EET

EET 111 Electric Circuits I 4.0 UNITS

An integrated study of AC and DC circuits in which the sinusoidal system is introduced early in the course. The course covers the concepts of Ohm?s Law, Kirchhoff?s Laws, and DC circuits such as series circuits, parallel circuits, and series-parallel circuits. The study of capacitors and inductors serves as an introduction to the sinusoidal system and the behavior of R, L, and C in such a system. The laboratory component includes the use of test instruments in experiments dealing with Ohm?s Law, series circuits, parallel circuits, and series-parallel circuits, followed by a study of internal resistance and loading. The final experiment supplies facility in the applications of the oscilloscope.

EET 212 Active Electronic Devices 4.0 UNITS

Introduces solid state devices. Emphasis on device terminal characteristics and models. The course includes the PN junction transistor characteristics, BJT biasing techniques, BJT models, BJT small signal amplifiers, junction field effect (JFET) and metaloxide silicon-field effect (MOSFET) transistor characteristics. Experiments cover semiconductor diode circuits, half-wave rectifier, full-wave characteristics, common emitter transistor characteristics and the parameters and components of a transistor amplifier circuit.

EET 211 Electric Circuits II 4.0 UNITS

Continuation of the integrated approach of Electric Circuits I. Concepts are extended to the analysis of AC systems power transformers, network theorems, network analysis, resonance, and filters. The associated laboratory supplements the course and introduces the use of additional test instruments as signal generators, frequency counters, and AC measuring instruments. The experiments cover Thevenin?s Theorem, RC transients, Lissajous figures for phase-shift measurement, AC series circuits, AC parallel circuits, and series and parallel resonance.

EET 214 Active Circuit Analysis and Design 4.0 UNITS

Continuation of EET 212, Active Electronics Devices. Bipolar junction transistor (BJT) small signal multistage amplifiers, decibels, and power amplifiers are studied. Junction field effect and metal-oxide-silicon field effect transistor biasing, and small-signal operations are covered. Consideration will be given to the frequency response characteristics of BJT and JFET circuits. The experiments study the performance of small-signal amplifiers, connected in the common-emitter mode, the emitter-follower mode, and the common-based mode, followed by an analysis of cascaded RC coupled amplifiers. The analysis and design of biasing, and FET small-signal amplifiers. The final experiment is a detailed analysis of the frequency response of a transistor amplifier.

EET 216 Pulse and Digital Circuits 4.0 UNITS

Examines the characteristics, analyses and design of wave-shaping, switching, and digital circuits. Emphasis is on circuits and systems which use discrete semiconductor devices. Integrated circuit fundamentals and applications are present in succeeding courses. Topics include switching operation and characteristics of semiconductor devices; clipping, clamping, and limiting circuits; pulse nomenclature; logic circuit fundamentals; binary arithmetic and truth tables; triggered devices, and multivibrator circuits and counter circuits. The laboratory component of the course is intended to analyze circuit components, breadboarding of basic logic circuits, experimental analysis of pulse switching, and triggering circuits. In addition, proper testing techniques for these systems are developed. Experiments cover pulse fundamentals, pulsed response of RC circuits, diode clippers and clampers, BJT and FET switches, logic inverters and gates, discrete logic gates, Schmitt- trigger circuits, the unijunction transistor, the monostable and astable multivibrator, and the bistable multivibrator.

EET 222 Analog Integrated Circuits 4.0 UNITS

Introduces the characterization and operation of integrated circuits in analog systems. Follows the sequence of courses in active electronic devices and their applications. This covers descriptions and applications of operational amplifiers and linear integrated circuits, as well as their use as building-blocks for linear and nonlinear analog systems. Topics included are inverting and noninverting amplifiers, buffer amplifiers, signal generators, timers, voltage regulators, active filters, function generators, multipliers, and D/A conversion. Limitations of op-amps are discussed, as well as other topics dictated by student and instructor interest. The laboratory component complements the course material. Proper breadboarding techniques are introduced and integrated circuit testing and evaluation are performed. The laboratory supports the theory with experiments in linear application of op-amps, nonlinear application of op-amps, signal generators and timers, data presentation-differentiator, integrator and triangular wave generator, and active filters. The student selects a project from the text or other literature.

EET 223 Integrated Circuits in Digital Systems 4.0 UNITS

An introduction to the characterization and operation of integrated circuits in digital systems. A description of the various families of digital integrated circuits are given, including T-FL, ECL, and CMOS. Emphasis is on the operation and applications of TTL digital IC?s such as the 7400 family of chips. Basic digital blocks such as the AND, OR and NOR gates are first studied, followed by the combinational and sequential IC systems, which are commercially available. These include the hex inverter, NAND/NOR gates, BCD to decimal decoder, exclusive OR, AND-ORINVERT gate, full adder flip-flops, and emory. Also, counters shift registers and A/D-D/A conversion are discussed. The laboratory component of the course permits the student to properly breadboard, test, and evaluate digital integrated circuits and to observe and verify the applications of these systems by performing experiments in IC logic elements, combinational logic analysis and implementation, decoders, data selectors and data distributors, counter analysis, counters and registers, and trouble-shooting project.

EET 226 Communications Systems 3.0 UNITS

Presents the theory and operation of RF circuits, tuned circuits, amplifiers, and oscillator circuits. The theory of amplitude and frequency modulation including the principles of AM and FM transmitters and receivers are covered in detail. Also deals with single-side bank transmission and pulse modulation. The laboratory exercises cover AM transmitters, AM receivers, FM transmitters, FM receivers, tuned RF amplifiers, and oscillators.

EET 228 Electronics Projects Lab 2.0 UNITS

This course involves the student in the practical aspects of electronic fabrication from proposal preparation to printed circuit board assembly and test. Application of electronic schematics, parts lists, layouts and artwork enables the students to produce similar documentation for a personal project that he/she will select as part of the course requirement. Heavy emphasis on parts selection and procurement, breadboarding, printed circuit board fabrication, assembly, soldering techniques and heat sinking are provided in this laboratory-based course.

EET 229 Microprocessor/ Microcomputer Sys Design 4.0 UNITS

Presents the architecture and operation of the microcomputer. Topics include an introduction to the 8086 microprocessor including its architecture, operation, and instruction set. The instruction set is studied through programming examples. Interfacing to the 8086 microprocessor is thoroughly studied. Input/output port configuration and interrupt management are introduced and used in numerous design projects. The laboratory experiments consist of designing projects. Students are exposed to projects that include solving both software and hardware issues. The tools used include a PC loaded with an 8086 assembler and connected serially to an SDK-86 kit. Laboratory experiments cover an 8086 arithmetic program, accessing data in memory, using a PC to write a program with an assembler, generating digital waveforms, nested loops programming, reaction time programming, using D/A converters with microprocessors and vector graphics.