Signals and Systems: A Primer with MATLAB®

By Matthew N. O. Sadiku, Warsame Hassan Ali

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Signals and Systems: A Primer with MATLAB® provides clear, interesting, and easy-to-understand coverage of continuous-time and discrete-time signals and systems. Each chapter opens with a historical profile or career talk, followed by an introduction that states the chapter objectives and links the chapter to the previous ones. All principles are presented in a lucid, logical, step-by-step approach. As much as possible, the authors avoid wordiness and detail overload that could hide concepts and impede understanding.

In recognition of the requirements by the Accreditation Board for Engineering and Technology (ABET) on integrating computer tools, the use of MATLAB® is encouraged in a student-friendly manner. MATLAB is introduced in Appendix B and applied gradually throughout the book.

Each illustrative example is immediately followed by a practice problem along with its answer. Students can follow the example step by step to solve the practice problem without flipping pages or looking at the end of the book for answers. These practice problems test students' comprehension and reinforce key concepts before moving on to the next section.

Toward the end of each chapter, the authors discuss some application aspects of the concepts covered in the chapter. The material covered in the chapter is applied to at least one or two practical problems or devices. This helps students see how the concepts are applied to real-life situations.

In addition, thoroughly worked examples are given liberally at the end of every section. These examples give students a solid grasp of the solutions as well as the confidence to solve similar problems themselves. Some of the problems are solved in two or three ways to facilitate a deeper understanding and comparison of different approaches.

Ten review questions in the form of multiple-choice objective items are provided at the end of each chapter with answers. The review questions are intended to

cover the "little tricks" that the examples and end-of-chapter problems may not cover. They serve as a self-test device and help students determine chapter mastery. Each chapter also ends with a summary of key points and formulas.

Designed for a three-hour semester course on signals and systems, **Signals and Systems: A Primer with MATLAB®** is intended as a textbook for junior-level undergraduate students in electrical and computer engineering. The prerequisites for a course based on this book are knowledge of standard mathematics (including calculus and differential equations) and electric circuit analysis.

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Editorial Review

Review

"This book follows an approach based on the right balance between theory and practice, which is recommended to catch the attention of students who might be discouraged at first with the subject if they do not foresee its possible applications. The book also stablishes links between the subject and related issues from other disciplines, which work out as an interesting introduction to each chapter. Most importantly, even though the title suggests that MATLAB® will have the largest share in the material, each chapter makes sure that the theoretical background is well known before turning to hands-on MATLAB examples. This is not just a recipe book; it is a well-balanced textbook."
?Alexandre Giulietti, Vision Systems Engineer, e2v, Seville, Spain

"Actually, the book includes what I exactly cover in a one-semester signals and systems course (EM 301). ... It also includes MATLAB sections, ... [which are] good and helpful for students. ... I [appreciate] ... its simplicity in describing complex concepts."
?Ozgul Salor, Gazi University, Ankara, Turkey

About the Author

Matthew N.O. Sadiku received his B.Sc from Ahmadu Bello University, and his M.Sc and Ph.D from Tennessee Technological University. He is currently a professor at Prairie View A&M University. He was previously a senior scientist with Boeing Satellite Systems, system engineer with Lucent/Avaya, full professor with Temple University, and assistant professor with Florida Atlantic University. Widely published and highly decorated, Dr. Sadiku is a registered professional engineer, a fellow of the IEEE, and a member of the ACM. He has served as the IEEE Region 2 Student Activities Committee chairman, and as an associate editor for *IEEE Transactions on Education*.

Warsame H. Ali received his B.Sc from King Saud University, his M.Sc from Prairie View A&M University, and his Ph.D from the University of Houston. He is currently teaching undergraduate and graduate courses in the Electrical and Computer Engineering Department at Prairie View A&M University. He was previously with NASA, Glenn Research Center, and with Texas Instruments. Dr. Ali has authored 80 research articles in major scientific journals and conferences, given several invited talks, and received many NSF, AFRL, and DOE awards. His research interests include digital PID controllers, digital methods to electrical measurements, mixed signals testing techniques, and more.

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