ADVANCED INDUSTRIAL INTEGRATED TECHNOLOGY (AIT)

AIT 120 (3 credit hours)
Equipment Installation
Focuses on the installation of electrical, piping, pneumatic, and mechanical industrial systems. Emphasizes electrical wiring/box selection, conduit preparation and installation, metal and plastic piping installation, basic hand tool usage, motor mounting, and rigging techniques. Lecture: 1 credit (15 contact hours). Laboratory: 2 credits (60 contact hours).
Pre-requisite: AIT 110 or AIT 1101 or consent of instructor.
Attributes: Course Also Offered in Modules
Components: LAB: Laboratory, LEC: Lecture

AIT 135 (3 credit hours)
Industrial Refrigeration - I
Presents refrigeration fundamentals and associated components for individuals interested in safe, effective, and efficient maintenance and operation of industrial refrigeration equipment who may also be seeking RETA credentialing. Lecture: 3 credits (45 contact hours).
Attributes: Technical
Components: LEC: Lecture

AIT 145 (6 credit hours)
Utility Technician I
Introduces the basics of safely constructing power lines. Covers pole climbing techniques, bucket truck operation and digger/derrick operation. Provides introductory training on all power line construction tools and equipment. Lecture: 1 credit (15 contact hours). Laboratory: 5 credit (225 contact hours).
Attributes: Technical
Components: LAB: Laboratory, LEC: Lecture

AIT 160 (1 credit hours)
Workplace Safety
Focuses on General Industry safety practices as defined by the Occupational Safety and Health Administration. Covers PPE, hazard identification, walking and working surfaces, as well as other recognized workplace safety issues. Students will earn the OSHA 10-hour General Industry safety card upon successful completion of the course. Lecture: 1 credit hour (15 contact hours).
Pre-requisite: Reading assessment scores above KCTCS development placement level or successful completion of prescribed developmental courses.
Attributes: Technical
Components: LEC: Lecture

AIT 210 (4 credit hours)
Advanced Equipment Maintenance
Focuses on maintenance techniques and procedures used with advanced and highly technical industrial machinery, including lubrication, V-belt and shaft drives, couplings, chain drives, bearings and seals, brakes and clutches, machine vibration and analysis, laser alignment, and troubleshooting techniques. Emphasizes the use of hand tools and precision measuring instruments. Lecture/Lab: 4.0 credits (90 contact hours).
Pre-requisite: Reading and Mathematics assessment exam scores above KCTCS developmental placement level or successful completion of prescribed developmental courses, and AIT 110 or consent of instructor.
Attributes: Course Also Offered in Modules
Components: LAB: Laboratory, LEC: Lecture

AIT 235 (3 credit hours)
Industrial Refrigeration - II
Offers a second level detailed presentation of primary components and systems utilized within industrial refrigeration plants for individuals interested in safe, effective, and efficient maintenance and operation of industrial refrigeration equipment who may also be seeking RETA credentialing. Lecture: 3.0 credits (45 contact hours).
Pre-requisite: AIT 135.
Attributes: Technical
Components: LEC: Lecture

AIT 245 (6 credit hours)
Utility Technician II
Covers construction of power lines. Teaches framing and use of tools required in construction. Emphasizes safety in establishing a work zone and utilizing rescue techniques. Lecture: 1 credit (15 contact hours). Laboratory: 5 credits (225 contact hours). Covers construction of power lines. Teaches framing and use of tools required in construction. Emphasizes safety in establishing a work zone and utilizing rescue techniques. Pre-requisite: AIT 245. Lecture: 1 credit hour (15 contact hours). Laboratory: 5 credit hours (225 contact hours).
Pre-requisite: AIT 145. AIT 245.
Attributes: Technical
Components: LAB: Laboratory, LEC: Lecture

AIT 273 (3 credit hours)
Intermediate Robotics
Applies operational programming, fault recovery, and environmental parameters required for multiple six-axis robots and peripheral components to function safely within a manufacturing cell setting. Lecture: 1 credit (15 contact hours). Lab: 2 credits (60 contact hours).
Pre-requisite: AIT 271 or AIT 2711 or consent of instructor.
Attributes: Technical
Components: LAB: Laboratory, LEC: Lecture

AIT 275 (4 credit hours)
Intermediate Programmable Logic Controllers
Applies further PLC programming instructions beyond introductory level using Logix 5000 programming software and controller hardware. Lecture: 2 credits (30 contact hours). Lab: 2 credits (60 contact hours).
Pre-requisite: AIT 271 or AIT 2710 or consent of instructor.
Attributes: Technical
Components: LAB: Laboratory, LEC: Lecture

