AUTOMATION AND ROBOTICS 48.0500.20
Program Description, Industry Credential, Coherent Sequence, and Teacher Certification

PROGRAM DESCRIPTION

The **Automation and Robotics** instructional program prepares students to apply basic engineering principles and technical skills in support of engineers and other professionals engaged in developing and using robots. This includes instruction in the principles of robotics, design and operational testing, system maintenance and repair procedures, robot computer systems and control language, specific system types hydraulics, mechanics, pneumatics to inspect, troubleshoot, program, install, modify, or repair robotic systems and machines. and applications to specific industrial tasks, and report preparation.

Throughout the **Automation and Robotics** instructional program, students will enhance their technical knowledge and skills utilizing robots and automated systems in carrying out various tasks, manufacturing systems, production planning documentation, technical problem solving, management information systems, preventive maintenance, quality control for automated manufacturing, fundamental computational techniques associated with the operation of a robotic manipulator and a general automated system. The **Automation and Robotics** program will familiarize the students with the roles, strengths, and capabilities of robotics and automation technologies, as well as how to achieve these skills.

The **Automation and Robotics** Career and Technical Education program is delivered as a coherent sequence of courses designed to offer students knowledge and skills that meet the needs of the workplace. The Professional Skills developed by business and industry leaders across Arizona are integrated throughout the program. **Automation and Robotics** students develop leadership, social, civic, and career skills through participation in the state-recognized Career and Technical Student Organizations, SkillsUSA.

The **Automation and Robotics** instructional program prepares students for entry-level employment, further training, and/or post-secondary education for these and other occupations: Electro-Mechanical Technician, Mechanical Technician, Electro-Mechanical Technician - 4th shift, Robotics Technician II

INDUSTRY CREDENTIALS

The following credentials have been approved for the A-F CCR and are CTED eligible for the **Automation and Robotics** instructional program:

- Certified SolidWorks Associate (CSWA)
- Machining Manufacturing Skill Standards Council (MSSC) - Certified Production Technician (CPT)
- Machining Manufacturing Skill Standards Council (MSSC) – Green Production Certification
- National Center for Construction Education and Research (NCCER) - Electronics Systems Technician (EST) - Level 1
- National Center for Construction Education and Research (NCCER) - Electronics Systems Technician (EST) - Level 2
- National Institute for Metalworking Skills (NIMS) - Level 1

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The following industry credentials have been approved to meet CTED eligibility for the **Automation and Robotics** instructional program:

- Electronics Systems Professional Alliance (ESPA) - Electronics Systems Technician (EST)
- International Society of Automation (ISA) - Certified Automation Professional
- International Society of Automation (ISA) – Certified Control Systems Technician
- IPC and the Wiring Harness Manufacturer's Association (WHMA) J-STD-001 Certification
- National Career Readiness Certificate (NCRC) Level 1
- National Occupational Competency Testing Institute (NOCTI) - FANUC Certified Robot Operator 1
- National Occupational Competency Testing Institute (NOCTI) - FANUC Certified Robot Operator 2
- National Occupational Competency Testing Institute (NOCTI) - FANUC Certified Robot Technician 1
- National Occupational Competency Testing Institute (NOCTI) - FANUC Certified Robot Technician 2
- OpenSpan Developer
- Robotics Engineering Curriculum (REC) – ROBOTC

COHERENT SEQUENCE
48.0500.11 – Automation and Robotics I, **and**

48.0500.20 – Automation and Robotics II, **and program may elect to add:**

48.0500.25 – Automation and Robotics III, **or**

48.0500.31 – Automation and Robotics IV, **or**

48.0500.70 – Automation and Robotics – DCE (Diversified Cooperative Education) **or**

48.0500.75 – Automation and Robotics – Internship

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TEACHER CERTIFICATION REQUIREMENTS

The instructor must be ADE/CTE certified in one of the following Certificates: PCTIET, SCTIET, or SSCTEIET

Note:

- Automation and Robotics 48.0500.70 may be a part of the sequence and the teacher must hold a Cooperative Education Endorsement (CEN).
- Automation and Robotics 48.0500.75 is not required to have a Cooperative Education Endorsement (CEN).

CERTIFICATE TYPES

PCTIET   Provisional Career and Technical Education Industrial and Emerging Technologies

SCTIET   Standard Career and Technical Education Industrial and Emerging Technologies

SSCTEIET   Standard Specialized Career and Technical Education Industrial and Emerging Technologies