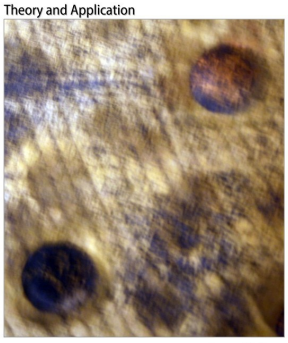
OER Texts for Electrical Engineering Technology and Related Fields

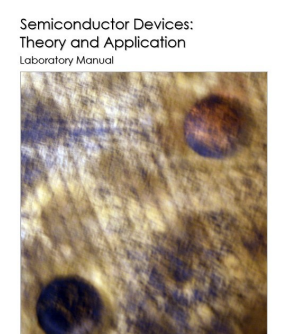
These open educational resources are freely redistributable and use a Creative Commons license that allows non-commercial use and editing so long as the original attribution is included (BY-NC-SA).

Semiconductor Devices: Theory and Application



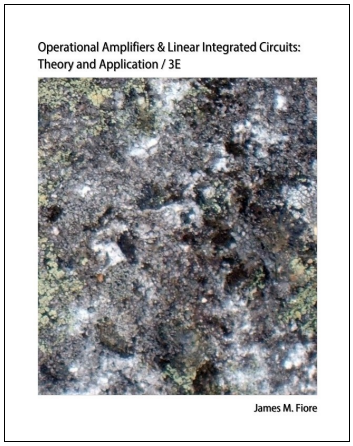
This text covers the theory and application of discrete semiconductor devices including various types of diodes, bipolar junction transistors, JFETs, MOSFETs and IGBTs. It is appropriate for Associate and Bachelors degree programs in Electrical and Electronic Engineering Technology, Electrical Engineering and similar areas of study. Applications include rectifying, clipping, clamping, switching, small signal amplifiers and followers, and class A, B and D power amplifiers. A companion laboratory manual is available.

Laboratory Manual for Semiconductor Devices



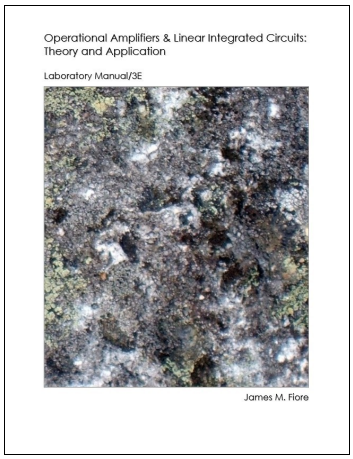
This is the companion laboratory manual to the OER text Semiconductor Devices: Theory and Application. It includes 28 exercises. Coverage begins at basic semiconductor devices such as signal diodes, LEDs and Zeners; and proceeds through bipolar and field effect devices. Applications include rectifiers, clippers, clampers, AC to DC power supplies, small and large signal class A amplifiers, followers, class B amplifiers, ohmic region FET applications, etc.

Operational Amplifiers & Linear Integrated Circuits: Theory and Application/3E



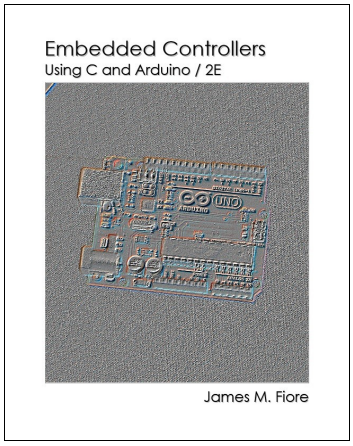
This text covers the theory and application of operational amplifiers and other linear integrated circuits. It is appropriate for Associate and Bachelors degrees programs in Electrical and Electronic Engineering Technology, Electrical Engineering and similar areas of study. Topics include negative feedback, comparators, voltage amplifiers, summing and differencing amplifiers, high speed and high power devices, non-linear circuit applications, regulators, oscillators, integrators and differentiators, active filters and AD/DA conversion. A companion laboratory manual is available. The first edition of this text was originally published by West with a second edition published by Cengage. The author has regained the copyright, updated the text, and released this third edition as an OER.

