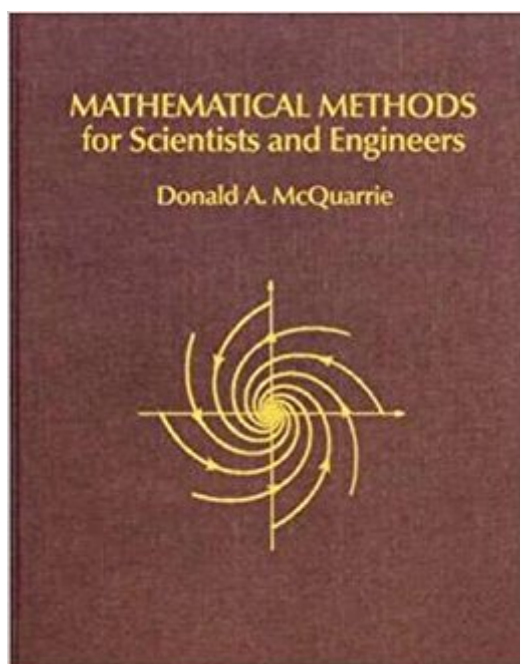


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# Mathematical Methods For Scientists And Engineers



## Synopsis

From best-selling author Donald McQuarrie comes his newest text, *Mathematical Methods for Scientists and Engineers*. Intended for upper-level undergraduate and graduate courses in chemistry, physics, math and engineering, this book will also become a must-have for the personal library of all advanced students in the physical sciences. Comprised of more than 2000 problems and 700 worked examples that detail every single step, this text is exceptionally well adapted for self study as well as for course use. Famous for his clear writing, careful pedagogy, and wonderful problems and examples, McQuarrie has crafted yet another tour de force. Artwork from this textbook and original animations by Mervin Hanson may be viewed and downloaded by adopting professors and their students. Figures that display the time evolution of an equation and the result of the variation of a parameter have been rendered as QuickTime movies. These movies can be displayed as animations or by using the single-step feature of QuickTime.

## Book Information

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## Customer Reviews

"Donald McQuarrie has produced a masterpiece... as appealing as any reference work you might imagine on this topic." -- Chemical & Engineering News, 9/22/03  
"McQuarrie's book is a well-written, carefully conceived panorama of an extensive mathematical landscape." -- Dennis DeTurck, University of Pennsylvania  
"McQuarrie's newest book lives up to all my expectations. The problems are excellent." -- Randall D. Kamien, University of Pennsylvania

As the author of landmark chemistry books and textbooks, Donald McQuarrie's name is

synonymous with excellence in chemical education. From his classic text on Statistical Mechanics to his recent quantum-first tour de force on Physical Chemistry, McQuarrie's best selling textbooks are highly acclaimed by the chemistry community. McQuarrie received his PhD from the University of Oregon, and is Professor Emeritus from the Department of Chemistry at the University of California, Davis. He makes his home at The Sea Ranch in California with his wife Carole, where he continues to write.

The content of this book is really great for students or whoever is trying to study this. But the format sucks. Does not have the bold letters of "theorem", not much proofs or whatsoever

goodthanks

The title befits the book in presenting mathematical methods for solving problems that extend between analogous facets of several disciplines. I used this book for a course in mathematical physics and it also served as the primary text for students in physics and engineering. This text covers material from linear algebra, differential equations, PDEs, complex analysis and statistics; although most courses won't go into the material on stochastic processes and probability theory presented at the very end of the book. The inclusion of these topics, however, does not necessarily make this book a comprehensive one. So let's be clear about one thing: this book has breadth, not depth. I think this book is daring in its attempt to cover a lot of ground and serves as a sort of hybrid from amongst a series of undergraduate math texts. However, I would recommend a separate book on differential equations for later chapters in the book that deal with Sturm-Liouville problems, Fourier series and integral transforms as it kind of washes over the material with a lot of summaries but is still relatively easy if you had any decent exposure to mathematics. I found "Mathematical Methods for Physicists and Engineers" by Riley, Hobson and Bence to be a good alternative but I am confident that a lot of the material is available in books you have previously used in other math courses.

