

ELECTRICAL/ELECTRONIC EGR TECH (EE)

Course Descriptions

EE 121. Fundamentals of Digital Electronics. 3 Credit Hours.

This course is an introduction to Digital Electronics. Students will learn basic lab safety, electron theory, Ohm's and Kirchoff's Laws, logic, number systems, binary addition and Boolean Expression applications. Students will design, construct, troubleshoot and evaluate design problems, and will present oral reports of their results. Students will also study PLDs, Flip-Flops, microprocessors, and shift registers and counters.

Prerequisites: GE 121 with minimum grade of "C" or department approval

EE 132. Electronic Devices. 5 Credit Hours.

Electronic Devices introduces theory, characteristics, and applications of most of the basic electronic devices used in industry. Basic practical circuits will be presented to reinforce the theory.

Prerequisites: EE 134 with a minimum grade of "C" and Reading Proficiency

EE 134. Electric Circuits. 6 Credit Hours.

Electric Circuits emphasizes basic direct current (DC) circuit configurations, components, and calculations. Content continues with introductory alternating current (AC) circuits and calculations, oscilloscope overview, and transformers. Troubleshooting concepts are addressed along with the theory content. Laboratory experiments reinforce topics.

Prerequisites: MTH 140 (or MTH 140S) with a minimum grade of "C" or equivalent placement test scores or department approval and Reading Proficiency

EE 151. Motor Control Fundamentals. 4 Credit Hours.

Motor Control Fundamentals is a practical, hands-on class, centered on the study and application of motor control and power devices and circuits. This course studies control components such as relays, pushbuttons, sensors, contactors, and overload relays and power devices such as motors, transformers, and solenoids. The course emphasizes developing skills to be able to read, write, speak, and troubleshoot basic electro-mechanical motor control circuits. Safe work habits are emphasized throughout the course.

Prerequisites: Reading Proficiency

EE 207. Industrial Instrumentation and Process Control. 3 Credit Hours.

Industrial Instrumentation and Process Control covers the study of instrumentation technology, temperature, pressure, flow, and analytical measurement devices. Proportional, Integral, and Derivative (PID) control, along with current loops and calibration, are discussed and applied in the lab. The course emphasizes the on-the-job knowledge and skills required to troubleshoot and maintain modern process control systems.

Prerequisites: MTH 140 or MTH 140S or MTH 160S with a minimum grade of "C" or placement into MTH 160, and Reading Proficiency

Recommended Preparation: EE 134

EE 233. Digital Logic. 4 Credit Hours.

Digital Logic covers digital computer fundamentals from the systems and circuit approach. Students will be exposed to Boolean algebra, pulse generating devices, timing devices, flip-flops, counters, and shift registers.

Prerequisites: EE 134 with a minimum grade of "C" and Reading Proficiency

EE 235. Electronic Communications. 4 Credit Hours.

The fundamental theory and application of communications circuits and devices. The study of radar fundamentals, transmission lines, and electromagnetic interference will be included. Additional lab hours required.

Prerequisites: EE 132 with a minimum grade of "C" and Reading Proficiency

EE 236. Introduction to Programmable Logic Controllers. 3 Credit Hours.

Introduction to Programmable Logic Controllers presents the fundamentals of ladder logic used in modern industrial controllers. Basic elements such as timers, counters, and sequencers are studied, as well as traditional methods of applying them to machine control. Students will program and perform laboratory experiments with programmable logic controllers.

Prerequisites: Reading Proficiency

EE 242. Introduction to Microprocessors. 3 Credit Hours.

This course will focus on the structure of a microcomputer input/output central processor and control units, memory programming techniques, logic circuits and arithmetic operations. Additional lab hours required.

Prerequisites: EE 130 with a minimum grade of "C" or department approval and Reading Proficiency

EE 252. Motion Control Fundamentals. 3 Credit Hours.

Motion Control Fundamentals introduces the student to the methods and equipment used to program, configure, and troubleshoot, solid state AC and DC drive systems, closed loop servo drives, and motion control systems. Topics include the effective use of test equipment, variable speed drive applications and configuration, various approaches to troubleshooting drive systems, servo systems, an overview of electrical motor theory, position, and speed feedback devices, and closed loop control. Safe work habits are emphasized throughout the course.

Prerequisites: EE 134 with a minimum grade of "C" and Reading Proficiency