

ELECTRONIC COMPUTER TECHNOLOGY

Courses

ECT 110. Electrical Circuits I. 3 Hours

Practical concepts of single voltage source DC and AC circuits: current, voltage, resistance, power, series and parallel circuits, capacitance, magnetic circuits, and inductance. Corequisites: SET 150 or MTH 168; ECT 110L.

ECT 110L. Electrical Circuits I Laboratory. 1 Hour

Experiments in single voltage source DC and AC circuits to accompany ECT 110. Three laboratory hours per week. Corequisite(s): ECT 110.

ECT 120. Electrical Circuits II. 3 Hours

Practical concepts of multiple voltage and current source DC and AC circuits: reactance, impedance, phase, circuit analysis, power factor, resonance, filters, and transformers. Circuit calculations using vectors, complex algebra, and simultaneous equations. Prerequisite(s): ECT 110; MTH 168.

ECT 206. Electron Devices I. 3 Hours

Fundamentals of semiconductor diodes, transistors (bipolar and field effect), amplifiers, biasing and small signal analysis. Prerequisite(s): ECT 120. Corequisite(s): ECT 206L.

ECT 206L. Electron Devices I Laboratory. 1 Hour

To accompany ECT 206. Three hours of laboratory a week. Corequisite(s): ECT 206.

ECT 224. Digital Computer Fundamentals. 3 Hours

Fundamental theory and techniques of electronic data processing to include binary arithmetic, switching theory (Boolean algebra), and basic circuitry (gates, adders, registers, and memory). Prerequisite(s): ECT 110. Corequisite(s): ECT 224L.

ECT 224L. Digital Computer Fundamentals Laboratory. 1 Hour

To accompany ECT 224. Three hours of laboratory a week. Corequisite(s): ECT 224.

ECT 306. Electronic Devices II. 3 Hours

Fundamentals of integrated circuits, operational amplifiers, transistors, photoelectric devices, silicon-controlled rectifiers, and their associated circuits. Prerequisite(s): ECT 206; MTH 169. Corequisite(s): ECT 306L.

ECT 306L. Electronic Devices II Laboratory. 1 Hour

To accompany ECT 306. Three hours of laboratory a week. Corequisite(s): ECT 306.

ECT 357. Microprocessors I. 3 Hours

Study of microprocessor architecture, hardware, software, applications, and development tools. Prerequisite(s): ECT 224.

ECT 358. Microprocessors II. 3 Hours

Advanced microprocessors study including development tools and software with regards to interfacing equipment in applications. Prerequisite(s): ECT 224, ECT 361. Corequisite(s): ECT 358L.

ECT 358L. Microprocessors II Laboratory. 1 Hour

To accompany ECT 358. Emphasis on microcomputer programming. Three hours of laboratory a week. Corequisite(s): ECT 358.

ECT 361. Programming Structures. 3 Hours

The study of programming language concepts. Emphasis on the C language and its application to microcomputer hardware and software development. Prerequisites: SET 153L.

ECT 362. Concepts & Applications of Computer Operating Systems. 3 Hours

Introduction to the fundamentals and applications of computer operating systems and the interaction of hardware and software. Operating systems for large-scale, mini-, and microcomputers introduced through case studies. Prerequisite(s): ECT 361.

ECT 400. Selected Topics. 1-4 Hours

Investigation and discussion of current technical topics in electronic and computer engineering technology. May be taken more than once. Prerequisite(s): Permission of department chairperson.

ECT 408. Data Acquisition & Measurements. 2 Hours

Measurement and evaluation of the characteristics of engineering materials, structural mechanics, electromechanical systems, and physical systems. Emphasis on data acquisition, signal conditioning and manipulation, and virtual instrumentation. Prerequisites: ECT 110L; SET 250.

ECT 452. Feedback Controls. 3 Hours

Study of principles of control including Nyquist criteria, Bode plots, PID loops, motor control virtual instrumentation, and advanced concepts. Laplace transform analysis is utilized. Prerequisite(s): ECT 306, ECT 408.

ECT 456. Automotive Electrical & Safety Systems. 3 Hours

Theory and design of charging systems, batteries, control systems, safety systems, and various sensor technologies. Overview of manufacturing and commercial aspects of the automotive industry. Prerequisite(s): ECT 110 or EGR 203.

ECT 461. Power Distribution & Control. 3 Hours

Study of power distribution systems including components, basic operation, polyphase circuits, characteristics, and application. Emphasis on the generation of electric power, its transmission, and its application to high power systems. Prerequisite(s): ECT 110.

ECT 465. Digital Data Communications. 3 Hours

Study of communication methods and protocols. Applications to networks, satellite communication, phone systems, fiber optics, modems, and other data transmission. A special emphasis is placed on digital networks. Prerequisite(s): ECT 224.

ECT 466. Microcomputer Architecture. 3 Hours

To develop an understanding of the basic hardware architecture of industry standard microcomputers including CPUs, standard busses, memory, mass storage devices, Systems-on-a-Chip and their implementation, I/O devices, and network interfaces. Study of architecture of recent microprocessors. Prerequisite(s): ECT 224, ECT 361.

ECT 490. Senior Project. 3 Hours

Advanced study and research of the product realization process focusing on conceptual design, embodiment design, final design, and prototyping or other design verification. Students work on externally sponsored engineering projects in multidisciplinary teams that perform engineering analysis that includes safety, ergonomics, environmental, cost and sociological impact of their designs. Prerequisite(s): CMM 100; ECT 306, ECT 358, ECT 408; IET 323.

ECT 493. Honors Thesis. 3 Hours

HONORS THESIS Selection, design, investigation, and completion of an independent, original research study resulting in a document prepared for submission as a potential publication and a completed undergraduate thesis. Restricted to students in University Honors Program.

ECT 494. Honors Thesis. 3 Hours

Selection, design, investigation, and completion of an independent, original research study resulting in a document prepared for submission as a potential publication and a completed undergraduate thesis.

Restricted to students in University Honors Program. Prerequisite(s): ECT 493.