

Manufacturing Cluster

Maintenance, Installation & Repair Pathway

Instrumentation Technician Assistant – This major prepares students as instrumentation technician assistants who assist in testing, installing, repairing, inspecting and maintaining complex instruments that measure and maintain changes in industrial environments. Instruction includes fundamentals of manufacturing, safety rules and regulations, maintenance tools and equipment, industrial electricity, schematics and blueprints. Curriculum covers digital electronics, troubleshooting and repair of programmable logic controllers, and microprocessor instrumentation measurement and control.

Automated Systems Technician – This major prepares students as automated systems technicians who install, set up, troubleshoot, test and operate robotics and related automation. Instruction includes fundamentals of manufacturing, safety rules and regulations, maintenance tools and equipment, industrial electricity, and the National Electric Code Curriculum covers industrial digital electronics, troubleshooting and repair of programmable logic controllers and industrial analog/digital circuits as well as automated industrial systems and basic robotics.

Electrical/Electronics Technician – This major prepares students as electrical/electronics technicians who troubleshoot and repair manufacturing process equipment including drives, AD/DC circuits, PLCs and Computer Supervisory Systems. Instruction includes fundamentals of manufacturing, safety rules and regulations, maintenance tools and equipment, industrial electricity and wiring methods and the National Electric Code. Curriculum covers industrial analog/digital electronics, troubleshooting and repair of programmable logic controllers and industrial analog/digital circuits.

Supervisory Control & Data Acquisition Technician (SCADA) – This major prepares students as SCADA technicians who install, repair, troubleshoot and maintain supervisory control, data acquisition and communications equipment. Instruction includes fundamentals of manufacturing, safety rules and regulations, maintenance tools and equipment, schematics and blueprints and digital electronics. Students also learn troubleshooting, repair and programming of programmable logic controllers, advanced microprocessor instrumentation measurement and control along with computer repair and troubleshooting, network security and wide-area network (WAN) technologies.

Flight Simulator Technician – This major prepares students as flight simulator technicians who perform preventative maintenance, preflight and routine tests on the electronic, mechanical and hydraulic systems used on flight simulators. Students are taught fundamentals of electricity, safety and equipment, and electronic measurements along with DC/AC circuits and soldering techniques. Instruction includes electronic and simulator maintenance applications, troubleshooting and repair of industrial fluid systems and advanced simulator applications.

Mechanical Maintenance Technician – This major prepares students as mechanical maintenance technicians who install, repair, troubleshoot and maintain heavy industrial equipment such as machines, conveyors and control systems. Instruction includes fundamentals

of manufacturing, safety rules and regulations, lean manufacturing processes and principles of welding and machining along with maintenance tools and equipment, schematics and blueprints. Students are taught maintenance and repair of electrical distributions systems, electromechanical devices and mechanical/fluid power transmissions.

Automated Manufacturing Technician – This major prepares students as automated manufacturing technicians who install, repair, troubleshoot and maintain computer-enhanced manufacturing equipment in an industrial environment. Instruction includes fundamentals of manufacturing, safety rules and regulations, lean manufacturing processes and principles of welding and machining along with schematics, blueprints, and maintenance and repair of electrical distributions systems. Students are taught industrial digital electronics, electromechanical devices, programmable logic controllers, instrumentation controls, automated industrial systems and basic robotics.

Electrical/Electronics Maintenance Technician – This major prepares students as electrical and electronics maintenance technicians who troubleshoot, install, repair and maintain electrical and electronic components, circuits, microprocessors and industrial computer systems. Instruction includes fundamentals of manufacturing, safety rules and regulations, maintenance tools and equipment, industrial electricity and wiring methods, and electrical schematics and blueprints. Curriculum covers setup, troubleshooting and repair of programmable logic controllers, digital electronics and microprocessor instrumentation and control.

