

From An Instructor's Perspective—Electronic Principles 7/e
By David J. Bates, Western Wisconsin Technical College

I would like to thank McGraw-Hill Higher Education for giving me the opportunity to be involved as a coauthor of *Electronic Principles 7th* edition by Malvino and Bates. As an instructor in the Electronic Technologies Department at Western Wisconsin Technical College, I currently teach semiconductor theory (Electronic Devices and IC Applications) to students in a variety of programs. These programs include Electronic Servicing Technician, Biomedical Electronics Technology, Electromechanical Technology, Electronics Technology, and Electrical Engineering Technology. At Western, we currently use Malvino's sixth edition for both the "core" electronic devices courses and the more advanced IC applications courses. I have used Malvino's *Electronics Principles* textbook since the second edition, and have always been impressed with the depth of the material covered, and the author's clear, conversational style of writing.

Based on the feedback from an extensive review, the seventh edition of *Electronic Principles* contains enhanced material on a variety of electronic devices and circuits. New material includes additional PNP transistor coverage, basic Bipolar Junction Transistor (BJT) voltage-divider circuit design, biasing and characteristics of common-base (CB) amplifier circuits, increased load line analysis of BJT power amplifiers, biasing power E-MOSFET and D-MOSFET amplifier circuits, Insulated Gate Bipolar Transistors (IGBTs) used as power switching devices, R/2R ladder D/A converters, the XR-2206 function generator integrated circuit, and an introduction to class-D amplifiers.

Starting in Chapter 1, "Introduction", the T-shooter or troubleshooting exercise has been simplified for easier student use and understanding. This will be continued throughout the remaining chapters. In Chapter 2, "Semiconductors", one of many "Summary Tables" has been added to provide concept reinforcement and a convenient information resource. Starting in Chapter 3, "Diode Theory", data sheets for specific semiconductor devices will be found within the chapter as they are discussed. Chapters 4 through 6 have additional content regarding the testing of diodes and transistors using DMMs, VOMs, and semiconductor curve tracers. While Chapter 10, "Voltage Amplifiers", retains its coverage of the common-emitter (CE) amplifier, Chapter 11, "CC and CB Amplifiers", focuses on common-collector (CC) or emitter follower, common-base (CB), and Darlington amplifier configurations. Chapter 12, "Power Amplifiers", has been modified to include class A, B, AB and C power amplifiers, along with additional load line analysis. In Chapter 13, "JFETs", modifications have been made to the order of biasing and biasing techniques. In Chapter 14, "MOSFETs", depletion-mode and power enhancement-mode MOSFET amplifiers have been added along with MOSFET testing. Chapter 15, "Thyristors", includes more detail in RC phase-shift control, SCR testing, and introduces IGBTs. Frequency analysis of FET stages has been added to Chapter 16, "Frequency Effects." In Chapter 20, "Linear Op-Amp Circuits", the circuit operation of the R/2R ladder D/A converter has been included. Chapter 22, "Nonlinear Op-Amp Circuits", now includes the basic operation of a class-D amplifier. Also, Chapter 23, "Oscillators", has an additional section on function generator ICs, including the XR-2206.

From my perspective as an electronics instructor, I am excited to have been given the opportunity to add instructional elements to the seventh edition. These will enhance students' learning and retention. Some of these new items are:

Practice Problems following many circuit examples give the student immediate feedback to check their understanding of newly presented material. The practice problem answers are listed at the end of each chapter.

Integration of MultiSim files for use in many circuit examples, practice problems, troubleshooting, and end-of-chapter problems. These files add an important element --connecting the student to the material by "bringing the circuit to life." These files are expertly done, and will enrich the student's learning experience. I am using many of these files in the classroom as I present important topics involving circuit operation or troubleshooting.

The Experiments Manual has been updated to provide students and instructors increased lab performance flexibility with the addition of MultiSim circuit files for each experiment. The data tables, used for recording student answers, offer the options of recording calculations, along with measurements taken with MultiSim and/or measurements taken with actual components. You can choose which procedures and which measurement sequence best fits your situation. Performing circuit calculations and taking preliminary MultiSim measurements can be set up as "pre-lab" activities, or can be used in blended on-line learning applications.

Troubleshooting Tables have been modified for ease of student use. The circuit measurements are displayed in an easy-to-view table which allow students to quickly practice their troubleshooting skills.

The Visual Calculator for Electronics, created by Albert Malvino, will be available for instructors who have adopted the textbook for their classes. For instructors, this software is a great addition to the available chapter Power Point slides when presenting course material. For students, this software can be used to quickly solve circuit analysis and troubleshooting problems. For more information, go to <http://malvino.com>

As an instructor, I have found these items to be a tremendous addition to my classroom presentation materials. For my students, I see an excitement, which has been missing recently, when they can build, test, and troubleshoot electronics circuits using the various tools now available to them. From my perspective, this is a complete package. To order a complimentary copy of Electronic Principles, 7/e by Malvino and Bates <http://catalogs.mhhe.com/mhhe/viewProductDetails.do?isbn=0073222771>

