

# ELECTRONICS (ELT)

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## ELT-224 Motors and Transformers (5)

Provides theory and hands-on experience with electric motors and transformers. Learning activities include reading, lecture and labs. Covers DC, three-phase and single-phase motors in depth, and studies three-phase and single-phase transformers, applications and connections. Arts & Sciences Elective Code: B

*Hours per week:* 3.0 lecture, 4.0 lab

*Prerequisite:* Take ELE-364.

## ELT-279 Electronic Practices (4)

Presents DC current, voltage, energy, power, resistance, capacitance, inductance, and semiconductor theory in a practical laboratory setting. Focuses on lab safety, component identification, schematic reading, and the use of equipment to measure prototype circuits. Includes extensive laboratory sessions requiring schematic reading, constructing circuits, using soldering and solderless breadboard, and utilizes lab equipment to measure and troubleshoot circuits. Arts & Sciences Elective Code: B

*Hours per week:* 3.0 lecture, 2.0 lab

## ELT-299 Introduction to LabView (3)

Introduces LabView, including modular programming, loops, charts, arrays, clusters, case and sequence structures, strings and file I/O. Presents Windows operating system basics, word processing and Excel software. Arts & Sciences Elective Code: B

*Hours per week:* 2.0 lecture, 2.0 lab

## ELT-309 Digital Circuits (3)

Presents the analysis and design of digital circuits. Introduces Boolean algebra as a tool in working with basic gates, flip-flops, counters, shift registers, adders, timers and busses. Provides laboratory and computer-simulation exercises. Arts & Sciences Elective Code: B

*Hours per week:* 2.0 lecture, 2.0 lab

## ELT-341 Electric Circuits II (5)

Adapts DC circuit analysis techniques to the AC realm. Examines fundamental concepts of passive filters and frequency response. Includes computer simulations and laboratory sessions for further concept investigation. Arts & Sciences Elective Code: B

*Hours per week:* 4.0 lecture, 2.0 lab

*Prerequisite:* Take ELT-345.

## ELT-345 Electric Circuits I (5)

Studies the fundamental DC concepts including current, voltage, polarity, energy and power. Describes the methods of analysis of DC electric circuits. Includes resistive-inductive and resistive capacitive circuits and introduces the fundamental concepts of AC electricity. Incorporates computer simulations and laboratory sessions for further investigation of concepts. Arts & Sciences Elective Code: B

*Hours per week:* 4.0 lecture, 2.0 lab

## ELT-350 Communications Systems I (7)

Offers the theoretical background with complementary laboratory exercises necessary for working with systems used in today's communication industry. Focuses on signal representations, transmission of, modulation of, and coding of both analog and digital signals. Includes the application of the phase-locked loop, and propagation of electromagnetic waves in guided media and free space. Incorporates the building and measuring of active filters; balanced, FM, and AM modulators and demodulators. Arts & Sciences Elective Code: B

*Hours per week:* 5.0 lecture, 4.0 lab

*Prerequisite:* Take ELT-341. Take ELT-518.

## ELT-399 Communications Systems II (4)

Continues Communications Systems I laboratory work related to the design, build and test of digital and analog communications links. Focuses on the measurement of antennas, transmission lines, the propagation of electro magnetic waves and waveguides, through lectures, comprehensive laboratory activities, lab report writing and computer simulations. Arts & Sciences Elective Code: B

*Hours per week:* 1.0 lecture, 6.0 lab

*Prerequisite:* Take ELT-350.

## ELT-514 Active Devices I: Transistor Amplifiers (7)

Presents an analytical approach with laboratory and computer-simulation exercises related to the design and troubleshooting of transistor amplifier. Includes bipolar junction transistors, FETs, small signal amplifiers, power amplifiers, amplifier frequency responses, and amplifier transient responses. Introduces operational amplifiers. Arts & Sciences Elective Code: B

*Hours per week:* 5.0 lecture, 4.0 lab

*Prerequisite:* Take ELT-345.

## ELT-518 Active Devices II: Operational Amplifiers (3)

Presents an analytical approach through laboratory and computer-simulation exercises regarding the design and troubleshooting of operational amplifier circuits. Examines four basic types of negative feedback. Includes voltage amplifiers, comparator, analog-to-digital conversion, wave shaping, active filters, and printed circuit design. Arts & Sciences Elective Code: B

*Hours per week:* 2.0 lecture, 2.0 lab

*Prerequisite:* Take ELT-514.

## ELT-618 Microprocessors I (5)

Studies counters, shift registers, memory, data storage, digital signal processing, and microprocessors. Learning activities include computer simulations and extensive laboratory sessions with PLDs (programmable logic devices). Arts & Sciences Elective Code: B

*Hours per week:* 4.0 lecture, 2.0 lab

*Prerequisite:* Take ELT-309 or EGT-420.

## ELT-621 Microprocessors II (4)

Introduces software engineering through a combination of C programming language, robotics, microcontrollers, and version control software. Incorporates writing programs in C. Arts & Sciences Elective Code: B

*Hours per week:* 3.0 lecture, 2.0 lab

*Prerequisite:* Take ELT-618.

### **ELT-796 Fundamentals of Fluid Power (3)**

Focuses on proper usage and application of, as well as the theory and physics behind, fluid power systems and controls. Introduces the various components used in each type of system. Includes assembly, operation, and troubleshooting various types of fluid power systems and components. Arts & Sciences Elective Code: B

*Hours per week:* 1.0 lecture, 4.0 lab

### **ELT-845 Design Projects (4)**

Practices system design through teamwork. Emphasizes designing, building, troubleshooting, and testing a complex electronic system as specified and approved by the design team's customer. Arts & Sciences Elective Code: B

*Hours per week:* 3.0 lecture, 2.0 lab

*Prerequisite:* Take ELT-350.

### **ELT-924 Honors Project (1)**

Allows a qualified honors student to pursue a special concentration of study under the guidance of a faculty member. Requires completion of an honors project contract. May be taken more than once. Arts & Sciences Elective Code: B; Comments: Requires approval of supervising professor and dean

*Hours per week:* 1.0 lecture

### **ELT-928 Independent Study (1-3)**

Provides readings, papers and basic research or other projects under the individual guidance of a staff member. Arts & Sciences Elective Code: B; Comments: Permission of instructor, dean

*Hours per week:* 1.0 lecture