Laboratory Manual for Operational Amplifiers & Linear Integrated Circuits/3E



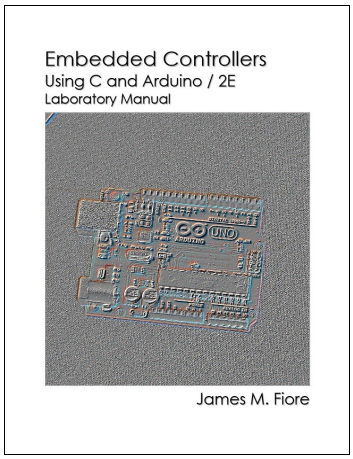
This laboratory manual accompanies the text of the same name and features 22 separate exercises. It covers the theory and application of operational amplifiers and other linear integrated circuits. Exercises include discrete differential amplifier analysis; inverting, non-inverting and differential configurations; frequency response; slew rate; DC offset; OTA; oscillators; linear regulator; function synthesis; active filters; and integrators and differentiators.

Embedded Controllers Using C and Arduino/2E



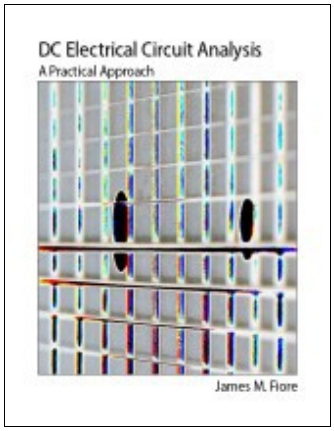
This text introduces embedded controller systems using the inexpensive and widely available Arduino hardware platform and the C programming language. It is intended for students in Electrical Engineering and Electrical Engineering Technology programs at the Associate and Baccalaureate levels. Unlike many Arduino texts, this text does not rely solely on the Arduino libraries. Rather, it “gets under the hood” and directly accesses I/O ports, pins and DDR, as would be expected in a traditional college level microprocessor/microcontroller course. A companion laboratory manual is available.

Laboratory Manual for Embedded Controllers Using C and Arduino/2E



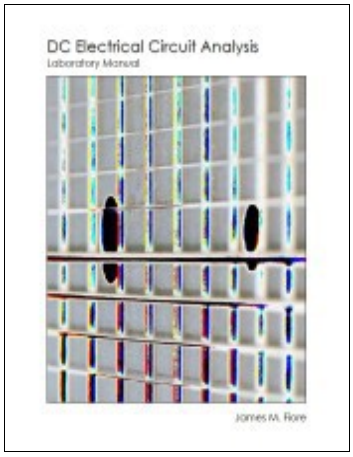
This is the companion lab manual for the text Embedded Controllers Using C and Arduino. It introduces embedded controller systems using the Arduino hardware platform and the C programming language. Exercises include usage of seven-segment displays, switches and analog input devices; a reaction timer; PWM; an event counter and an arbitrary waveform generator.

DC Electrical Circuit Analysis: A Practical Approach



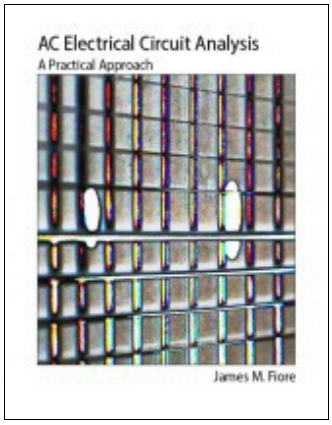
A thorough treatment of DC circuit analysis, this text begins with coverage of scientific and engineering notation along with the metric system and a discussion of the scientific method. Basic concepts and quantities are introduced such as charge, current, energy, power and voltage. Subsequent chapters introduce resistance, series circuits, parallel circuits and series-parallel circuits. The text continues with coverage of analysis techniques such as superposition, source conversions, mesh analysis, nodal analysis, Thévenin's and Norton's theorems, and delta-wye conversions; plus dependent sources, and an introduction to capacitors and inductors. RL and RC circuits are included for DC initial and steady state response along with transient response. A companion laboratory manual is available.

