

# Systems Maintenance, Automation, and Robotic Technology (SMART), AAS

Academic Year 2024-2025

Workforce Division

## Program Description:

The SMART program provides students the opportunity to prepare for entry level to intermediate level career as systems maintenance specialist that work in modern manufacturing environment on manufacturing, automation, and robotic equipment and systems. The program provides a flexible approach that allows students to design their path in a variety of specializations that are mapped to different types of manufacturers needs throughout the region.

The graduate will have completed fundamentals required for all manufacturing careers – Introduction to manufacturing systems, safety, maintenance operations, precision measurements and blueprint reading for manufacturing drawings. These courses give the foundation for maintenance technicians to work on many manufacturing systems. The specialization core allows students to choose to become a general maintenance mechanic for entry level positions or to cater their selections to specialist roles such as electrical specialist, electronics specialist, mechanical specialist, fluid power specialist, or automation specialist for intermediate level positions. Each specialist role is tied to multiple nationally recognized certifications. Entry-level positions for which graduates will compete include: industrial maintenance, maintenance technician, automation specialist, MFG Maintenance – mechanic, maintenance – electrician, production operator, manufacturing specialist, skilled trades, and multi-craft worker.

The program adheres to the standards of the National Institute for Metalworking Skills (NIMS) and is accredited by NIMS

## Career Outlook and Salary Forecast

For the most current salary information, please refer to the Bureau of Labor Statistics “Occupational Outlook Handbook” found at [www.bls.gov/ooh/](http://www.bls.gov/ooh/).

## Program Outcomes:

- Comply with safety guidelines
- Perform lock-out/tag-out for all types of devices
- Handle hazardous materials
- Use measuring tools and calculate necessary responses
- Read and interpret technical Drawings
- Use common tools necessary to maintain equipment
- Perform root cause analysis and identify solutions
- Safely operate machines
- Install, repair, and maintain a variety of manufacturing mechanical equipment
- Install, repair and maintain a variety of fluid systems
- Prepare maintenance plans

## Program Admission Requirements

The program has admission and candidacy requirements in addition to the Mountwest admission guidelines. Students must also apply with Marshall Advanced Manufacturing Center.

## Contact Information:

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*Mountwest empowers students to learn and lead in the community and in the workforce.*

**SMART – Systems Maintenance, Automation, and Robotic Technology, AAS – CS40**

Name:						ID Number 942-			
Educational Counselor:									
Faculty Advisor:									
COURSE	REQUIREMENTS	SEM	HRS	GR	SUBSTITUTE/REPEAT CRS				
<b>Component I – General Education Core – 15 Credit Hours</b>									
ENL 101	Written Communication		3						
IT 101	Fundamentals of Computers		3						
COM 125	Interpersonal Communication		3						
MAT 135	Technical Mathematics		3						
EC 102	Basic Economics		3						
<b>Component II – Technical Core – 13 Credit Hours</b>									
MFG 105	Intro to Manufacturing Systems & Safety		3						
MFG 110	Intro to Maintenance Operations		3						
MFG 115	Precision Measurement		3						
MFG 117	Blueprints for Manufacturing		3						
MFG 290	SMART Capstone		1						
<b>Component III – Specialization Options for SMART (Choose at least 32 Credit Hours). A minimum of 15 hours in MFG courses is required to complete the degree.</b>									
General Maintenance Mechanic Specialist	SEM	HRS	Electrical Maintenance Specialist	SEM	HRS	Mechanical Systems Specialist	SEM	HRS	
MFG 140 – Mechanical Systems I		5	MFG 130 – Industrial Maintenance Electrical Principles <sup>2</sup>		3	MFG 140 – Mechanical Systems I		5	
MFG 145 - Hydraulics		2	MFG 132 – Electrical/Electronic Theory for Maintenance <sup>2</sup>		4	MFG 240 – Mechanical Systems II <sup>5</sup>		5	
MFG 147 – Pneumatics		2	MFG 230 – Electric Motor Controls <sup>3,4</sup>		5	<b>Electronics Maintenance Specialist</b>			
MFG 150 – Industrial Maintenance Electronic Principles		3	MFG 232 – Power Systems <sup>3,4</sup>		3	MFG 150 – Industrial Maintenance Electronic Principles		3	
MFG 240 – Mechanical Systems II <sup>5</sup>		5	<b>Automated Systems</b>			ELT 150 – Intro to PLC/PAC		4	
<b>Fluid Power Systems Specialist</b>			MFG 160 – Industrial Robotics & Robotic Maintenance		3	ELT 180 – Ladder Logic		4	
MFG 145 – Hydraulics		2	MFG 250 – Process Controls <sup>6</sup>		3	ELT 250 – Motion Control Fundamentals		4	
MFG 147 – Pneumatics		2	ELT 150 – Intro to PLC/PAC		4				
<b>HOURS REQUIRED FOR GRADUATION: 60</b>									

<sup>1</sup> ENL 101 has a prerequisite of placement in 100-level English or a co-requisite of ENL 095. Students must complete course with a “C” or above to graduate.

<sup>2</sup> MFG 130 has a co-requisite of MFG 132.

<sup>3</sup> MFG 230 and MFG 232 have a prerequisite of MFG 130.

<sup>4</sup> MFG 230 and MFG 232 are co-requisites.

<sup>5</sup> MFG 240 has a prerequisite of MFG 140.

<sup>6</sup> MFG 250 has a prerequisite of ELT 150.