# Mechatronics Technology

**Winona & Red Wing Campus**

## OVERVIEW

**Mechanical systems, electrical devices, and industrial automation combine for a cutting edge career.**

If you like working with your mind and your hands, the challenging field of mechatronics technology may be the career choice for you! Mechatronics technology is the cutting edge discipline of building, troubleshooting, and maintaining the industry of tomorrow.

Mechatronics technicians work with industrial electricians, engineers, and technical support staff to ensure that production processes and equipment can be expanded and sustained in a wide range of industries.

At Southeast in Red Wing and Winona, Mechatronics Technology students will learn skills spanning electronics, mechanics, hydraulics, and motors. You will understand how to set up and maintain advanced programmable logic controllers, drives, human-machine interfaces, and actuators. Graduates with this credential work in settings such as
manufacturing, automation, control systems, and agriculture, such as:
*  installing industrial robots at leading manufacturing firms
*  deploying automated milking parlors on dairy farms
*  troubleshooting high-tech industrial mechanical operations

Whether studying electrical, mechanical, or instrumentation systems, the faculty will be able to draw a line from each lecture to what is taking place in today's most advanced industries.
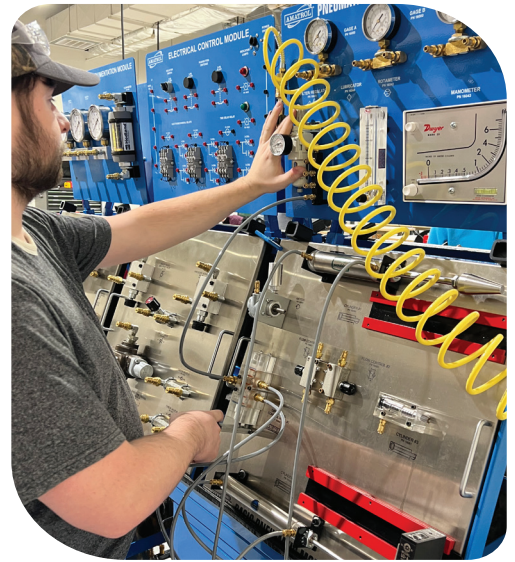
### MAJORS WITHIN

| | |
|---|---|
| Mechatronics Technology, AAS | 60 credits |
| Electromechanical Technical, Diploma | 31 credits |
| Automation Foundations, Certificate | 11 credits |
| Industrial Maintenance, Certificate | 10 credits |

**Scan here to watch our in depth video about Mechatronics Technology!**

# southeastmn.edu/mechatronics

## PROGRAM HIGHLIGHTS

Taught by industry and academic professionals who can connect modern industrial processes with cutting-edge advances in the world of mechatronic

Lecture and lab coursework directly relate to what is taking place in today's most advanced industries

Capstone project will demonstrate your ability to integrate what you have learned in the program

## CAREER OPPORTUNITIES

Automation Technicians
Industrial Engineering Technicians
Industrial Machinery Mechanics
Commercial & Industrial Maintenance Technicians

## JOB PLACEMENT

TBD

## PROGRAM OUTCOMES

1.  Understanding AC/DC electrical circuits
2.  Proficiency with pneumatic & hydraulic systems
3.  Control and troubleshoot electrical motors
4.  Installation and configuration of Variable Frequency Drives (VFD) and Human
5.  Machine Interfaces (HMI)
6.  Successful troubleshooting of electro-mechanical systems
7.  Demonstration of multi-system integration via a program capstone project

# Mechatronics Technology
## Sample Program Plan

Please note that this is a sample program schedule. Your schedule may vary depending upon your needs, goals, and course availability.

