**ECT 108L. Introduction to Electronic Design. 1 Hour**
Modern design techniques to develop electronic devices are explored. This is achieved through the application of electronic test and measurement equipment, design software, and electronic prototyping tools. Experience with such systems is gained through the completion of individual and team design projects. Three laboratory hours per week.

**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 w/ Lab. 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. This course includes significant practical experiences through laboratory exercises; 2 contact hours of lecture and 3 contact hours of lab. Prerequisites: ECT 110; MTH 168.

**ECT 206. Electron Devices I w/ Lab. 3 Hours**
Fundamentals of semiconductor diodes, transistors (bipolar and field effect), amplifiers, biasing and small signal analysis. This course includes significant practical experiences through laboratory exercises and design projects; 2 contact hours of lecture and 3 contact hours of lab. Prerequisites: ECT 120.

**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 Systems Fundamentals. 3 Hours**
Fundamental theory and techniques of digital systems to include binary arithmetic, logic gates and simplification methods, combinational and sequential circuit design, and programmable logic devices. Digital system design and implementation using current principles, practices, and tools is introduced. This course includes significant practical experiences through laboratory exercises and design projects. Prerequisites: ECT 110.

**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 w/ Lab. 3 Hours**
Fundamentals of integrated circuits, operational amplifiers, transistors, photoelectric devices, silicon-controlled rectifiers, and their associated circuits. This course includes significant practical experiences through laboratory exercises and design projects; 2 contact hours of lecture and 3 contact hours of lab. Prerequisites: ECT 206; MTH 169.

**ECT 306L. Electronic Devices II Laboratory. 1 Hour**
To accompany ECT 306. Three hours of laboratory a week. Corequisite(s): ECT 306.

**ECT 357. Advanced Digital Systems Design. 3 Hours**
A study of modern digital system design using programmable logic devices (PLDs), hardware description languages (HDLs), and low-level software languages. The course covers the design, analysis, and implementation of simple to complex digital systems including finite state machines, ALUs, and systems-on-chip. Current industrial methods including good HDL coding practices of readability, re-configurability, and efficient execution are emphasized. Additionally, students will work with modern computer aided tools for design, simulation, and implementation activities. This course includes significant practical experiences through laboratory exercises and design projects. Prerequisites: ECT 224, ECT 361.

**ECT 358. Microprocessor Systems Design. 3 Hours**
A study of microprocessor architecture, interfaces, and applications. Processor organization and instruction set architecture is investigated. Processor I/O interfaces and applications are implemented using low and high level software languages and electronic circuit design. Current industrial practices and modern tools are used for hardware and software design. This course includes significant practical experiences through laboratory exercises and design projects. Prerequisites: ECT 224, ECT 361.

**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.