EE 2302: Circuit Analysis II

3 Credit Hours

Prerequisite: EE 2301, MATH 2306 and PHYS 2212

A continuation of basic Circuit Analysis I which focuses on RC, RL, and RLC circuits, mutual inductance, series and parallel resonance, two-port networks frequency response, AC power including power factor correction, as well as three phase circuits. Simulation is heavily emphasized using state of the art software such as PSPICE.

EE 2305: Electronic Circuits and Machines

4 Credit Hours

Prerequisite: PHYS 2212 or ISYE 2600

This course covers the electrical characteristics of fundamental circuit components including resistors, capacitors and inductors in DC circuits, single-phase AC and three-phase AC circuits. Fundamental concepts of AC power and phasors are examined. The course also introduces the devices that generate and transform electrical power, as well as switching and protection of electrical circuits. Practical applications of motors, generators, transformers and operational amplifiers will be covered to provide non-electrical engineering majors a comprehensive understanding of electro-mechanical systems.

EE 2401: Semiconductor Devices

3 Credit Hours

Prerequisite: PHYS 2212, CHEM 1211, and ENGR 1000

This course effectively applies the knowledge of chemistry and physics to understand the operating principles of various semiconductor devices. The course covers topics starting from the fundamental concepts of atomic and crystal structure, crystal growth, impurity doping and energy bands to the in-depth device operation and quantitative analysis of p-n junction diode, metal-semiconductor contacts and Schottky diode, BJTs and MOSFETs. Also, fundamental operating principles of optoelectronic devices such as, LEDs and photodiodes are discussed. Simple device simulation components reinforces the understanding of various critical aspects of device operation. The course concludes with an experiment-based project on device characterization where students perform analysis on the experimentally acquired data to extract various important device parameters.