AIT 277 (4 credit hours)
Advanced Programmable Logic Controllers
Integrates advanced peripheral devices used in a complex PLC-controlled automation system. Lecture: 2 credits (30 contact hours). Lab: 2 credits (60 contact hours).
Pre-requisite: AIT 275 or consent of instructor.
Attributes: Technical
Components: LAB: Laboratory, LEC: Lecture

AIT 280 (3 credit hours)
Automation Capstone
Serves as a capstone course for the Automation Technician track in the Advanced Industrial Maintenance Technology program. Integrates previous and current program learning outcomes into a single project-based learning experience. Laboratory: 3 credits (90 contact hours).
Pre- or co-requisite: AIT 273 and AIT 277 or consent of instructor.
Attributes: Technical
Components: LAB: Laboratory

AIT 1001 (2 credit hours)
Basic Electrical Knowledge
Introduces fundamentals of AC and DC electrical circuits. Provides introductory theory and application of series, parallel, and combination AC and DC circuits. Introduces circuit analysis utilizing Ohm's Law and a digital multimeter. Lecture: 1 credit (15 contact hours). Laboratory: 1 credit (30 contact hours).
Pre-requisite: Reading and Mathematics assessment exam scores above KCTCS developmental placement level or successful completion of prescribed developmental courses or consent of instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 1002 (1 credit hours)
Power Development
Introduces electrical power systems used in industrial settings, including basic theory and application of alternators, electric motors, three-phase alternating current, and direct current power. Lecture: 0.5 credits (7.5 contact hours). Laboratory: 0.5 credits (15 contact hours).
Pre-requisite: AIT 1001 or Consent of Instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 1003 (1 credit hours)
Hydraulic/Pneumatic Fundamentals
Introduces basic theory and application of hydraulic and pneumatic industrial power systems. Lecture: 0.5 credits (7.5 contact hours). Laboratory: 0.5 credits (15 contact hours).
Pre-requisite: Reading and Mathematics assessment exam scores above KCTCS developmental placement level or successful completion of prescribed developmental courses or consent of instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 1101 (1 credit hours)
Electrical Power Distribution
Provides instruction in the use of electrical power as it applies in industry. Includes transformers, three-phase industrial power distribution, and inductive and reactive circuit analysis. Lecture: 0.5 credits (7.5 contact hours). Laboratory: 0.5 credits (15 contact hours).
Pre-requisite: AIT 100 or 1001 or consent of instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 1102 (2 credit hours)
Fluid Power Distribution
Provides instruction in the use of hydraulic and pneumatic power as it applies to industry. Includes basic principles of pressure and flow, basic hydraulic/pneumatic circuits including pumps, valves, cylinders, and motors. Lecture: 1 credit (15 contact hours). Laboratory: 1 credit (30 contact hours).
Pre-requisite: AIT 100 or AIT 1003 or consent of instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 1201 (1 credit hours)
Electrical Installation
Focuses on the installation of industrial electrical systems including, power distribution, wire selection and identification, raceway installation, sizing overcurrent protection, and wiring techniques. Lecture: 0.34 credits (5 contact hours). Laboratory: 0.66 credits (20 contact hours).
Pre-requisite: AIT 110 or AIT 1101 or consent of instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 1202 (1 credit hours)
Piping & Pneumatic Installation
Focuses on the installation of pneumatic industrial systems, including interpretation of drawings and diagrams, fabrication of pipe and pipefittings, pneumatic supply lines, piping safety, and pipe installation for pneumatic systems. Lecture: 0.33 credits (5 contact hours). Laboratory: 0.67 credits (20 contact hours).
Components: LAB: Laboratory, LEC: Lecture

AIT 1203 (1 credit hours)
Mechanical Installation
Includes motor and machine mounting, speed, torque, power measurement, and various lifting and rigging techniques. Lecture: 0.33 credits (5 contact hours). Laboratory: 0.67 credits (20 contact hours).
Components: LAB: Laboratory, LEC: Lecture

