Numerical Methods for Engineers and Scientists, 3rd Edition
Amos Gilat, Vish Subramaniam

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DESCRIPTION

Numerical Methods for Engineers and Scientists, 3rd Edition provides engineers with a more concise treatment of the essential topics of numerical methods while emphasizing MATLAB use. The third edition includes a new chapter, with all new content, on Fourier Transform and a new chapter on Eigenvalues (compiled from existing Second Edition content). The focus is placed on the use of anonymous functions instead of inline functions and the uses of subfunctions and nested functions. This updated edition includes 50% new or updated Homework Problems, updated examples, helping engineers test their understanding and reinforce key concepts.

ABOUT THE AUTHOR

Amos Gilat, Ph.D., is Professor of Mechanical Engineering at The Ohio State University. Dr. Gillat’s main research interests are in plasticity, specifically, in developing experimental techniques for testing materials over a wide range of strain rates and temperatures and in investigating constitutive relations for viscoplasticity. Dr. Gilat's research has been supported by the National Science Foundation, NASA, Federal Aviation Administration, Department of Defense, and various industries.

Vish Subramaniam, Ph.D., is a Professor of Mechanical Engineering & Chemical Physics at The Ohio State University. Dr. Subramaniam's main research interests are in cancer detection and imaging, plasma and laser physics and processes, particularly
those that involve non-equilibrium phenomena. Dr. Subramaniam's research is both experimental and computational, and has been supported by The Department of Defense, National Science Foundation, and numerous industries.

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**NEW TO EDITION**

- **NEW Chapter**: A new chapter (Chapter 7) on Fourier Methods has been added to the book. The chapter covers Fourier series, discrete Fourier series, Discrete Fourier Transform, and an introduction to the Fast Fourier Transform (FFT), which is widely used in engineering for processing digital data.

- **Eigenvales and Eigenvectors**: This topic, which was part of Chapter 4 (Solving a System of Linear Equations) in the first two editions of the book, is now covered in a separate chapter, further strengthening the coverage of this key topic.

- **MATLAB**: The third edition of the book is updated to MATLAB R2012b. All the programs use anonymous functions, and function handles are used for passing functions into functions. Appendix A has been updated to the current version of MATLAB.

- **Homework Problems**: Increased number of end-of-chapter problems to approximately 40 per chapter. About 50% of end-of-chapter problems have been revised.

**FEATURES**

*Concise presentation of numerical methods written to enhance student’s understanding.*

- Presents core information in manageable chunks for the student without overwhelming them with detail.

*Text includes many examples and end-of-chapter problems to help students learn numerical methods.*
• Three levels of homework problems address applying numerical methods techniques with traditional pencil and paper and with MATLAB. See end-of-chapter problem sets.

• Realistic applications from engineering and science motivate students.

*Flexible structure addresses needs of various types of courses and students.*

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