Revised 1/20

NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY EGR 255 - ELECTRIC CIRCUITS LABORATORY (1 CR.)

Course Description

Teaches principles and operation of laboratory instruments such as VOM, electronic voltmeters, digital multimeters, oscilloscopes, counters, wave generators and power supplies. Presents application to circuit measurements, including transient and steady-state response of simple networks with laboratory applications of laws and theories of circuits plus measurement of AC quantities. Laboratory 3 hours per week.

General Course Purpose

The course will familiarize the student with laboratory instruments and procedures, as related to the circuit theories taught in EGR 251-252 - "Basic Electric Circuits I-II". It will form the foundation for all later work with electrical instrumentation.

Course Prerequisites/Corequisites

Competence in resistive circuit analysis. Corequisite: 251.

Course Objectives

The objective of this course is to convey to the student the basic operational principles of various multipurpose laboratory instruments including voltmeters, multimeters, ammeters, oscilloscopes, waveform generators, counters, power supplies and the like. The objective will also demonstrate the use for measurements in specific circuits.

Major Topics to Be Included

- a) Laboratory familiarization
- b) Series and parallel circuit measurements
- c) Measurement of RC and RL transients; the oscilloscope
- d) Measurement of transients in a series RLC circuit
- e) Measurement of parameters in steady-state AC networks
- f) Characteristics of RC high-pass and low-pass filters
- g) Amplitude characteristics of the single-tuned, series, band-pass filter
- h) Performance characteristics of operational amplifiers
- i) Measurement of active filter characteristics (op-amp based)