AIT 1301 (2 credit hours)
Principles of Instrumentation
Introduces measurement and instrumentation concepts and applications by examining the four main components of instrumentation: temperature, pressure, flow, and level. Lecture: 1 credit (15 contact hours). Laboratory: 1 credit (30 contact hours).
Pre-requisite: AIT 110 or AIT 1101 or consent of instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 1302 (2 credit hours)
Integrated Process Control
Covers measurement and instrumentation concepts and applications and introduces the concept of loop controls and the proper calibration of loops. Examines the importance of PID controllers in a control loop. Lecture: 1 credit (15 contact hours). Laboratory: 1 credit (30 contact hours).
Pre-requisite: AIT 1301 or consent of instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 1401 (2 credit hours)
Basic Electrical Controls
Provides instruction in the integrated application of basic electrical controls including electrical motor controls with starting, reversing, and stopping devices. Lecture: 1 credit (15 contact hours). Laboratory: 1 credit (30 contact hours).
Pre-requisite: AIT 110 or AIT 1101 or consent of instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 1402 (1 credit hours)
Basic Pneumatic Controls
Provides instruction in pneumatic speed control circuits, utilizing air pressure regulators and flow controls to achieve desired cylinder speeds. Lecture: 0.5 credits (7.5 contacts hours). Laboratory: 0.5 credits (15 contact hours).
Pre-requisite: AIT 110 or AIT 1102 or consent of instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 1403 (1 credit hours)
Basic Hydraulic Controls
Provides instruction in hydraulic speed and pressure control; includes flow control valves, metering circuits, pressure reducing valves, and sequence valves. Lecture: 0.5 credits (7.5 contact hours). Laboratory: 0.5 credits (15 contact hours).
Pre-requisite: AIT 110 or AIT 1102 or consent of instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 1501 (2 credit hours)
Intermediate Electrical Controls
Provides instruction in the integrated application of advanced industrial controls for electrical systems. Emphasizes variable frequency drives, proximity sensors, SCR speed controls. Lecture: 1 credit (15 contact hours). Laboratory: 1 credit (30 contact hours).
Pre-requisite: AIT 140 or AIT 1401 or consent of instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 1502 (1 credit hours)
Intermediate Pneumatic Controls
Provides instruction in the integrated application of advanced industrial controls for pneumatic systems. Emphasizes pneumatic logic circuits. Lecture/Lab: 1.0 credit (22.5 contact hours).
Pre-requisite: AIT 1402 or consent of instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 1503 (1 credit hours)
Intermediate Hydraulic Controls
Provides instruction in the integrated application of advanced industrial controls for hydraulic circuits. Emphasizes hydraulic synchronization circuits and multi-pressure circuits. Lecture/Lab: 1.0 credit (22.5 contact hours).
Pre-requisite: AIT 1403 or consent of instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 2001 (2 credit hours)
Integrated Process Management
Emphasizes project team organization. Introduces the following concepts: cycle time, production time, first pass yield, and barrier identification. Lecture: 1 credit (15 contact hours). Laboratory: 1 credit (30 contact hours).
Pre-requisite: AIT 130 or Consent of Instructor.
Attributes: Due to Inacitvity
Components: LAB: Laboratory, LEC: Lecture

AIT 2002 (2 credit hours)
Quality Control and SPC
Introduces quality control including understanding acceptance criteria with tolerances, data collection, and data reporting. Lecture: 1 credit (15 contact hours). Laboratory: 1 credit (30 contact hours).
Pre-requisite: AIT 130 or Consent of Instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 2101 (1 credit hours)
Predictive/Preventive Maintenance and Lubrication
Focuses on maintenance techniques and procedures used with advanced and highly technical industrial machinery. Lecture/Lab: 1.0 credits (22.5 contact hours).
Pre-requisite: AIT 1101 or consent of instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 2102 (1 credit hours)
Power Transmission Systems
Focuses on maintenance techniques and procedures used with advanced and highly technical industrial machinery including v-belt and shaft drives, couplings, chain drives, bearings and seals, brakes and clutches. Lecture/Lab 1.0 credit (22.5 contact hours).
Pre-requisite: Reading and Mathematics assessment exam scores above KCTCS developmental placement level or successful completion of prescribed developmental courses or consent of instructor.
Components: LEC: Lecture

AIT 2103 (2 credit hours)
Advanced Mechanical
Focuses on various installation methods required for advanced and highly technical industrial equipment components. Lecture: 1 credit (15 contact hours). Laboratory: 1 credit (30 contact hours).
Pre-requisite: Reading and Mathematics assessment exam scores above KCTCS developmental placement level or successful completion of prescribed developmental courses or consent of instructor.
Components: LAB: Laboratory, LEC: Lecture

AIT 2710 (2 credit hours)
Introduction to Programmable Logic Controllers
Examines fundamental architecture of programmable logic controllers as it pertains to industrial applications and incorporates ladder logic principles, commonly used instruction language, editing, program navigation and program analysis. Lecture: 1 credit (15 contact hours). Laboratory: 1 credit (30 contact hours).
Pre-requisite: AIT 140 or AIT 1401 or consent of instructor.
Attributes: Technical
Components: LAB: Laboratory, LEC: Lecture

AIT 2711 (2 credit hours)
Introduction to Robotics
Investigates underlying principles, applications and fundamentals of 6-axis robotics including manual manipulation, execution of existing robotic program file, development of a robotic program, modification of target parameters, and safety interlocks. Lecture: 1 credit (15 contact hours); Laboratory: 1 credit (30 contact hours).
Attributes: Technical
Components: LAB: Laboratory, LEC: Lecture