Preface

The primary goal for this extensive revision of *Introductory Circuit Analysis* is to incorporate the comments of current users and reviewers, include current trends in curriculum content, and expand on specific areas of coverage.

To accomplish this, I rearranged the order in which the information is presented so that similar topics are covered sequentially, added new material, removed less-used material, and updated content where possible. Extensive editing has ensured that the fundamental laws covered in the first half of the text are clearly understood, establishing a firm foundation for the ac section and concepts to follow in other courses in the curriculum.

The following are some of the improvements that will aid both students and teachers in using this text:

- Objectives are added to the beginning of each chapter to reveal on a broad scale what the student should learn from the chapter.
- The chapter on Inductors now follows directly after the chapter on Capacitors. The more natural flow from coverage of capacitors to inductors makes use of the similarities in circuit analysis for the two elements.
- The chapter on Magnetic Circuits now follows the chapter on Inductors. This chapter contains excellent material for practical applications that students can use as a resource later, but many teachers rarely had time to cover the detail presented in the chapter.
- The Filters chapter now follows the Resonance chapter, which again permits a continuing discussion of similar material.
- The chapter on System Analysis was deleted to permit expanded coverage of some of the important topics in the first half of the text and because so few institutions cover the material in an introductory course.
- Coverage is increased in the earlier chapters for some very important topics, such as series and parallel circuits, mesh and nodal analysis, and the transient response of capacitors and inductors.
- Problems are added in almost every chapter of the text. A review of the Solutions Manual prompted me to revise many problems so that the results better reinforce the concept under investigation and further challenge the student.

Every technique, approach, analogy, and maneuver I could imagine to clarify some of the most important concepts in this field has been adapted for this text to improve the presentation. Some of these elements include:

- A broader use of instrumentation throughout the text
- Additional examples for the most important topics
- Expanded comments to teach students how to avoid some common pitfalls
- Additional problems appropriate to introduce in this text

Throughout the text, every effort was made to ensure that the content is current. For instance, film resistors are now emphasized instead of carbon. All photos of devices and instrumentation in the text are up to date. Protoboards, surface mount resistors, fuel cells, and improved solar cells are now covered. Outdated applications have been replaced. Because the TI-86 calculator is no longer manufactured, examples now include instructions for the TI-89 calculator. However, since so many students still have the TI-86, an appendix was added so that instructions for that calculator are still available.

All of the software programs covered in this text have been upgraded. This edition uses PSpice Release 10, Multisim Version 8, and Mathcad Version 12. Users of earlier versions of these programs will find that most of the changes are minimal.

The depth of coverage for software packages always generates some discussion with each edition. I am particularly pleased that at least five editions ago *Introductory Circuit Analysis* was the first to cover software packages in the detail, depth, and range that enabled students to feel comfortable with the applications. This level of detail is not offered in other publications or in the information packages provided by the software distributors; therefore, I have decided to maintain this depth of coverage. Because it is a constant source of discussion with the publisher and some users, I deeply appreciate any comments you would like to offer on the subject. Hopefully, it is a positive aspect of the text, but coverage may need to be modified in some areas.

QBASIC and C++ have been removed from this edition due to the growing sophistication of the software packages and the need for some additional coverage in other critical areas.

For review purposes, additional summary tables are introduced to emphasize the duality that exists between various facets of the material and to review the important conclusions associated with each type of analysis. In general, these tables should help the student in developing a broad sense of understanding about how various laws can be applied to different configurations and how best to analyze a system. For some topics such as mesh and nodal analysis, power in the ac domain, and parallel ac networks, additional methods of analysis and comments have been

included that should help clarify the approach and remove the confusion surrounding some unique situations.

The Laboratory Manual associated with the text is also extensively revised. One major change, based on the comments of Professor James Fiore, is the increased use of tables throughout to display the results better and permit immediate comparisons between results obtained using different approaches. Only after revising a few experiments did I realize what a wonderful improvement to the Laboratory Manual this change made. Computer exercises have been introduced into a number of the other laboratory experiments, so the computer labs have been removed.

SUPPLEMENTS

To enhance the learning process, a full supplements package accompanies this text and is available to students and instructors using the text for a course.

