

Robotics and Manufacturing Automation

Degree Type

Certificate

This certificate is for students who want to work directly with robotic and electro-mechanical manufacturing, logistics, and maintenance equipment used by today's modern manufacturing and warehousing companies. Technologists will use their knowledge of electrical circuitry and mechanical engineering to operate and maintain robotic and advanced manufacturing equipment. This may include working closely beside engineers and machinists to design, test, and improve automated mechanical equipment and its components as well as troubleshoot malfunctions, repair faulty devices, and perform preventative measures.

Upon certificate completion, students will have hands-on practical experience in the use and application of electrical instruments and mechanical measuring devices and will be able to read and use data sheets, system specifications, schematic diagrams, timing diagrams, and wiring diagrams. Emphasis is placed on safe work habits and procedures, preventive maintenance, localization and correction of malfunctions, and troubleshooting techniques.

Learn more about the program and apply at [Robotics and Manufacturing Automation Certificate](#)

Requirements

Item #	Title	Credits
ENR103	Introduction to Robotics	4
ENR105	Circuit Theory & Analysis	4
ENR110	Engineering and Scientific Computing	3
MAT175	College Algebra	4
COM103	Human Communication	3

Note: This certificate has advanced mathematics requirements.

Total Credits	18
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Career Outlook

Common job titles for certificate graduates include Electro-Mechanical Technician, Electrical-Electronics Technician, Robotics Technician, and Manufacturing Automation Technician. Technicians with this certificate are expected to experience a 2 to 4 percent increase in employment from 2014-2024, according to the Bureau of Labor Statistics. This lack of growth will be due largely to increased efficiency in the design and production of robotics machinery; however, it may be offset by a demand to replace technologists that leave the occupation due to retirement and career advancement. Technologists who continue their education to earn an associate's degree or similar postsecondary training will benefit from greater employment opportunities.

This [occupational profile](#) is provided by O*NET.

Program Outcomes

Upon completion of the Robotics and Manufacturing Automation Certificate students are able to:

- Install, program, or repair programmable/robotic controllers, end-of-arm tools, and conveyors. Develop robotic path motions to maximize efficiency, safety, and quality.
- Test and troubleshoot robotic and electro-mechanical systems using knowledge of microprocessors, programmable controllers, electronics, circuit analysis, mechanics, sensor or feedback systems.
- Read blueprints, schematics, diagrams, or technical orders to determine methods and sequences of assembly.
- Perform preventive or corrective maintenance on robotic and automation systems such as the replacement of defective circuit boards, sensors, controllers, encoders, and servomotors and maintain service records of equipment or automated systems.

- Inspect parts and equipment for surface and functionality defects. Verify part dimensions or clearances to ensure conformance to specifications, using precision measuring instruments.
- Install electrical or electronic parts and hardware in housings or assemblies, using soldering equipment and hand tools.
- Exhibit skills necessary for an entry level position in robotics upon completion.

Program Completion

Completion of a program is based on full time enrollment. Many of our students attend part time and may not complete within the one year timeline.

Prerequisite Statement

To graduate within this program in the specified time, students must begin in the Fall semester and successfully place into required courses based on placement test results and/or high school GPA. Academic advisors can assist with questions.