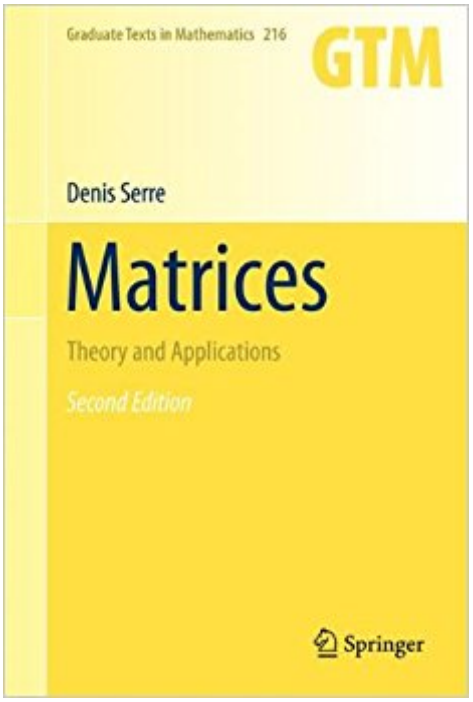
Matrices: Theory And Applications (Graduate Texts In Mathematics)



Synopsis

In this book, Denis Serre begins by providing a clean and concise introduction to the basic theory of matrices. He then goes on to give many interesting applications of matrices to different aspects of mathematics and also other areas of science and engineering. With forty percent new material, this second edition is significantly different from the first edition. Newly added topics include: â ¢ Dunford decomposition, â ¢ tensor and exterior calculus, polynomial identities, â ¢ regularity of eigenvalues for complex matrices, â ¢ functional calculus and the Dunfordâ “Taylor formula, â ¢ numerical range, â ¢ Weyl’s and von Neumannâ ™s inequalities, and â ¢ Jacobi method with random choice. The book mixes together algebra, analysis, complexity theory and numerical analysis. As such, this book will provide many scientists, not just mathematicians, with a useful and reliable reference. It is intended for advanced undergraduate and graduate students with either applied or theoretical goals. This book is based on a course given by the author at the Ã‰cole Normale SupÃ©rieure de Lyon.

Book Information

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Customer Reviews

From the reviews of the second edition:"This is a first-year graduate text that will be of considerable value to students with any of a wide variety of potential research objectives. Both the proofs and the general explanations are unusually detailedâ |There are 165 well-designed exercises, many of which provide additional information on topics treated in the text." (Mathematical Reviews)"The main motivation of the author is to â | obtain a textbook that is suitable for a wide range of applications

and hence for the different audiences deeply interested in matrices. The main goal is certainly achieved. â | The complex theoretical language, the presentation of modern numerical techniques and the classical algebraic basics make this textbook an excellent source for graduate students in each field using matrices. It can be recommended both for use in the classroom and for independent study." (PÃ©ter Hajnal, Acta Scientiarum Mathematicarum, 71, 2005)"This is a first-year graduate text that will be of considerable value to students with any of a wide variety of potential research objectives. Both the proofs and the general explanations are unusually complete and detailed â | . There are 165 well-designed exercises, many of which provide additional information on topics treated in the text. Full solutions are available on the authorâ ™s website." (R.J. Bumcrot, Mathematical Reviews, 2003)"Denis Serre provides a clear and concise introduction to the basic theory of matrices. â | The book combines algebra, analysis, complexity theory, and numerical analysis, and it will provide many scientists, not just mathematicians, with a useful and reliable reference. â | The book is intended for advanced undergraduate and graduate students with either applied or theoretical goals." (Lâ ™enseignement mathÃ©matique, 48:3-4, 2002)"Serre â | offers another volume in this series of mathematics work; it is designed for graduate students or upper-level undergraduates who wish to study matrix theory or need a reference in that subject. The discussion is approached from a strongly algebraic viewpoint and is quite concise and thorough. â | There are about 170 exercises spread throughout, all theoretical in nature. Extensive bibliography. A useful resource for anyone who uses matrix theory in his or her work. Summing Up: Highly recommended." (J.H. Ellison, Choice, April 2003)"This text offers an advanced course in matrix theory aimed at a student with a good background in analysis, providing a selection of advanced topics in matrices over the real or complex fields without attempting to be encyclopedic. â | The book contains a large number of exercises, many interesting and challenging, including extensions of results discussed in the main text and alternative proofs of some theorems." (J.D. Dixon, Zentralblatt MATH, 1011, 2003)â œIt covers, at a slightly higher than basic level, all these expects, and is therefore well suited for a graduate program. â | The prose is good, there are plenty of exercises, and the book is accordingly well suited for self-study. Additionally Matrices would serve very well as a text for courses locally homeomorphic to Serreâ ™s, of which there should clearly be more.â • (Michael Berg, The Mathematical Association of America, December, 2010)â œContaining numerous highlights and details that cannot be found in other texts, this book can be recommended warmly for an advanced course on matrix theory.â • (H. Mitsch, Monatshefte fÃ r Mathematik, Vol. 165 (1), January, 2012)â œThe author has added many new exercises extending the basic material and these add considerably to the value of the book. â | the author touches on many aspects â |

offering a range of topics, and presenting some fascinating and perhaps not familiar parts of the subject. Even those familiar with the subject may find something new here, and a good student, willing to work hard, could find it a rewarding book for self-study.â • (John D. Dixon, Zentralblatt MATH, Vol. 1206, 2011)

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