ELECTRICAL AND ELECTRONIC ENGINEERING TECHNOLOGY (2860)

2860:120 Circuit Fundamentals (4 Credits)
Prerequisite: 2030:152 or permission. SI units, current, voltage, resistance, Ohm’s Law, circuit analysis, network theorems, computer simulation, inductor, capacitor, RLC dc analysis, transients, laboratory support of circuit concepts, ac introduction.

2860:121 Introduction to Electronics and Computers (2 Credits)
Prerequisite: 2030:151. Introduces students to computer simulation, Boolean algebra, circuit manufacturing, laboratory practices, and to the electronics industry.

2860:122 AC Circuits (4 Credits)
Prerequisite: 2860:120. Corequisite: 2030:154. Sinusoidal voltage and current, reactance and impedance, methods of AC circuit analysis, AC power, transformers, AC meters and oscilloscopes, dependent and independent sources.

2860:123 Electronic Devices (4 Credits)
Prerequisite: 2860:120. Physical theory, characteristics and operational parameters of solid-state devices. Analysis and design of electronic circuits incorporating these devices, utilizing characteristic curves and linear modeling.

2860:210 Industrial Control Panel Fabrication (2 Credits)
Prerequisite: 2030:152. This course will introduce students to shop fabricating skills involved in the creation of electrical control panels using mechanical and electrical fabricating tools.

2860:225 Applications of Electronic Devices (4 Credits)
Prerequisites: 2860:122 and 2860:123. Frequency response, filter concepts, electronic amplifiers, power amplifiers, multistage amplifiers, differential amplifiers, operational amplifiers, voltage regulators, feedback and oscillators, special devices, computer simulation analysis.

2860:237 Digital Circuits (4 Credits)
Prerequisite: 2860:121. Devices used in logic circuits, interfacing, combinational logic, arithmetic circuits, encoders, multiplexers, programmable logic devices, flip-flops, counters, shift registers, computer modeling of digital circuits.

2860:238 Microprocessor Applications (4 Credits)
Prerequisite: 2860:237. Programmable logic devices, computer modeling of digital circuits, memory circuits. Computer architecture, programming the microprocessor, microprocessor hardware, microprocessor applications, parallel I/O and programmable timers.

2860:242 Machinery & Controls (3 Credits)
Prerequisite: 2860:120 or 2860:370. Introductory study of DC and AC motors and their control. Ladder logic input devices, relays, and motor starters are explored as applied to starting DC & AC 3 Phase Induction motors. Variable Frequency Drives and Softstarts are applied with various control input schemes to AC 3 Phase Induction motors. Application of Programmable Logic Controllers and Human Machine Interfaces to the control of AC 3 Phase Induction motors.

2860:251 Electronic Communications (4 Credits)
Prerequisite: 2860:225. Resonance, coupling, filters, oscillators, mixers, power amplifiers, AM, FM, receivers.

2860:260 Electronic Project (2 Credits)

2860:290 Special Topics: Electronic Engineering Technology (1-4 Credits)
Prerequisite: Permission of instructor. Directed study in a special field of interest chosen by the student in consultation with the instructor (may be repeated for a total of six credits).

2860:310 National Electrical Code and Electrical System Design (3 Credits)
Prerequisite: 2860:122 or 2860:370. This course provides students with the skills necessary to apply the National Electrical Code (NFPA 70) to the design and installation of electrical systems and circuits.

2860:350 Advanced Circuit Theory (3 Credits)

2860:352 Microcontrollers (4 Credits)
Prerequisite: 2860:238. Corequisite: 2860:350. Using a typical microcontroller, study its architecture, program it, use subroutines and interrupts, use it in various applications, utilize various on-board modules including analog-to-digital, and timers.

2860:354 Advanced Circuits Applications (3 Credits)

2860:360 Virtual Instrumentation and Data Acquisition (3 Credits)
Prerequisites: 2860:122 and 2860:370. An introduction to instrumentation, data acquisition (DAQ) and graphical programming used in manufacturing and laboratory environments.

2860:370 Survey of Electronics I (3 Credits)
Prerequisite: 2030:154. Fundamentals of DC and AC electrical circuits and rotating machinery. For non-Electrical and Electronic Engineering Technology majors.

2860:371 Survey of Electronics II (3 Credits)
Prerequisite: 2860:370. Survey of the most commonly used solid state circuit components including typical applications. Introduction into digital circuits and microprocessor applications. For non-Electronic Technology majors.

2860:400 Computer Simulations in Technology (3 Credits)
Prerequisites: 2030:345 and 2860:354. Introduce the use of software widely used in industry to simulate and study electrical circuits and signals. Methods of data sampling, management and presentation will be studied.

2860:406 Communication Systems (3 Credits)
Prerequisites: 2860:251 and 2860:354. Digital communications, transmission lines, waveguides, microwave devices and antennas.

2860:420 Biomedical Electronic Instrumentation (3 Credits)
Prerequisite: 2860:354. Introduction to electrical signals from the body, transducers, recording devices, telemetry, microprocessor applications, and electrical safety of medical equipment.
2860:451 Industrial Electrical Systems (3 Credits)
Prerequisite: 2860:354. Electric power, industrial nameplates, power factor correction, mutual inductance, linear transformers, power transformers, polyphase systems, per-phase analysis, system grounding, protective device coordination computer-aided analysis.

2860:453 Control Systems (4 Credits)

2860:455 Senior Project (2 Credits)
Prerequisite: Senior standing. Capstone experience consisting of Electrical or Electronic Project emphasizing creative technical analysis or design and presentation. (may be repeated for a total of six credits).
Gen Ed: Capstone

2860:490 Special Topics: Electronic Engineering Technology (1-4 Credits)
Prerequisite: Permission of instructor. Directed study in a special field of interest chosen by the student in consultation with the instructor (may be repeated for a total of six credits).

2860:497 Senior Honors Project: Electronic Technology (1-3 Credits)
Prerequisites: Senior standing in Honors Program, permission of department preceptor, and major in electronic technology. Independent research leading to completion of Senior Honors Thesis or other original work. (May be repeated for a total of six credits)