

INDUSTRIAL AUTOMATION A.A.S.

61 Semester Credit Hours; Curriculum: 0290

Industrial Automation degree is designed to prepare students for inspiring careers in production equipment automation. Curriculum develops a comprehensive set of skills in electronics, mechanical systems, welding, fluid power, industrial robotics and programmable controllers. Students will learn to operate, setup, maintain, troubleshoot and repair various high-tech equipment including automated production lines, robotic integration and production automation.

Note: Refer to IAI General Education Courses page for guidelines on General Education course selection.

Code	Title	Hours
General Education Requirements		
<i>Area A — Communications</i>		
EGL 101	Composition I	3
Select one of the following:		3
EGL 102	Composition II	
EGL 111	Introduction to Business and Technical Writing (recommended)	
EGL 212	Technical Writing Applications (recommended)	
SPE 103	Effective Speech	
<i>Area B — Mathematics</i>		
Select one course from Area B		3-4
MAT 114	Applied Mathematics I (recommended)	
<i>Area C — Science</i>		
No course required		0-3
PHY 101	Applied Physics (recommended)	
<i>Area D — Social and Behavioral Sciences</i>		
Select one course from a social or behavioral science discipline		3
<i>Area E — Humanities/Fine Arts</i>		
Select one course from a humanities or fine arts discipline		3
<i>Area F — Global Studies¹</i>		
Select one course that satisfies Global Studies requirement		0-3
<i>Area G — U.S. Diversity Studies²</i>		
Select one course that satisfies U.S. Diversity Studies requirement		0-3
Total Hours		15

¹ Students may take a Global Studies course that satisfies both Area F and another Area requirement.

² Students may take a U.S. Diversity Studies course that satisfies both Area G and another Area requirement.

Code	Title	Hours
Major Requirements		
CAD 101	Industrial Drafting and Design	4
MFG 101	Occupational Safety	2
MFG 111	Manufacturing Overview	3
MFG 112	Automation Overview	3
MFG 120	Introduction to Welding	3
MFG 135	Fluid Power and Controls	4

MFG 170	Industrial Electronics	3
MFG 180	Mechanical Drives	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 two of the following:		6
CAD 230	Introduction to SolidWorks	
CNS 105	Networking Essentials	
MFG 125	Advanced Welding	
MFG 142	CNC Setup and Operations	
MFG 220	Machine Vision Systems	
MFG 250	Advanced Programmable Controllers	
MFG 270	Automated Components Integration	
Total Hours		46

Industrial Automation A.A.S. Pathway

The following Pathway is recommended for students pursuing an Associate in Applied Science degree in Industrial Automation. **General Education courses should be selected from the list of IAI General Education Courses.**

First Year		Hours
Fall Semester		
EGL 101	Composition I	3
MFG 101	Occupational Safety	2
MFG 111	Manufacturing Overview	3
MFG 170	Industrial Electronics	3
MFG 240	Programmable Controllers	4
Hours		15
Spring Semester		
MAT 114	Applied Mathematics I	4
CAD 101	Industrial Drafting and Design	4
MFG 112	Automation Overview	3
MFG 245	Intermediate Programmable Controllers	4
Hours		15
Second Year		
Fall Semester		
Select one of the following:		3
EGL 102	Composition II	
EGL 111	Introduction to Business and Technical Writing (recommended)	
EGL 212	Technical Writing Applications (recommended)	
SPE 103	Effective Speech	
MFG 120	Introduction to Welding	3
MFG 180	Mechanical Drives	3
MFG 225	Motors and Controls	3
Select one of the following:		3-4
CAD 230	Introduction to SolidWorks	
CNS 105	Networking Essentials	
MFG 142	CNC Setup and Operations	
MFG 250	Advanced Programmable Controllers	
Hours		15-16
Spring Semester		
MFG 135	Fluid Power and Controls	4
MFG 210	Industrial Robotics and Automation	4
Select one of the following:		3-4
CAD 230	Introduction to SolidWorks	
CNS 105	Networking Essentials	

MFG 125	Advanced Welding	
MFG 220	Machine Vision Systems	
MFG 270	Automated Components Integration	
Select one Social and Behavioral Sciences course that also satisfies Global Studies ¹ or U.S. Diversity Studies ² requirement		3
Select one Humanities/Fine Arts course that also satisfies Global Studies ¹ or U.S. Diversity Studies ² requirement		3
Hours		17-18
Total Hours		62-64

¹ At least one Global Studies course is required for degree completion.

² At least one U.S. Diversity course is required for degree completion.

Note: Pathway is a recommended sequence of courses. Part-time students should contact the department chair or 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.
7. Propose integration of automation system to improve overall efficiency using critical thinking and communication skills.