It's too bad the author died before his second edition. This is the ultimate reference book I have for all math related problems. It gives a good approach to a very broad range of problems. Whenever I have to refresh on a mathematical topic like Green's functions I pull this book from my shelf. To work through the problems the solution's manual is a must while it greatly lacks in depth in some areas. This is definitely a reference text that should be on your shelf. 1100 pages of great reference

in an age when book prices are sky high and this book is so cheap in comparison. This book was assigned for my Advanced Applied Analysis class and I couldn't be happier having this as a broad reference. For more in depth approaches countless books are out there and sometimes all you need is to scratch the surface in the theory of a topic to gain a lot.

The late Donald McQuarrie's *Mathematical Methods for Scientists and Engineers* is a masterpiece! I have used the text for my graduate mathematical methods course for engineers for four years at Howard University and I have also used Arfken and Weber's *Mathematical Methods for Physicists* as a graduate student at Ohio State University many, many years ago. I also have read and consulted the late Mary Boas' excellent *Mathematical Methods in the Physical Sciences*, which is now in its 3rd edition. While it is true that Arfken and Weber covers more topics than McQuarrie (e.g. tensor analysis and group theory), McQuarrie is actually a textbook that is clearly written for students to read and follow with a myriad of examples to work through. Arfken and Weber is a reference book and it is really not a textbook, although it is used extensively throughout the physics community. I wish that more folks would discover McQuarrie, who was famous for writing very clear texts in the chemical community. One criticism I have heard from folks is the presence of typos in McQuarrie. There is a web site by D. Sober who is collecting these errata for future use. Unfortunately, I suspect that we may not see a second edition of McQuarrie because of his passing in 2009. One should remember that there were many typos in the first editions of Arfken (then only Arfken and not Arfken and Weber) and Boas. In summary, I suspect that the choice of a book depends on your audience! McQuarrie is a pleasure to read and work through as a student, although some may not be happy with its omission of tensor analysis and group theory which are, of course, important topics for physicists. Arfken is really a reference book and not a textbook. Boas is a beautiful book which is not as extensive as McQuarrie but is a much better written expository textbook than Arfken and Weber and it even includes an elementary discussion of group theory and tensor analysis. Those seeking a more mathematical and less applied perspective may not be happy with any of these three. If you find yourself struggling through Arfken and Weber, then I might suggest checking out McQuarrie, and even Boas. I would agree with a review I once read that McQuarrie is Arfken and Weber done right! McQuarrie contains more material than an instructor can cover in a one-year course, but it makes a serious attempt to provide a considerable amount of background material for a clear expository discussion of linear algebra, ordinary differential equations, complex variables, partial differential equations, non-linear differential equations, and probability and statistics. The remarkable thing is that it is all done in a single textbook. McQuarrie

also comes in paperback form for those who want to watch their pennies, along with a solutions manual for instructors.

The book came very quickly - well before the latest estimated arrival date. It was in the described condition - very good. Overall a very good experience

This book is promising but ultimately falls short. First, the order of the book is rather strange, placing matrices in the middle of the book as if to divide the calculus and complex analysis in two. Once you get over the way the book is sorted, the book improves slightly. But then you start looking at all the typos and textual errors in the book and it is clear that the book is in dire need of a second edition. Typos are all over the place, from mislabelling figures to labels that make no sense. Division lines are often missing and reading the answer key is like flipping a coin to see whether the answer provided is reliable. The way the book is worded is often confusing, and the writing is something that Arfkin and Weber certainly excel far better in than McQuarrie. Over all, I would bet that a second edition makeover of the book would do wonders, but I wonder why this book is necessary when better books such as Arfkin and Weber are out there in the first place.

I loved this book. It's got all the necessary topics, and occasionally if you look in the right place a neat trick. I majored in math and took two math methods classes all of which used different books and I think this is your one stop shop for it all. My only complaint is that the material is basic. best probably for undergrads majoring in math/phys/chem/engin

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