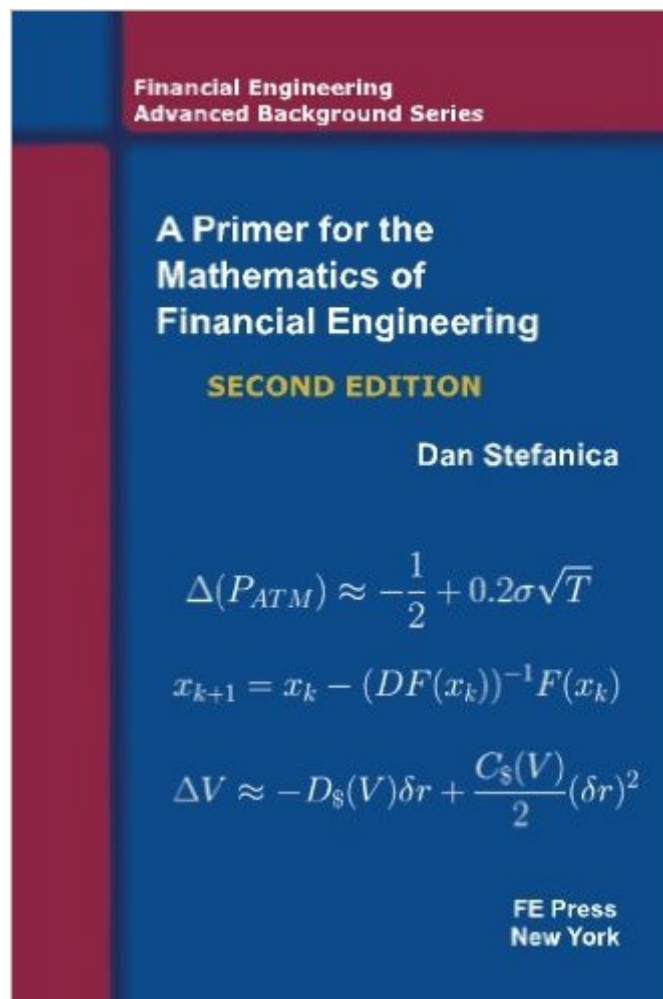


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# A Primer For The Mathematics Of Financial Engineering, Second Edition (Financial Engineering Advanced Background Series)



## Synopsis

Reviews for *A Primer for the Mathematics of Financial Engineering*, First Edition: "One of the hottest degrees on today's campus is a Masters in Financial Engineering. Whether you need to retrieve hallowed memories or just want to familiarize yourself with the mathematics underlying this degree, this unique book offers a terrific return on investment." --Peter Carr, PhD Global Head of Modeling, Morgan Stanley; Director of the Masters Program in Mathematical Finance, Courant Institute, NYU "This is the book I always recommend to people who ask about their mathematics before doing an MFE, and a few people could do with reading it after as well." --Dominic Connor Director, P&D Quantitative Recruitment

**NEW TOPICS:** Dollar duration, Dollar convexity, DV01; the effect of parallel shifts in the yield curve to changes in bond yields; bond portfolio immunization; arbitraging the Put-Call parity; percentage vs. log returns for individual assets and portfolios; optimum investment portfolios: maximum return portfolios and minimum variance portfolios; the numerical precision of finite difference approximations of the Greeks. **New or expanded sections:** new chapter on solving nonlinear problems; expanded Lagrange multipliers sections; streamlined Taylor series and Taylor expansion sections; Mathematical Appendix at the end of the book. This book builds the solid mathematical foundation required to understand the quantitative models used in financial engineering. It contains 175 exercises, many of these being frequently asked interview questions. A Solutions Manual including detailed solutions to every exercise in the Primer was published by FE Press. International shipping and Errata at [www.fepress.org](http://www.fepress.org) The First Edition of the Primer was warmly received by a large audience, including students and prospective students of financial engineering programs, academics teaching in such programs or in finance departments, and practitioners from the financial industry. The book proved to be very well suited for self-study, particularly with the addition of the Solutions Manual

**Financial applications (selected):** Put-Call parity, bond mathematics, numerical computation of bond yields, Black-Scholes model, numerical estimation for Greeks, implied volatility, yield curves bootstrapping