Electrical Maintenance Technician Assistant – This major prepares students to assist electrical maintenance technicians to troubleshoot, repair, install and maintain electrical and electronic equipment, machines and assemblies to industry standards. Included are fundamentals of manufacturing, electricity and AC/DC circuitry along with industrial wiring, motor control wiring, industrial controls, electromechanical devices and the National Electric Code. Hours completed in this major can be counted toward the 8,000 hours (four years) of work experience required for the journeyman electrician license.

Fluid Power/Mechanical Power Transmission Technician – This major prepares students as fluid power/mechanical power transmission technicians who install, troubleshoot and repair a variety of industrial equipment including manual and automated machines. Instruction includes fundamentals of manufacturing, safety rules and regulations, lean manufacturing processes and principles of welding and machining along with maintenance tools and equipment, industrial wiring methods and schematics and blueprints. Students are taught maintenance and repair of electrical distributions systems, electromechanical devices and mechanical/fluid power transmissions.

Instrumentation Technician – This major prepares students as instrumentation technicians who test, install, repair, inspect and maintain complex instruments that measure and record changes in industrial environments. Instruction includes fundamentals of manufacturing, safety rules and regulations, maintenance tools and equipment, industrial electricity, and schematics and blueprints. Curriculum covers digital electronics, setup, troubleshooting and repair of advanced programmable logic controllers, and microprocessor instrumentation measurement and control.

Industrial Facilities Manager – This major prepares students as industrial facilities managers who direct the operations of industrial plants utilizing cost reduction and increased efficiency strategies. Instruction includes fundamentals of manufacturing, safety rules and regulations, lean manufacturing processes and principles of welding and machining along with schematics and blueprints and maintenance and repair of electrical distributions systems. Students are taught industrial digital electronics, electromechanical devices, mechanical/fluid power transmissions, and programmable logic controllers as well as automated industrial systems and basic robotics.

Industrial Maintenance Technician – This major prepares students as industrial maintenance technicians who maintain and repair equipment for an industrial employer, including hydraulic, pneumatic, electronic and computerized equipment. Instruction includes fundamentals of manufacturing, safety rules and regulations, lean manufacturing processes, and principles of welding and machining along with maintenance tools and equipment, industrial electricity, and schematics and blueprints. Students are taught industrial wiring and the maintenance and repair of electrical distributions systems, electromechanical devices and mechanical/fluid power transmissions.

Maintenance, Installation & Repair Workforce Transition – This major will be used for all Individualized Cooperative Education (ICE) programs to build their training outline. Students will focus on employability skills while receiving hands-on experience in maintenance, installation and repair in the manufacturing environment. Included is a work-site experience (WSE) where students develop proficiency skills unique to a given occupation along with a formal mentoring program designed to accelerate an individual student's skill development.

Mechanical Maintenance Technician Assistant – This major prepares students to assist mechanical maintenance technicians who maintain, troubleshoot and repair machinery in an industrial manufacturing environment. Instruction includes fundamentals of manufacturing, safety rules and regulations, lean manufacturing concepts and principles of welding and machining along with maintenance tools and equipment, schematics and blueprints. Students are taught maintenance and repair of electromechanical devices and mechanical/fluid power transmissions.

Flight Simulator Operations Assistant – This major prepares students as flight simulator operations assistants who work with flight and airport staff to coordinate technical support and communications on a regular basis. Students are taught fundamentals of simulator maintenance along with basic troubleshooting and repair of industrial fluid systems. Curriculum includes personal development and employability skills.

Manufacturing Specialist – Mechanical Maintenance Technician Assistant – This major prepares students to assist a mechanical maintenance technician in installing, repairing, troubleshooting and maintaining automated and manual machine maintenance in a large manufacturing environment with diverse operations. Students learn basic electrical theory, schematics and blueprints, electromechanical devices and mechanical/ fluid power transmission with an emphasis in maintenance and repair procedures. Instruction includes an overview of safe

operation of manufacturing equipment in the areas of metal fabrication, welding, machine tool, CNC, computer aided drafting and pre-engineering.