

TMA ADVANCED AUTOMATION CERTIFICATE

28 Semester Credit Hours; Curriculum: 0276

Dual credit certificate established in cooperation with Technology and Manufacturing Association (TMA) prepares students for inspiring careers in industrial automation. Students will learn to operate, setup, maintain, and repair high-tech automation equipment using skills related to electronics, mechanical systems, fluid power, industrial robotics, and programmable controllers. Upon program completion, students who register with TMA can apply to receive a second certificate and job placement assistance from TMA.

| Code | Title | Hours |
|----------------------------------|---|-----------|
| Courses for a Certificate | | |
| ELT 107 | Survey of Electronics | 3 |
| MFG 120 | Introduction to Welding | 3 |
| MFG 135 | Fluid Power and Controls | 4 |
| MFG 210 | Industrial Robotics and Automation | 4 |
| MFG 225 | Motors and Controls | 3 |
| MFG 240 | Programmable Logic Controllers (PLC) | 4 |
| MFG 245 | Programmable Automation Controllers (PAC) | 4 |
| Select one of the following: | | 3 |
| MFG 125 | Advanced Welding | |
| MFG 170 | Automation Equipment Maintenance | |
| MFG 230 | Automation Equipment Repair | |
| MFG 250 | Advanced Automation Controllers | |
| Total Hours | | 28 |

TMA Advanced Automation Certificate Pathway

The following Pathway is recommended for students pursuing the TMA Advanced Automation Certificate.

| First Year | | |
|------------------------------|---|--------------|
| Fall Semester | | Hours |
| ELT 107 | Survey of Electronics | 3 |
| MFG 120 | Introduction to Welding | 3 |
| MFG 210 | Industrial Robotics and Automation | 4 |
| MFG 240 | Programmable Logic Controllers (PLC) | 4 |
| Hours | | 14 |
| Spring Semester | | |
| MFG 135 | Fluid Power and Controls | 4 |
| MFG 225 | Motors and Controls | 3 |
| MFG 245 | Programmable Automation Controllers (PAC) | 4 |
| Select one of the following: | | 3-4 |
| MFG 125 | Advanced Welding | |
| MFG 170 | Automation Equipment Maintenance | |
| MFG 230 | Automation Equipment Repair | |
| MFG 250 | Advanced Automation Controllers | |
| Hours | | 14-15 |
| Total Hours | | 28-29 |

Note: Pathway is a recommended sequence of courses. Part-time students should contact the program coordinator to discuss a part-time pathway as well as course prerequisites and recommendations.

Program Learning Outcomes

1. Describe preventive maintenance and evaluate its importance for running uninterrupted production.
2. Design hydraulic and pneumatic circuits to run a number of valves and cylinders through a specified sequence of operations.
3. Compose, simulate, and troubleshoot programs for varied robot operations including safe industrial robot operation.
4. Apply acquired skills to troubleshoot and repair mechanical and electrical failures of automation equipment.
5. Design control circuits for various motor applications including Variable Frequency Drive (VFD) controller.
6. Create programs for Programmable Logic/Automation Controllers to run and monitor various automation equipment.