

EE312 BASIC ELECTRONIC INSTRUMENTATION LABORATORY (2 Credits, Required)

Catalog Description

Trains students how to design, build, diagnose, and characterize electronic circuits. Topics include instrumentation, semiconductor devices, and electronic circuits. Covers both analog and digital circuits. Laboratory projects include filters, operational amplifiers, dc power supply, MOSFET amplifier, BJT amplifier, logic gates, timing, and counters.

Prerequisites

Prerequisite(s): EE202

Corequisite(s): None

Textbook(s) and/or other required material

Textbook(s):

Pao-Lo Liu and Yong-Kyu Yoon, "Electronics Laboratory," available in University Bookstore.

Course Objectives

Course Objectives:

After taking the course,

Students can operate laboratory instruments, including oscilloscope, function generator, power supply, digital multimeter, and curve tracer.

Students know characteristics of electronic devices and their functions.

Students can perform experimental measurements and characterize circuits.

Students can design application circuits and perform diagnosis and optimization.

Topics Covered

Topics covered:

1. Introduction to Electronics Laboratory
2. RC Filter and Bridge Circuit
3. Operational Amplifier
4. DC Power Supply
5. Metal-Oxide-Semiconductor Field-Effect Transistor
6. Logic Gates
7. Digital Circuits

Class / Lab Schedule

One 50-minute lecture per week, three hours of lab per week

Contribution of course to professional component/criterion 5

Engineering Topics: Electronics Lab Skills

Relationship of course to program outcomes

- (a) an ability to apply knowledge of mathematics, probability and statistics, computer science and electrical engineering as it applies to the fields of computer software and hardware
- (b) an ability to design and conduct experiments, as well as to organize, analyze, and interpret data
- (c) an ability to design and construct a complex hardware and software system, component, or process to meet desired needs using relevant software engineering principles, within realistic constraints such as economic, environmental, social, political, ethical, health & safety, manufacturability, and sustainability
- (e) an ability to identify, formulate, and solve hardware and software computer engineering problems using sound computer engineering principles
- (g) an ability to effectively communicate technical information in speech, presentation, and writing
- (k) an ability to use the techniques, skills, and modern hardware and software engineering tools necessary for computer engineering practice

Persons who prepared this description and date of preparation

Dr. Pao-Lo Liu, Professor, September 2007 (reformatted for CEN by Carl Alphonse)