



MATLAB 5 for Engineers (2nd Edition)

By Adrian Biran, Moshe Breiner

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MATLAB is a powerful, comprehensive & easy-to-use environment for performing technical computations. It is an interactive program that deals with numeric computation & data visualization.

This text provides a clear & concise introduction to the latest version of MATLAB and explores its use in solving engineering problems. The book is divided into two parts: Part I is a guided introduction to MATLAB, teaching the package in a hands-on way & Part II is an exploration of how MATLAB can be used to solve large classes of engineering problems in a variety of engineering disciplines.

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MATLAB 5 for Engineers (2nd Edition) By Adrian Biran, Moshe Breiner Bibliography

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Editorial Review

From the Inside Flap

PREFACE

This second edition of the book MATLAB for Engineers is adapted to version 5 of MATLAB. The new features of MATLAB 5 include powerful program-development tools, new data types and structures, more graphic and visualization features, additional mathematical functions and major improvements to MATLAB application toolboxes, among them the introduction of SIMULINK 2. All these new features make programming easier, especially for complex applications. On the other hand, the number of new features is so large that it is impossible to describe all of them adequately in a one-volume textbook. To keep the introductory character of the text, and a reasonable book size, we limited the extent of updating as described below.

We deleted all references to MATLAB 3.5. Where MATLAB 5 commands are different from MATLAB 4 commands, we updated them to version 5. A few new functions and graphic facilities that enhance programming power and graph readability are introduced. Titles, labels and text added to graphs are really improved by using the subset of LATEX commands admitted by MATLAB 5. For instance, instead of writing `alpha` as previously, we can now write `alpha` and obtain the Greek letter alpha.

From the new data types and structures we chose multidimensional arrays, structures and cells because we found them useful even in simple engineering calculations. Thus, in Chapter 2 we extended the spreadsheet model to represent it by a multidimensional array, and in Chapter 10 we used three-dimensional arrays for the RGB model of additive colour mixing. In Chapter 12 we introduced the new MATLAB structure facility to define graphs by a single data structure. In Chapter 17 we used structures to store values of constants together with their units, and we introduced new functions operating on character strings and cells to operate on those constants and obtain the values and the units of the results.

A major updating is that of the material related to the integration of ordinary differential equations - (ODEs). MATLAB 5 introduces new integration routines that solve more difficult problems than those that could be treated in MATLAB 4. Examples of such problems are stiff equations and dynamical systems exhibiting discontinuities. Therefore, Chapter 14 underwent an extensive updating.

A few new exercises were distributed among all chapters.

MathWorks, Inc. took care to provide software usable after the year 2000.

While preparing this new edition we received essential help from several people at MathWorks, from Baruch Pekelman and Oren Merom of Omikron Delta, the agents of MathWorks in Israel, and from Emma Mitchell, Bridget Allen and Michael Strang of Addison Wesley Longman.

From the Back Cover

MATLAB 5 FOR ENGINEERS

Adrian Biran

Moshe Breiner

MATLAB 5 is the latest version of the popular, comprehensive and easy-to-use environment for performing technical calculations. Its interactive nature offers invaluable assistance with numeric computation and data visualization.

MATLAB 5 for Engineers provides a clear and concise introduction to MATLAB 5, demonstrating its enhanced programming capabilities and exploring its use in solving engineering problems. Written for engineering students and practising engineers, it shows how MATLAB can be used to perform calculations, store tables and interpolate between stored values, process numbers obtained by data acquisition systems, and prepare engineering and research reports.

The book is split into three parts: Chapter 1 is a concise MATLAB tutorial for users wishing to get quickly acquainted with the package itself; Part I (Chapters 2-10) is an introduction for engineers, beginning with basic calculations and helping the user to master techniques for solving progressively more complex problems; Part II (Chapters 11-17) focuses on more advanced material, featuring specialized applications and new functions.

Key features include:

- Full coverage of all the main features of MATLAB 5
- A guided introduction to the basic MATLAB functions
- Written in a clear and readable style
- A wealth of end of chapter exercises, with solutions to selected problems
- Real world examples from engineering mathematics, mechanical and electrical engineering
- Appendices and summaries to reinforce learning
- Studies of classical engineering problems, for which MATLAB yields concise and elegant solutions

Adrian Biran is an Adjunct Associate Professor in the Faculty of Mechanical Engineering at Technion, Israel Institute of Technology.

Moshe Breiner is the Managing Director of SimACon, a company specializing in the fields of simulation, mathematical analysis and controls. He regularly offers advanced courses in MATLAB.

Also available by the same authors: MATLAB for Engineers (ISBN 0-201-56524-2), covering MATLAB versions 3.5 and 4.

About the Author

Moshe Breiner is the Managing Director of SimACon, a company specializing in the fields of simulation, mathematical analysis and control. He regularly offers advanced courses in MATLAB.

Users Review

From reader reviews:

Dennis Thorpe:

Here thing why this specific MATLAB 5 for Engineers (2nd Edition) are different and trustworthy to be

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