists Applied Numerical Methods for Engineers and Scientists Numerical Methods for Engineers and Scientists Using MATLABÃ Â®, Second Edition Numerical Methods for Engineers and Scientists, Second Edition, Applied Numerical Methods with MATLAB for Engineers and Scientists (Civil Engineering) Applied Numerical Methods W/MATLAB: for Engineers & Scientists Partial Differential Equations for Scientists and Engineers (Dover Books on Mathematics) Advice to Rocket Scientists: A Career Survival Guide for Scientists and Engineers (Library of Flight) Numerical Methods for Engineers (Civil Engineering) A First Course in Numerical Analysis: Second Edition (Dover Books on Mathematics) Solutions To Accompany Mcquarrie's Mathematical Methods For Scientists And Engineers. Mathematical Methods for Scientists and Engineers Schaum's Outline of Advanced Mathematics for Engineers and Scientists (Schaum's Outlines) Numerical Methods for Unconstrained Optimization and Nonlinear Equations (Classics in Applied Mathematics) Numerical Solution of Partial Differential Equations: Finite Difference Methods (Oxford Applied Mathematics and Computing Science Series) Numerical Partial Differential Equations: Finite Difference Methods (Texts in Applied Mathematics)