Laboratory Manual for DC Electrical Circuit Analysis



This laboratory manual covers DC electrical circuits, typically an introductory course for students in an Electrical Engineering Technology program (AAS or BS). It begins with a basic introduction to the electrical laboratory and progresses through Ohm's Law to series, parallel and series-parallel circuits. It includes exercises involving superposition, Thévenin's Theorem, mesh and nodal analysis, maximum power transfer and concludes with an introduction to capacitors and inductors.

AC Electrical Circuit Analysis: A Practical Approach

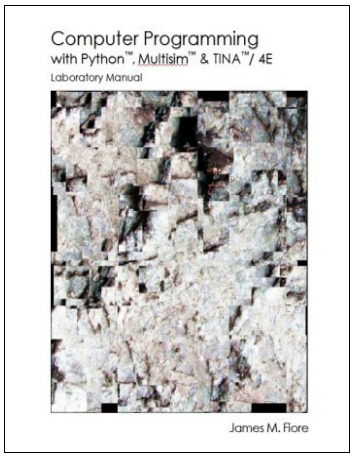


An essential and practical text for both students and teachers of AC electrical circuit analysis, this text picks up where the companion DC electric circuit analysis text leaves off. Beginning with basic sinusoidal functions, ten chapters cover topics including series, parallel, and series-parallel RLC circuits. Numerous theorems and analysis techniques are examined including superposition, Thévenin's theorem, nodal and mesh analysis, maximum power transfer and more. Other important topics include AC power, resonance, Bode plots and an introduction to three-phase systems. Each chapter begins with a set of chapter objectives and includes a summary and review questions. A total of over 500 end-of-chapter exercises are included. A companion laboratory manual is available.

Laboratory Manual for AC Electrical Circuit Analysis

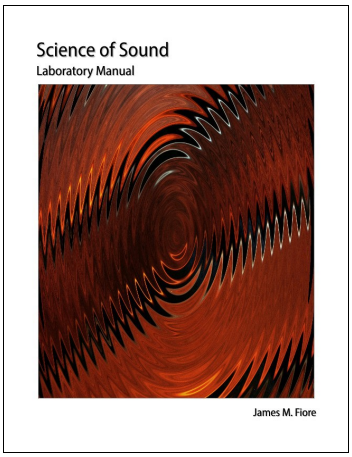
This laboratory manual covers AC electrical circuits, typically a second circuit analysis course for students in an Electrical Engineering Technology program (AAS or BS). It features a total of 15 exercises beginning with basic RL and RC circuits and progresses through phasors to AC series, parallel and series-parallel circuits along with superposition, Thévenin's Theorem, maximum power transfer, and series and parallel resonance.

Laboratory Manual for Computer Programming with Python, Multisim & TINA/4E



This laboratory manual begins with an introduction to the Multisim™ and TINA™ circuit simulation programs and progresses to programming using the Python language. Most programming assignments are based on electrical circuit applications. The manual is intended for an introductory programming course for Electrical Engineering and/or Technology students at the AAS and/or BS level.

Laboratory Manual for Science of Sound



This is a laboratory manual designed to support a college-level general science course covering sound, audio and acoustics. Lab exercises include measuring the speed of sound, harmonic motion, tensioned strings, resonant pipes, and the like. It concludes with a series of digital audio exercises using the author's freeware Sample Wrench audio editor/analyzer (available from the author's web site http://www.dissidents.com).

Author's Bio: James Fiore is a professor of Electrical Engineering Technology at Mohawk Valley Community College in Utica, NY, USA. He has over 40 years of teaching and course development experience in ABET accredited electrical engineering technology programs. He is the author of several OER texts and laboratory manuals along with dozens of articles in trade journals and technical magazines covering the areas of electronic design, programming and electronic music production. Professor Fiore is a recipient of the SUNY Chancellor's Award for Excellence in Scholarship, the MVCC Award for Excellence in Scholarship, the MVCC Award for Excellence in Teaching, and the MVCC Aeries Award for Community Service. He is an advocate for OER and author/artist rights. Professor Fiore maintains pages on the MVCC web site that include links to the latest versions of all of his OER titles in both pdf and odt formats: https://www2.mvcc.edu/users/faculty/jfiore/freebooks.html He also maintains mirrors at his own sites: http://www.dissidents.com and https://www.jimfiore.org