ENGIN. TECH.-ELECTRICAL (ETEE)

ETEE 1050 - Introduction to Electromechanical Systems
(3 Credits)
The course will introduce the student to the nature of electricity and magnetism, and applications of practical electrical and electromechanical devices and systems. Students will study electrical laws in basic DC and AC circuits, and the behavior of passive and active circuits and components. Students will also be introduced to basic electromechanical components such as relays, switches, motors and generators. The course will emphasize a systems approach to utilizing and testing electromagnetic technology. Both hands-on labs and software simulation will be used to develop an understanding of combining components to form complex systems and the techniques to evaluate the performance of electromechanical systems.

Lecture: 2 hours, Lab: 2 hours

Prerequisite(s): MATH 1179 (may be taken concurrently)

ETEE 1100 - Engineering Applications of Computers
(3 Credits)
Students will be introduced to microprocessor and microcontroller architectures. Machine, assembly, and high-level languages will be examined. A combination of assembly and a high-level language will be applied to solving problems using a popular microcontroller development environment and target hardware system. Data and graphic information types and formats will be described and used in programs. Acquiring data from internal and external sources, communicating across networks, and directing output to displays and other external interfaces will also be explored. Student lab activities include developing and debugging programs used to control electromechanical devices, measuring operating parameters, collecting data, and displaying information.

Lecture: 2 hours, Lab: 2 hours

Prerequisite(s): (MATH 1750 (may be taken concurrently) or MATH 1179) and ETEE 1800

ETEE 1120 - Electronic Devices & Circuits
(3 Credits)
This course is a study of the basic laws of electronic circuit theory applied to electronic devices with emphasis on solid state devices, including the theory and operation of semi-conductor diodes and transistors. Operational amplifiers, oscillators, active filters and switching circuits are emphasized and analyzed in laboratory experiments. Analysis techniques include the use of Bode plots and computerized experiments using circuit simulation software in addition to bench work wiring up circuits that are analyzed and then tested.

Lecture: 2 hours, Lab: 2 hours

Prerequisite(s): ETEE 1500

ETEE 1500 - Electrical Systems I
(3 Credits)
This course covers AC and DC circuits. Analysis techniques are taught and implemented in laboratory experiments using physical components, instruments, and computer analysis. Power transformers and single phase/three phase power distribution is introduced.

Lecture: 2 hours, Lab: 2 hours

Prerequisite(s): ETEE 1050 (may be taken concurrently)

ETEE 1800 - Introduction to Digital Systems
(3 Credits)
This course provides the student with a basic understanding of digital systems through the use of programmable logic controllers. The student will explore fundamental properties of digital logic controllers, digital control components and systems. Students also will analyze and develop basic control systems solutions, using logic controller simulation software to configure and test systems.

Lecture: 2 hours, Lab: 2 hours

Prerequisite(s): Math Accuplacer or MATH 0500 or MATH 0100

ETEE 2390 - Electrical Power Systems
(3 Credits)
Three phase delta/wye and single phase power circuits are analyzed. Measurement with instrument transformers and two/three wattmeters are emphasized and used in laboratory experiments. AC and DC motors and generators, stepper motors and universal motors are studied, with related laboratory experiments. Emphasis is on operation, measurement of characteristics and control. Transformers, circuit breakers, relays and programmable control devices are covered, and also the basics of power transmission lines. Technology associated with smart-grid systems will be introduced.

Lecture: 2 hours, Lab: 2 hours

Prerequisite(s): ETEE 1500 (may be taken concurrently)

ETEE 2500 - Electrical Systems II (Formerly ETEK 2370-Technical Capstone Project)
(3 Credits)
Switching devices including SCRs, TRIACS, DIACS, UJT, and their application in power and motor control circuits are covered in this course. The application of transducers as sensors in industrial control systems is also covered. Use of programmable controllers in industrial control of processes and power circuits is emphasized. The laboratory experiments include SCR and switching devices in the control of power circuits; application of sensors for measurement of heat, position, stress, light and pressure; operation and programming of programmable controllers; measurements in single phase and three phase -Y power circuits, and the operation of motors. Students will apply material learned in this course and in previous courses to a capstone project.

Lecture: 2 hours, Lab: 2 hours

Prerequisite(s): ETEE 1500