

AUTOMATION AND ROBOTICS, MANUFACTURING TECHNOLOGIES, AAS

Program Description

Associate of Applied Science, Manufacturing Technologies, Automation and Robotics is a two year program designed to provide advanced training and technical job skills to students seeking employment within the advanced manufacturing field. Students will utilize state of the art equipment and robotics to integrate, diagnose, and troubleshoot highly advanced production systems.

Recommended Course Schedule

1st semester		Units
OSH 222	General Industry Safety	1
MPT 101	Basics of Operations and Maintenance	3
ELM 140	Industrial Robotics I	3
MPT 135	Material Handling	2
MPT 111	Fundamentals of Manufacturing and Automation I	3
ENG 101	Composition I	3
Semester Total		15
2nd semester		Units
MPT 102	Introduction to Programming for Mechatronics	3
MPT 104	Introduction to IIoT, Networking and Data Analytics	6
ENG 102	Composition II	3
AAD 201	History of the Built Environment	3
Semester Total		15
3rd semester		Units
MPT 160	Mechanical Drive Systems I	3
ELM 110	Electrical/Electronic Circuits	3
MT 108	Fluid Power (Pneumatics, Electro-pneumatics)	3
MPT 112	Fundamentals of Manufacturing and Automation II	3
MPT 114	Fundamentals of Manufacturing and Automation III	3
Semester Total		15
4th semester		Units
ELM 127	Introduction to AC Controls	3
ELM 134	Programmable Logic Controllers I	3
ELM 240	Advanced Manufacturing and Robotic Systems	3
MPT 110	Automated Production Concepts I	3
PSC 101	Introduction to American Politics	3
Semester Total		15
Total Units		60

Program Requirements

AAS degrees are generally non-transfer degrees that are designed for students to enter the workforce.

To earn an AAS degree, students must:

1. Maintain a minimum cumulative GPA of 2.0 (see requirements for graduation.)
2. Complete a minimum of 15 units within the college.
3. Satisfy General Education requirements for the AAS (<https://catalog.tmcc.edu/degrees-certificates/general-education/aas/>).
4. Have no financial or library obligation to the college.

Code	Title	Units
General Education Requirements		
<i>English/Communications</i>		6
Required:		
ENG 101 or ENG 100 or ENG 113	Composition I Composition Enhanced Composition I for International and Multilingual Students	
and		
ENG 102 or ENG 114	Composition II ¹ Composition II For International and Multilingual Students	
<i>Fine Art, Humanities, Social Science</i>		3
Required:		
AAD 201	History of the Built Environment ³	
<i>Mathematics:</i>		[3]
Requirement is satisfied though embedded curriculum in the following courses: ELM 110, ELM 134, ELM 140, ELM 240, MPT 101, MPT 111, MPT 112, MPT 160, MT 108.		
<i>Science</i>		[3]
Requirement is satisfied though embedded curriculum in the following courses: ELM 127, ELM 134, ELM 240, MPT 101, MPT 102, MPT 104, MPT 160, MT 108.		
Additional College Requirements		
<i>Diversity</i> ²		[3]
Required:		
AAD 201	History of the Built Environment	
<i>Human Relations</i>		[3]
Requirement is satisfied though embedded curriculum in the following courses: ELM 127, ELM 240, MPT 101, MPT 104, MPT 110, MPT 111, MPT 112, MPT 135, MPT 160, MT 108.		
<i>U. S. and Nevada Constitutions</i>		3
Degree Requirements		
ELM 110	Electrical/Electronic Circuits	3
ELM 127	Introduction to AC Controls	3
ELM 134	Programmable Logic Controllers I	3
ELM 140	Industrial Robotics I	3
ELM 240	Advanced Manufacturing and Robotic Systems	3
MPT 101	Basics of Operations and Maintenance	3

MPT 102	Introduction to Programming for Mechatronics	3
MPT 104	Introduction to IIoT, Networking and Data Analytics	6
MPT 110	Automated Production Concepts I	3
MPT 111	Fundamentals of Manufacturing and Automation I	3
MPT 112	Fundamentals of Manufacturing and Automation II	3
MPT 114	Fundamentals of Manufacturing and Automation III	3
MPT 135	Material Handling	2
MPT 160	Mechanical Drive Systems I	3
MT 108	Fluid Power (Pneumatics, Electro-pneumatics)	3
OSH 222	General Industry Safety	1
Total Units		60

¹ If you place into ENG 102 or ENG 114 the additional 3 required units may become elective units.

² May also count toward degree requirements. Please consult with Academic Advisement.

³ Required for BAS in Cyber-Physical Manufacturing.

Program Outcomes

Students completing the degree will:

PSLO1: Students will operate equipment and tools used in manufacturing processes. Students will read and interpret technical prints for the diagnostic and troubleshooting of components and production systems.

PSLO2: Students will demonstrate programming, interfacing, and troubleshooting Programmable Logic Controllers.

PSLO3: Students will be able to integrate and troubleshoot motor controls, pneumatics, hydraulics, programmable logic controllers (PLCs) and robotics into complex production systems. Students will apply quality and statistical process control techniques to manage complex production systems and identify and correct inefficiencies.