**Mathematical topics (selected):** numerical approximation of definite integrals; Taylor approximations and Taylor series expansions; finite difference approximations; Stirling's formula, polar coordinates; numerical methods for solving one dimensional problems; Newton's method for higher dimensional problems

## Book Information

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## Customer Reviews

First, primer means you have to have the fundamental math out of the way before you dive into this book. If you are fuzzy about what integration means, or the basic form of differentiation then start with Calculus first. Though I think the author does a great job of teaching Calculus in this book. This book bridges a very important gap between math and finance, and that is from the pure theoretical math to applied finance. People do not realize that financial engineering employs some of the most advanced theories in both theoretical math and probability. Which is why Wall Street is looking for physicists and engineering students for quantitative finance. This is a great self study, or textbook which instructs the student how to apply their math background to finance. The author does an excellent job of teaching the math, while using financial engineering as the examples and problems. Which in the end takes you from basic Calculus to Taylor series and Lagrange. Actually it would be a great way to teach calculus in the future. Instead of using theoretical physics and the sciences for examples and problems, simply use finance. The pseudocode is just a bonus in my mind. This is an excellent math book for students, even if they are not planning on a future in financial engineering because it does illustrate applied math like no other textbook.

Are you contemplating an MFE and/or MS in Math/Computational Finance Degree and asking yourself whether you have the right background? I strongly believe that "A Primer for the Mathematics of Financial Engineering" by Prof. Dan Stefanica will take you through every step toward finding the Best answer. It will also help you start your journey as an MFE student with utmost confidence. This book is a must for all prospective students for an MFE (or equivalent) degree. What I like the most about this book is the way the chapters are structured. Every chapter consists of two main parts. The first part deals with the basic mathematical foundation and/or numerical techniques required to understand a given subtopic of quantitative finance. Once the

mathematical/numerical basis is set up, Prof. Stefanica moves on to describing how it can be applied to comprehend a specific set of topics in quantitative finance in the second part of each chapter. Even if your math is not super strong to begin with, or you have not had much exposure to numerical techniques, you can easily master your skills while you are studying the first part of every chapter. And immediately following that, you see the application of the abstract mathematical concepts in the finance world. And then you can sharpen your skills much further by actually solving the stimulating questions/problems found at the end of each chapter. Another thing I love about this book is the set of pseudo-codes. After describing the numerical techniques, be it Simpson's rules for numerical integration or Secant method for solving 1-D nonlinear problems, the author provides pseudo-codes showing practical examples of their implementation. You can easily translate these pseudo-codes to your favorite language (C++, Matlab, etc.) and start producing results immediately. I hope you will enjoy studying the topics presented in this book... like I did. Good Luck!

The title of the book says Primer but don't expect this book to be primer. You really need to have a good understanding of the concepts of Calculus, differentiation and probability in order to use this book. I am out of school for more than 10 years and I really had to tweak my brain in order to grasp the concepts explained in this book. But here is the good news. One can easily get hold of all the concepts and theories in this book using online resources. Once you do that it should be good ride and if one can successful master this book doing an MS in FE should be well within the reach.

I read the first couple of chapters a couple of times to get my head around the math I haven't used for a while. It's a little easier together with Mathematica and another head-hurting book "Computational Financial Mathematics using Mathematica." It still hurts, but it's a good hurt.

This is a must read, it provides all the necessary financial mathematical information needed for a career as a quant. But the real reason this is a must read is because once you understand the equations, you need to go back through the book, and solve every equation using a programming language . If you can solve each equation by developing software to handle it, you are on your way to being a rock star quant and prepared for interviews. Be sure to buy the solution manual too, because you will save yourself a headache trying to figure out if you solved the problems correctly.

I am a math finance student who will soon start a summer internship on Wall Street. I want to leave feedback for the best and worst books that I used in my studies so far. I read this book before

starting my studies, and did many exercises. First, the solutions manual is great to have, you can do exercises and not spend time without any chance of finding the correct answer. The book is very useful to help refresh math topics, instead of reading through a pure calculus book. But seeing a lot of finance applications right away is where the value of the book is in. Having pseudocodes for numerical and exercises that make you write codes to get values for financial instruments was a great way to get me ready for what I was asked in my graduate classes. I go back to the book repeatedly. It is a very good reference book for all things Black-Scholes and for Newton's method, Lagrange multipliers and other math stuff. And I was asked several interview questions that were exercises in this book.

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