Student Resources

- **Laboratory Manual,** ISBN 0-13-219615-8
- **Companion Website** (student study guide) at www.prenhall.com/boylestad
- **CD-ROM.** Packaged with this textbook, this CD contains a set of Multisim circuit files and a set of PSpice circuit files. These files (also available on the Companion Website) are provided at no extra cost to the consumer and are for use by anyone who chooses to use Multisim and/or PSpice software. Multisim and PSpice are widely regarded as excellent simulation tools for classroom and laboratory learning. However, successful use of this textbook is not dependent upon the use of the circuit files.

If you do not currently have access to Multisim software on your computer or in your school lab and you wish to purchase it in order to use the circuits created for this text, visit www.prenhall.com/ewb or request information via e-mail from phewb@prenhall.com. The PSpice software can be purchased by visiting www.orcad.com.

At the time of publication, the CD provided with this text contains files appropriate for use with Multisim 2001, Multisim 7, Multisim 8, and PSpice Release 10. However, circuits created in subsequent versions of software also may be available at www.prenhall.com/boylestad whenever later versions of the software are developed by their respective manufacturers.

Instructor Resources

To access supplementary materials online, instructors need to request an instructor access code. Go to www.prenhall.com, click the **Instructor Resource Center** link, and then click **Register Today** for an instructor access code. Within 48 hours after registering you will receive a confirming e-mail including an instructor access code. Once you have received your code, go to the site and log on for full instructions on downloading the materials you wish to use.

- **Instructor's Resource Manual,** containing text solutions and test item file. Print version (ISBN 0-13-219616-6) and online version (ISBN 0-13-221446-6).
- **PowerPoint® Lecture Notes.** Available on CD (ISBN 0-13-188761-0) and online (ISBN 0-13-173557-8).
- **TestGen®,** a computerized test bank. Available on CD (ISBN 0-13-188850-1) and online (ISBN 0-13-198670-8)

ACKNOWLEDGMENTS

As I approach the completion of each edition, I always hope that the material has now been presented to the best of my ability. However, I always end up with a folder full of suggestions to consider for the next edition. This edition is no different, although I believe the revisions made have improved the content and presentation so that future changes will be minimal.

As with every edition, I have found that certain individuals in the academic world have made a significant contribution to the revision. For all the hours he spent working with me on the revision of the software printouts, I must thank my good friend Professor Louis Nashelsky. For questions of a practical nature, Jerry Sitbon's input was simply invaluable. The vast improvement in the Laboratory Manual is due primarily to the constructive criticisms of Professor James Fiore.

A number of reviewers and users provided outstanding input—I am deeply grateful for the many hours of effort on their part. Their reviews helped me to define which changes should be made and which topics should be left as is. Many comments included requests that I not lower or raise the level of the text significantly. Therefore, this text continues to provide the coverage appropriate for today's technology student without removing the challenge associated with some advanced topics.

I thank the reviewers of this edition: Sami Antoun, DeVry University; Don Barrett, DeVry University; David Barth, Edison State Community College; Jim Fiore, Mohawk Valley Community College; George Flantinis, New Hampshire Technical Institute; Curtis Johnson, University of Houston; Angela Lemons, North Carolina A&T University; Richard McKinney, Nashville State Community College, and Paul Svatik, Owens Community College.

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I have been fortunate over the years to have Rex Davidson as my production editor. He helps to ensure that the text is a quality publication. Lara Dimmick at Prentice Hall has to be one of the most capable individuals I have ever worked with. Ask her anything about anything, and she will get the answer for you—not tomorrow, but today. Thank you, Lara.

With each edition, I am always amazed at the abilities of the copy editors to detect and correct mistakes. Their suggestions and comments are valuable–they are a special group of people. For this edition, I was blessed to have Colleen Brosnan as copy editor, who transformed my input into something on another plane entirely. There are, of course, numerous other individuals in the production, sales, and marketing departments that I want to thank for this edition. The production of any publication of this magnitude is not an individual effort but one that requires teamwork and dedication. Thank you.

To all of you, both students and faculty, you have my best wishes for a healthy, productive, and pleasant school year.

Robert Boylestad

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