Common Course Outline
ELEI 225
Electronic Circuits II
3 Semester Hours

The Community College of Baltimore County

Description

ELEI 225– 3 Credits – Electronic Circuits II explores the basics of analog electronic circuit analysis including the theory and circuitry of operational amplifiers, power supplies, oscillators and voltage regulators. Practical laboratory work includes building and analyzing electronic circuits.

3 Credits: 2 lecture hours per week; 2 lab hours per week
Prerequisites: ELEI 115/ENSC 115

Overall Course Objectives

Upon successful completion of this course the student will be able to:

1. describe the basic op-amp and its characteristics;
2. analyze inverting and non-inverting op-amp configurations, amplifiers, integrators, and differentiators;
3. evaluate the operation of comparator circuits, summing amplifiers, integrators and differentiators;
4. compare the operation of an instrumentation amplifier, isolation amplifier, operational transconductance amplifier (OTA), and log and antilog amplifiers;
5. describe the three basic filter response characteristics;
6. analyze active low-pass, high-pass, band-pass and band-stop filters;
7. demonstrate two methods for measuring frequency response;
8. explain the basic operating principles of an oscillator;
9. describe and analyze the basic operation of resistive-capacitive (RC) and inductive-capacitance (LC) feedback oscillators;
10. analyze the operation of the 555 Timer;
11. describe the basic concept of voltage regulation;
12. discuss the principles of series voltage regulators, shunt voltage regulators and switching regulators; and
13. analyze the operation of integrated circuit voltage regulators.

Major Topics

The following topics will be covered in this course:

I. Operational amplifier
II. Basic op-amp circuits
III. PSPICE circuit simulation software
IV. Special-purpose op-amp circuits
V. Active filters

VI. Oscillators
VII. Voltage regulators

Grading/exams: Grading procedures will be determined by the individual faculty member and will be provided the first day of class.

The following will be required for this course:

1. Homework
2. Midterm and final exams
3. Minimum of eight (8) lab assignments

Writing: The individual faculty member will determine specific writing assignments, but will include:

- Internet research report on current industry trends and/or technology
- Lab reports

Other Course Information

This course is a required core course for the Engineering Technology Electronics/Electrical Engineering option.

Components of this course are taught in a computerized lab environment.

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