INDUSTRIAL ELECTRICITY/ELECTRONICS TECHNOLOGY (ILT)

ILT 104. INDUSTRIAL INSTRUMENTATION. 3 hrs.
This course provides a study of instrumentation circuits/systems. Topics include the use of transducers, detectors, actuators, and/or other devices and equipment in industrial applications. Upon completion, the student should be able to apply principles of instrumentation circuits and systems.

ILT 105. INDUSTRIAL INSTRUMENTATION LAB. 2hrs.
This lab includes the use of transducers, detectors, actuators, and/or other devices and equipment in industrial applications. Upon completion, the student should be able to apply principles of instrumentation circuits and systems.

ILT 106. CONCEPTS OF DIRECT CURRENT. 5 hrs.
This course provides an advanced study of direct current (DC) concepts and application principles. Specific topics include safety, terms and symbols, electrical theory, Ohm’s law, power law, electrical measurement, DC electrical components, series, parallel, and series-parallel circuit construction. Students gain hands-on experience through various laboratory problems. Emphasis is placed on the use of scientific calculators, reading schematics, and the operation of common test equipment used to analyze and troubleshoot DC circuits and to prove the theories taught during classroom instruction.

ILT 107. CONCEPTS OF ALTERNATING CURRENT. 5 hrs.
This course provides an advanced study of alternating current (AC) concepts and application principles. Specific topics include safety, terms and symbols, AC electrical theory, components, circuits, electrical measurement instruments, laws of AC, and methods for constructing and measuring various types of AC circuits. Students gain hands-on experience through laboratory exercises designed to analyze complex circuits, power requirements, faults, phase relationships, and power factors. Emphasis is placed on the use of scientific calculators and the operation of various types of test equipment used to analyze and troubleshoot AC circuits

ILT 114. INSTRUMENTATION OPERATION AND CALIBRATION. 3 hrs.
The hardware used to measure and control process variables is presented. The student learns the principles of operation, servicing, maintenance, calibration, and troubleshooting procedures used on mechanical, pneumatic, electronic and digital based industrial transmitters, recorders, controllers, valves, and other control devices. The course is broken down into theory and laboratory work on actual process measuring and control equipment.

ILT 115. INDUSTRIAL CONTROLS. 3 hrs.
This course emphasizes the fundamentals and applications of solid state motor starters. Topics include DC drives, AC variable frequency drives, thyristers, sequences circuits and closed loop control including PID process control. Upon completion, students should be able to apply principles of solid state motor starters

ILT 118. CONSTRUCTION WIRING NEC. 3 hrs.
This course provides a study of the codes that is required to safely perform electrical wiring installations. Emphasis will be placed upon the codes that apply to residential, commercial, and industrial locations. Upon completion, students should be able to apply the codes in the electrical wiring of residential, commercial and industrial applications.

ILT 148. AUTOMATIC CONTROLS SYSTEMS. 3 hrs.
PREREQUISITE: Instructor approval.
This course emphasizes automated control systems and sub-systems. Topics include robotics, programmable hydraulic, pneumatic, microprocessor, variable-speed drives, transducers, and related control circuitry with emphasis on troubleshooting the total system. Upon completion, students should be able to apply principles of automated control systems.

ILT 162. SOLID STATE FUNDAMENTALS. 3 hrs.
This course provides instruction in basic solid state theory beginning with atomic structure and including such as diodes, bipolar transistors, field effect transistors, amplifiers, thyristors, operational amplifiers, oscillator and power supply circuits. Emphasis is placed on the practical application of solid-state devices, proper biasing and amplifier circuit analysis and the use of test equipment to diagnose troubleshoot and repair typical solid-state device circuits. This course also provides the opportunity for students to apply the solid-state principles and theories learned in class in the laboratory setting. Emphasis is placed on the practical application of solid-state devices, proper biasing and amplifier circuit analysis and the use of test equipment to diagnose, troubleshoot and repair typical solid-state device circuits.

ILT 163. DIGITAL FUNDAMENTALS. 3 hrs.
This course provides instruction on basic logic gates, flip-flops, registers, counters, microprocessor/ computer fundamentals, analog to digital conversion, and digital analog conversion. Emphasis is placed on number systems, Boolean algebra, combination logic circuits, sequential logic circuits, and typical microprocessor data manipulation and storage. This course has an embedded lab with exercises designed to develop skills required by industry. Upon completion, students should be able to analyze digital circuits, draw timing diagrams, determine output of combinational and sequential logic circuits and diagnose and troubleshoot electronic components as well as demonstrate knowledge of microprocessor and computer circuits.

ILT 164. CIRCUIT FABRICATION I. 1 hr.
This course provides instruction in fabrication of functional circuits and is an introduction to device construction and fabrication. Utilizing discrete components, students will fabricate functional circuits. Topics include soldering, cable construction, coaxial cable connection and termination, component mounting cases, and chassis, printed circuit board design, layout, fabrication, and repair, as well as soldering techniques, care of tools, wire splicing, wire wrapping, connector maintenance, and related shop safety. Upon completion of this course, students should be able to perform basic circuit and project construction.

ILT 165. INDUSTRIAL ELECTRONIC CONTROLS I. 3 hrs.
This course provides a study of industrial electronics controls. Topics include photoelectric, temperature, gas and humidity, pressure and strain measurements for industrial instrumentation controls and applications. The lab enables students to test, troubleshoot and repair electronic control circuits. Upon completion, students should be able to apply principles of industrial electronics control circuits.
ILT 194. INTRODUCTION TO PROGRAMMABLE LOGIC CONTROLLERS 3 hrs.
This course provides an introduction to programmable logic controllers. Emphasis is placed on, but not limited to, the following: PLC hardware and software, numbering systems, installation, and programming. Upon completion, students must demonstrate their ability by developing, loading, debugging, and optimizing PLC programs.

ILT 263. CERTIFICATION PREP LAB. 1 hr.
This course is to be taken in the final semester of the program. The course may be repeated to prepare students for different certification examinations as determined by the college.