

ELECTRONICS ENGINEERING TECHNOLOGY (EET)

EET 100 Electrical Circuits I Credits: 3

Typically Offered: Fall, Spring.

Course Description: Studies of DC circuits and electrical components, including conductors, insulators, resistors, inductors, capacitors, switches, voltage and current sources. Fundamentals of AC circuits, motors and generators, three-phase industrial power, power generation, distribution, transmission, and transformers. Includes laboratory sessions to demonstrate and reinforce understanding of these topics. Two hours lecture, three hours lab.

EET 200 Electrical Circuits II Credits: 4

Typically Offered: Spring.

Course Description: Analysis of series and parallel DC networks by various methods including mesh and nodal analyses, network theorems; Thevenin's, Norton's and Superposition analyses of AC series and parallel networks (RL, RC & RLC circuits), j operators, phasors, reactances, phase relationships, power, network theorems, sinusoidal AC voltages, currents, impedances and admittances (RL, RC & RLC), resonance, frequency response, polyphase systems, transformers and circuit analysis applications using PSpice computer simulation program. Laboratory exercises using AC sources, dual-trace oscilloscope, frequency generator, spectrum analyzer, and circuit prototyping reinforce the lecture concepts. Three hours lecture, three hours lab. **Prerequisite(s):** EET 100 and credit or concurrent enrollment in MAT 119.

EET 202 Digital Logic Credits: 4

Typically Offered: Spring.

Course Description: Studies of number systems, logic gates, combinational logic using Small scale (SSI) and Medium scale (MSI) integrated circuits such as TTL, CMOS and ECL, Boolean algebra, mapping, flip-flops, counters, timers, adders, comparators, decoders, encoders, multiplexers, demultiplexers, arithmetic logic units (ALU's), programmable logic devices (PLD's) and input-output devices. Three hours lecture, three hours lab. **Prerequisite(s):** EET 100.

EET 206 Introduction to Microcomputers Credits: 4

Typically Offered: Fall.

Course Description: A study of microcomputer and microprocessor architectures, ALU's, memory devices, interfacing, communications, and software programming applications using assembly language and high-level programming language such as C/C++. Three hours lecture, three hours lab. **Prerequisite(s):** EGT 102 or CSC 184 and EET 202.

EET 212 Introduction to Semiconductor Devices Credits: 4

Typically Offered: Fall.

Course Description: Studies of basic semiconductor theory, principles, characteristic curves and applications of semiconductor devices such as various types of diodes, BJT, FET transistors and biasing, and thyristors. Circuit applications including power supply rectification and filtering, voltage regulation, clippers, clampers and amplifiers, circuit modeling and analysis using electronic circuit design and analysis software such as Electronics Work Bench and PSpice. Three hours lecture, three hours lab. **Prerequisite(s):** Credit or concurrent enrollment in both EET 200 and CHE 101.

EET 290 Engineering Technology Internship Credits: 1-3

Typically Offered: Fall, Spring, Summer.

Course Description: Intended for students working full-time or part-time for a company in a job related to their major, which reinforces and extends knowledge and skills. Requires periodic progress reports, supervisor evaluation and a formal final report addressing the experience and the educational benefits derived. **Prerequisite(s):** Departmental approval.

EET 312 Electronic Amplifiers and Integrated Circuits Credits: 4

Typically Offered: Spring.

Course Description: A study of principles and analysis of small and large signal amplifiers circuits of classes -A, -B, and -C using BJT, FET and MOSFET transistors; amplifier coupling methods, frequency response and Bode plots; introduction to active filters and operational amplifiers with applications as signal amplifiers, comparators, summers, voltage regulators, integrators and differentiators; thyristor principles, operational amplifiers, multistage amplifiers, integrated differential and operational amplifier circuits, Op-Amp theory and applications such as comparators, instrumentation amplifiers, signal generators, power amplifiers and active filters, D/A and A/D converters and applications. Circuit modeling programs, such as Electronics Work Bench, are used throughout the course. Three hours lecture, three hour lab. **Prerequisite(s):** EET 206 and EET 212.

EET 342 Analog Communications Systems Credits: 4

Typically Offered: Fall.

Course Description: A study of information theory, bandwidth, and noise; spectral analysis, principles and analysis of AM, FM modulation, detection, receivers, transmitters, networks, filters, antennas; principles and circuits of single-sideband communications; electromagnetic wave propagation; analog telephone systems; broadcast TV systems and transmission lines through VHF frequency. Laboratory experiences include exercises in basic analog communication circuits, and transmission and reception experiments. Three hours lecture, three hours lab. **Prerequisite(s):** EET 312.

EET 372 Programmable Logic Controllers Credits: 4

Typically Offered: Spring.

Course Description: Studies programmable logic controllers (PLC's); hardware components, memory structure, I/O modules, PLC ladder logic diagrams and basic programming functions, sequencing, contact and coil programming, fail-safe circuits and applications. Laboratory experiments feature hardware/software applications using industrial-grade PLC's of the major manufacturers interfaced with I/O devices for data acquisition and control experiments. Three hours lecture, three hours lab. **Prerequisite(s):** EET 206 and EET 212.