## Mechatronics Technology, AAS

| Course No. | Course Name | Credits |
|---|---|---|
| **First Semester** | | |
| MECH 1000 | Introduction to Mechatronics | 1 |
| MECH 1010 | Problem Solving | 3 |
| MECH 1202 | DC Electricity | 2 |
| MECH 1610 | Basic Industrial Controls | 3 |
| GOAL 1 | English/Comm Requirement | 3 |
| GOAL 4 | Math Requirement | 3 |
| **Semester total** | | **15** |
| **Second Semester** | | |
| MECH 1204 | AC Electricity | 2 |
| MECH 1212 | Digital Electronics | 1 |
| MECH 1620 | Programmable Controllers | 3 |
| MECH 1710 | Fluid Power | 2 |
| MECH 1700 | Mechanical Power Transmission | 2 |
| MECH 1720 | Machining for Maintenance | 3 |
| WELD 1455 | Trades Enhancement Welding | 3 |
| **Semester total** | | **16** |
| **Third Semester** | | |
| MECH 2020 | Mechatronic Graphics and Design | 2 |
| MECH 2630 | Advanced PLC Programming | 3 |
| MECH 2631 | Motors & Drives | 3 |
| MECH 2640 | Integrated Industrial Systems | 3 |
| GEN ED | Liberal Arts elective | 3 |
| **Semester total** | | **14** |
| **Fourth Semester** | | |
| MECH 2632 | Process Control Systems | 3 |
| MECH 2730 | Robotics | 3 |
| MECH 2800 | Mechatronics Capstone | 3 |
| GOAL 6 | Humanities Requirement | 3 |
| GOAL 5 | Social Science Requirement | 3 |
| **Semester total** | | **15** |

## Industrial Maintenance, Certificate

| Course No. | Course Name | Credits |
|---|---|---|
| MECH 1700 | Mechanical Power Transmission | 2 |
| MECH 1710 | Fluid Power | 2 |
| MECH 1720 | Machining for Maintenance | 3 |
| WELD 1455 | Trades Enhancement Welding | 3 |
| | **Total Required Credits - 10** | |

## Automation Foundations, Certificate

| Course No. | Course Name | Credits |
|---|---|---|
| MECH 1202 | DC Electricity | 2 |
| MECH 1204 | AC Electricity | 2 |
| MECH 1212 | Digital Electronics | 1 |
| MECH 1610 | Basic Industrial Controls | 3 |
| MECH 1620 | Programmable Controllers | 3 |
| | **Total Required Credits - 11** | |

## Electromechanical Technical, Diploma - WINONA

| Course No. | Course Name | Credits |
|---|---|---|
| **First Semester** | | |
| MECH 1000 | Introduction to Mechatronics | 1 |
| MECH 1010 | Problem Solving | 3 |
| MECH 1202 | DC Electricity | 2 |
| MECH 1610 | Basic Industrial Controls | 3 |
| GEN ED | Liberal Arts elective | 3 |
| GEN ED | English/Communications Requirement | 3 |
| **Semester total** | | **15** |
| **Second Semester** | | |
| MECH 1204 | AC Electricity | 2 |
| MECH 1212 | Digital Electronics | 1 |
| MECH 1620 | Programmable Controllers | 3 |
| MECH 1700 | Mechanical Power Transmission | 2 |
| MECH 1710 | Fluid Power | 2 |
| MECH 1720 | Machining for Maintenance | 3 |
| WELD 1455 | Trades Enhancement Welding | 3 |
| **Semester total** | | **16** |
| | **Total Required Credits - 31** | |

## Electromechanical Technical, Diploma - RED WING

| Course No. | Course Name | Credits |
|---|---|---|
| **First Semester** | | |
| MECH 1000 | Introduction to Mechatronics | 1 |
| MECH 1010 | Problem Solving | 3 |
| MECH 1202 | DC Electricity | 2 |
| MECH 1710 | Fluid Power | 2 |
| MECH 1700 | Mechanical Power Transmission | 2 |
| MECH 1610 | Basic Industrial Controls | 3 |
| GEN ED | Liberal Arts elective | 3 |
| **Semester total** | | **16** |
| **Second Semester** | | |
| MECH 1204 | AC Electricity | 2 |
| MECH 1212 | Digital Electronics | 1 |
| MECH 1620 | Programmable Controllers | 3 |
| MECH 1720 | Machining for Maintenance | 3 |
| WELD 1455 | Trades Enhancement Welding | 3 |
| GOAL 1 | English/Communication Requirement | 3 |
| **Semester total** | | **15** |
| | **Total Required Credits - 31** | |