TMA INDUSTRIAL 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		
MFG 120	Introduction to Welding	3
MFG 135	Fluid Power and Controls	4
MFG 170	Industrial Electronics	3
MFG 210	Industrial Robotics and Automation	4
MFG 225	Motors and Controls	3
MFG 240	Programmable Controllers	4
MFG 245	Intermediate Programmable Controllers	4
Select one of the following:		3-4
CAD 101	Industrial Drafting and Design	
MFG 125	Advanced Welding	
MFG 180	Mechanical Drives	
MFG 250	Advanced Programmable Controllers	
MFG 270	Automated Components Integration	
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**
MFG 120	Introduction to Welding	3
MFG 170	Industrial Electronics	3
MFG 225	Motors and Controls	3
MFG 240	Programmable Controllers	4
	Hours	**13**
Spring Semester		
MFG 135	Fluid Power and Controls	4
MFG 210	Industrial Robotics and Automation	4
MFG 245	Intermediate Programmable Controllers	4
Select one of the following:		3-4
CAD 101	Industrial Drafting and Design	
MFG 125	Advanced Welding	
MFG 180	Mechanical Drives	
MFG 250	Advanced Programmable Controllers	
MFG 270	Automated Components Integration	
	Hours	**15-16**
	Total Hours	**28-29**

Note: Pathway is a recommended sequence of courses. Part-time students should contact the department chair or program coordinator to discuss the 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 the Variable Frequency Drive (VFD) controller.
6. Create programs for Programmable Logic/Automation Controllers to run and monitor various automation equipment.