EET 374 Robotics Controls Credits: 4

Typically Offered: Spring.

Course Description: Introduction to various types of robot anatomy and drive systems, robotics control systems and components, motion analysis, types of end-effectors, robotics sensors and machine vision. Robot classifications, geometry and path control techniques, end-of-arm tooling, gripper selection system intelligence and compliance, robot programming, safety and safeguarding considerations and operator training, acceptance and problems. Laboratory experiments focus on interfacing lab robots to I/O devices using industrial grade PLC's of the major manufacturers and programming the lab robots to perform basic tasks. Three hours lecture, three hours lab. **Prerequisite(s):** EET 372.

EET 382 Electronics Fabrication Credits: 2**Typically Offered:** Spring.**Course Description:** Students are required to construct an electronic project approved by the instructor; this includes selection of a suitable project, its design and construction, and testing of the completed project. Lab may also require construction of small projects. 5 hours lab, including discussion periods. **Prerequisite(s):** EET 206 and EET 312.**EET 390 Technological Projects Credits: 1-3****Typically Offered:** Fall, Spring, Summer.**Course Description:** Intended for the advanced student whose project would enrich the educational experience. Approval by the Department Chairperson is required at least two weeks before the end of the previous term.**EET 402 Microcomputer Systems Credits: 4****Typically Offered:** Fall.**Course Description:** Advanced study in the architecture and design of modern computers and imbedded systems; design of microprocessor-based systems including memory, I/O interfacing, interrupts, and DMA. Design embedded systems with soft core micro controllers on programmable chips. Develop software with assembly and C programming language for an embedded system. Three hours lecture, three hours lab. **Prerequisite(s):** EET 206.**EET 412 Operational Amplifiers and Linear Integrated Circuits Credits: 3****Typically Offered:** Fall.**Course Description:** Advanced study of operational amplifiers, multistage amplifiers, integrated differential and operational amplifier circuits, Op-Amp theory and applications such as comparators, instrumentation amplifiers, signal generators, power amplifiers and active filters, D/A and A/D converters, and PSpice modeling program applied for circuit analysis examples. Two hours lecture, three hours lab. **Prerequisite(s):** EET 312, EET 372, and MAT 147.**EET 422 Electrical Power Technology Credits: 3****Typically Offered:** Spring.**Course Description:** Studies the principles and applications of various types of DC and AC generators and motors, methods of power control, using thyristor devices, solid-state AC and DC motor drives and servo mechanisms, microcontrollers control applications for motor drives, interface to programmable logic control systems, inverters, and converters; principles of three-phase power systems; transformers; generation, transmission, motors/generators, and three-phase power relationships. Course content is equivalent to MET 422. **Prerequisite(s):** EET 212 and MAT 147.**EET 442 Digital Communications Systems Credits: 3****Typically Offered:** Spring.**Course Description:** Principles and methods of digital modulation including A/D and D/A converters, frequency-shift keying, frequency-division multiplexing, delta and pulse-code modulation; error detection and correction techniques; UART's and modems; integrated services digital network (ISDN); networking architecture and protocols; fiber optics and satellite communications; and microwaves. **Prerequisite(s):** EET 206 and EET 342.**EET 452 Automation and Process Control Technology Credits: 4****Typically Offered:** Fall.**Course Description:** Studies principles of feedback control systems, compensation techniques, major types of sensors, electromechanical components and the interface between mechanics and electronics. Course content is equivalent to MET 452. Three hours lecture, three hours lab. **Prerequisite(s):** EET 202 and EET 212.**EET 472 Automatic Control Systems Credits: 4****Typically Offered:** Spring.**Course Description:** Study of the transfer function approach and Laplace transforms to the analysis of feedback control systems in the time and frequency domains, and associated compensation techniques; concepts of block diagrams, and open- and closed-loop control systems. Laboratory exercises include PLC's and MATLAB software and associated Toolboxes. Three hours lecture, three hours lab. **Prerequisite(s):** EET 372, EET 452, and MAT 147.**EET 482 Integrated System Project Credits: 3****Typically Offered:** Fall, Spring.**Course Description:** Electronic design project constructed in the laboratory and/or research project on selected electronics topics or problems. Requires a written notebook, periodic progress reports and a project final report. Class assignments or projects will require integration, knowledge from preceding courses and application of problem-solving skills acquired throughout the entire curriculum. **Prerequisite(s):** EET 342 and EET 452.**EET 485 Senior Seminar Credits: 2****Typically Offered:** Spring (odd-numbered years).**Course Description:** Designed for seniors majoring in electronics engineering technology; emphasizes the development of research in the field of electronics engineering technology, selected topics for group discussion of current areas of interest, guest speakers, and the exploration of career options. **Prerequisite(s):** Senior standing and declared engineering technology major.**EET 490 Advanced Topics in Electronics Engineering Technology Credits: 3****Typically Offered:** Departmental Discretion.**Course Description:** Selected new/emerging topics in the field of Electronics Engineering Technology. **Prerequisite(s):** Junior or Senior standing, declared Electronics Engineering Technology major, a minimum of 2.5 GPA, and departmental approval.