

# ASSOCIATE OF APPLIED SCIENCE - MANUFACTURING TECHNOLOGIES, AUTOMATION AND ROBOTICS EMPHASIS

Manufacturing Technologies Automation and Robotics Emphasis 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.

## Program Outcomes

Students completing this Degree Emphasis will:

- 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.
- Students will understand programming, interfacing, and troubleshooting Programmable Logic Controllers.
- Students will be able to integrate and troubleshoot motor controls, pneumatics, hydraulics, computers, PLCs, and robotics into complex production systems. Students will apply quality and statistical process control techniques to manage complex production systems and troubleshoot inefficiencies.

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 (<http://catalog.tmcc.edu/degrees-certificates/general-education/aas>).
4. Have no financial or library obligation to the college.

## General Education Requirements

**English/Communications** 6

Recommended:

BUS 107 Business Speech Communications

Required:

ENG 102 Composition II <sup>1</sup>  
or ENG 114 Composition II For International Students

**Fine Art, Humanities, Social Science** 3

Recommended:

ANTH 201 Peoples and Cultures of the World <sup>2</sup>

**Mathematics:** [3]

Embedded in ELM 110 and ELM 134

**Science** 3

Required:

MTT 150 Metallurgy I

## Additional College Requirements

**Diversity**<sup>2</sup> [3]

Recommended:

ANTH 201 Peoples and Cultures of the World <sup>2</sup>

**Human Relations** [3]

Embedded in MPT 140, WELD 211, WELD 212, ELM 110, ELM 127

U. S. and Nevada Constitutions 3

Required: Choose one or two courses from the following:

PSC 101 Introduction to American Politics

or CH 203 American Experiences and Constitutional Change

HIST 101 US History to 1877  
& HIST 102 and U. S. History since 1877

HIST 101 US History to 1877  
& HIST 217 and Nevada History

HIST 101 US History to 1877  
& PSC 100 and Nevada Constitution

HIST 101 US History to 1877  
& PSC 208 and Survey of State and Local Government

## Degree Requirements

DFT 110 Print Reading for Industry 3

MPT 140 Quality Control 3

OSH 222 General Industry Safety 1

## Emphasis Requirements

ELM 110 Electrical/Electronic Circuits 4

ELM 127 Introduction to AC Controls 3

ELM 134 Programmable Logic Controllers I 3

ELM 233 Introduction to Instrumentation 3

ELM 140 Industrial Robotics I 3

MPT 110 Automated Production Concepts I 3

MPT 120 Automated Production Concepts II 3

MPT 130 Automated Production Concepts III 3

MT 108 Fluid Power (Pneumatics, Hydraulics, Instrumentation) 3

## Elective Requirements 10

Choose 10 units from the following:

CE 290 Work Experience

CIT 112 Network +

CIT 114 IT Essentials

ECON 102 Principles of Microeconomics

ELM 129 Electric Motors and Drives

ENGR 100 Introduction to Engineering Design

ENV 101 Introduction to Environmental Science

MATH 126 Pre-Calculus I (or higher)

MPT 150 Solid Modeling for Manufacturing Technicians

MPT: any remaining Manufacturing and Production Technology Courses.

MTT 230 Computer Numerical Control I

MTT: Any remaining Machine Tool Technology courses

WELD: Any welding course

Total Units 60

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

<sup>2</sup> May also count toward degree requirements. Please consult with Academic Advisement.

Course	Title	Units
<b>1st semester</b>		
Communications <sup>4</sup>		3
DFT 110	Print Reading for Industry	3
ELM 110	Electrical/Electronic Circuits	4
ELM 127	Introduction to AC Controls	3
OSH 222	General Industry Safety	1
Semester Total		14
<b>2nd semester</b>		
English <sup>3</sup>		3
MT 108	Fluid Power (Pneumatics, Hydraulics, Instrumentation)	3
MPT 110	Automated Production Concepts I	3
ELM 134	Programmable Logic Controllers I	3
MTT 150	Metallurgy I	3
Semester Total		15
<b>3rd semester</b>		
Elective <sup>4</sup>		6
ELM 233	Introduction to Instrumentation	3
MPT 120	Automated Production Concepts II	3
U.S. and Nevada Constitutions <sup>3</sup>		3
Semester Total		15
<b>4th semester</b>		
Elective <sup>4</sup>		4
Fine Arts, Humanities, Social Sciences <sup>3</sup>		3
MPT 130	Automated Production Concepts III	3
MPT 140	Quality Control	3
ELM 140	Industrial Robotics I	3
Semester Total		16
Total Units		60

<sup>3</sup> See approved General Educations requirements for the AAS Degree. (<http://catalog.tmcc.edu/degrees-certificates/general-education/aas>)

<sup>4</sup> See Program recommendations or requirements.