Electrical Technology (ELEC)

ELEC 101. Electrical Fundamentals I. 3 Credits.
This course will introduce the student to the various electrical properties and the equipment which produces those properties. Basic circuitry will be examined, utilizing algebraic skills to perform the calculations. Course Fee: $25.00.

ELEC 102. Electrical Fundamentals II. 3 Credits.
This course will introduce the student to the alternating current. The electrical properties and their affects on the circuit will be examined. Basic trigonometric skills will be utilized to perform calculations for analyzing various electrical circuits. Prerequisites: ELEC 106. Course Fee: $50.00.

ELEC 103. Electric Code Study/Codeology. 3 Credits.
This course is a preliminary study of the National Electrical Code (NEC). Wiring design and protection, wiring methods and materials, and equipment for general use are covered. Interaction and personal communications with Authorities Having Jurisdiction (i.e., inspectors, engineers, architects, employers, etc.) as well as customers and owners will be addressed. Course Fee: $15.00.

ELEC 106. Electrical Formulas & Calc. 3 Credits.
This course covers the basic formulas needed to determine electrical values in typical electrical installations including power, current, and voltage. Basic methods of calculation for both DC and AC quantities will be discussed and demonstrated as well as the use of modern calculators and computer software to determine necessary values.

ELEC 111. Electric Meters & Motors. 3 Credits.
This course is a practical hands-on course using ammeters, voltmeters, watt meters, and multi-meters in testing and troubleshooting electric motors, components and wiring systems. This course includes a study of single and three phase AC motors, their construction features and operating characteristics. This lecture/lab class emphasizes electric motor terminology, identification of motor types, enclosures, mounts, motor selection, connections, maintenance, testing and trouleshooting. Students are also introduced to motor loads, protection, controls, and devices used to connect motors to their loads such as pulleys, V-belts, gear boxes and couplings. Course Fee: $35.00.

ELEC 133. Basic Wiring. 5 Credits.
This course covers the basic formulas needed to determine electrical values in typical electrical installations including power, current, and voltage. Basic methods of calculation for both DC and AC quantites will be discussed and demonstarted as well as the use of modern calculators. Labs shall include wiring of Residental and Commercial applications as prescribed within the 2011 NEC. Prerequistie ELEC 101/102.

ELEC 137. Electrical Drafting. 2 Credits.
This course studies techniques of communicating through the use of mechanical drawings, electrical drawings, heating ventilation and air conditioning drawings. Basic blueprint reading and sketching are included as well as symbols and scales.

ELEC 139. Elctrcl Code Study-Residential. 3 Credits.
This course is an introductory study of National Electrical Code requirements for residential wiring, including protective ground circuits, service entry and electrical safety reqirements for routine residential electrical installations. Course Fee: $40.00.

ELEC 190. Special Topic. 12 Credits.

ELEC 192. Independent Study. 1-12 Credits.

ELEC 201. Alternating Current Theory. 3 Credits.
This course is a study of three phase alternating current circuits and single and three-phase transformers and machines. The theory and operation of three phase wye and delta circuits and the relationship of voltage, current and power in these circuits. The use of phasor algebra in the solution of alternating current problems is stressed as are the characteristics and use of electrical instruments such as voltmeters, ammeters, ohmmeters, and watt meters. Students learn the theory and operation of transformers with single and three phase connections and are introduced to alternating current machines. Prerequisite: ELEC 102.

ELEC 204. Elctrcl Planning & Estimating. 3 Credits.
This course is an applied course in the planning and cost estimation of electrical installations and rehabs for both commercial and residential applicaitons. The course will use current catalog and electrical supply information to determine rough cost estimates based on blue print or electrical drawings, as well as using customer requirements to determine the plan and cost estimates for new and old work.

ELEC 205. Electrical Design & Lighting. 3 Credits.
This course is a class discussion course dealing with electrical material and equipment sizing, layout and applicaton, applicable wiring codes, regulations and rules, and characteristics of common electrical distribution systems as used in industrial plants and commercial buidling locations. Included is a study of short circuit current, current limiting and coordination, power factor correction and elecrical rates. This course includes the study of modern illumination principles, calculation procedures and equipment for lighting installations. Also included are discussions of building construction, heat loss clculations and electric heating equipment selection.

ELEC 211. AC Measurements. 3 Credits.
This lecture/lab course consists of a series of experiments to investigate the characteristics of single-phase and three-phase electrical circuits. The connections and testing of transformers in both single-phase and three-phase configurations are stressed. Students also learn the operation of three phase motors from conventional sources and phase converts, with an operation of three phase motors from conventional sources and phase converts, with an emphasis on efficiency, operating characteristics and connections. Co-requisite: ELEC 201.

ELEC 230. Industrial Electrical Wiring. 3 Credits.
This course covers construction plans for industrial sites and details regarding unit substations, feeder bus systems, panelboards, trolley busways, wire tables and sizing, signaling systems, motors and controllers, motor installations, power factor, lightning protection, ventilation and exhaust systems, programmable logic controllers, fiber optics, hazardous locations, and harmonics.

ELEC 233. Commercial Wiring Lab. 3 Credits.
This course is an extension of ELEC 133 with lectures emphasizing commercial wiring methods. Students will perform laboratory work consisting of actual installation of various raceways, as well as connecting of special equipment used in commercial and industrial applications, all in accordance with the National Electrical Code. Prerequisite: ELEC 133. Course Fee: $50.00.

ELEC 236. Conduit/Rcwys & Code Calc Lab. 3 Credits.
This course includes laboratory work dealing with Code application relating to conduit bending as well as National Electrical Code calculations for wire and cable installation. Students will perform lab work consisting of actual installation of conduit, wire and cable. Course Fee: $75.00.

ELEC 239. Grounding&Bonding Fund. 3 Credits.
This course is a combination lecture/lab series of grounding theory as well as characteristics of grounded and non-grounded systems. Labs include proper grounding practices, various grounding applications, tools and materials usage and methods of compressions and exothermic application and installations. Course Fee: $25.00.

ELEC 241. Electric Motor Controls. 3 Credits.
This course is a lecture and laboratory class oriented to the study of electromechanical control system concepts. Experiments are designed to illustrate the principles, applications, connection and installation procedures of electrical controllers. Special emphasis is placed on the analysis and development of control circuits.

ELEC 247. Medium and High Voltage. 3 Credits.
This course is a lecture/lab course which covers medium and high voltage electrical theory, conductors, insulators, over current devices, testing, termination, safety precautions and safety equipment. Course Fee: $65.00.

ELEC 250. Programmable Logic Controllers. 3 Credits.
This course covers an introduction to a variety of programmable logic controllers (PLCs). The applications, operations, and programming of PLC's will be covered with an emphasis on programming. Computers and manual methods will be used to program PLCs.

ELEC 290. Special Topic. 12 Credits.

ELEC 299. Independent Study. 1-12 Credits.

ELEC 392. Independent Study. 1-12 Credits.