

# Electromechanical Systems CERTIFICATE

## Program Overview

**Note: Students must be a journeyman electrician, have a Construction Electricity (CNEL) or Electrical Technology (ELTN) Diploma/AAS, or have Instructor approval.**

Electromechanical systems, also referred to as mechatronics, is a new and rapidly growing field that integrates electronics, mechanics, pneumatics, hydraulics, and computer control systems to create new and improved automated manufacturing production systems. This program is designed for people who are interested in plant maintenance (troubleshooting & repair), process set up, installation, and commissioning.

Electromechanical Systems move beyond simply cross-training employees, as the discipline recognizes that individuals need to be trained in five areas: mechanical, electrical, fluid power, process control, and industrial programming.

The Electromechanical Systems Certificate program requires high school graduation or equivalent. Students/electricians that previously acquired a diploma/AAS degree in the study of electricity may transfer in credits toward the Electromechanical certificate. Students should have an interest and aptitude in applied algebra, trigonometry, drawing and science. Good eyesight and color vision are important.

## Career Opportunities

The Electromechanical Systems program prepares students for careers requiring specialized skills in electricity, electronics, instrumentation, programmable logic controllers, microprocessors, automation and robotics. Students will become multi-skilled technicians capable of solving the many complex problems of manufacturing automation. Students will be prepared for a wide variety of careers including: Instrument Technician, Electrical Technician, Electromechanical Technician, Robotics Technician, Electronics Mechanic, Machine Repair & Maintenance, Motor Installer, Instrumentation Calibration Technician, Industrial Programmer, PLC Programmer, and Field Service.

These jobs are found in a wide range of fields including: electrical utilities, oil refineries, water treatment, wastewater treatment, manufacturing plants, chemical, medical, electronics, agriculture, biotechnology and automotive industries.

## Program Outcomes

1. Graduates will have the ability to communicate and conduct themselves in a professional manner with the customers and co-workers.
2. Graduates will be able to work on various styles of drives and pumps.
3. Graduates will be able to program using specialized industrial languages.
4. Graduates will have an understanding of machine logic and how electric, pneumatic, and hydraulic circuits interact with it.
5. Graduates will be able to work with various process controls systems.

## Program Faculty

Travis Schachtner  
travis.schachtner@saintpaul.edu  
651.403.4163

## Program Requirements

Check off when completed

Certain classes must be taken concurrently and certain classes are prerequisites to other classes.

Course	Cr
<input type="checkbox"/> EMEC 2400 Industrial Basics	4
<input type="checkbox"/> EMEC 2500 Fluid System Fundamentals	4
<input type="checkbox"/> EMEC 2620 Mechanical Fundamentals I	4
<input type="checkbox"/> EMEC 2625 Mechanical Fundamentals 2	4
<input type="checkbox"/> EMEC 2741 Electromechanical Troubleshooting & Maintenance	4
<input type="checkbox"/> EMEC 2751 Automated Process Control	4
<input type="checkbox"/> EMEC 2760 Programming for Robotic Manufacturing	4
<input type="checkbox"/> EMEC 2770 Advanced PLC Programming	4
<b>Total Program Credits</b>	<b>32</b>

## Additional Program Materials Costs

- Students must attend orientation.
- Textbooks are required the first day of class. Go to [www.saintpaulcollegebookstore.com](http://www.saintpaulcollegebookstore.com) for textbook information.
- Students are responsible for having their own Personal Protective Equipment (PPE) to participate in the labs.

## Program Start Dates

Fall, Spring

Class work for this program consist of online course delivery with hands-on labs to reinforce that lessons learned as well as one-on-one with instructors.

## Course Sequence

This course sequence is recommended for a full-time student; however, this sequence is not required.

Students should consult with a Program Advisor each semester.

Not all courses are offered each semester.

### First Semester

EMEC 2400 Industrial Basics	4
EMEC 2500 Fluid System Fundamentals	4
EMEC 2620 Mechanical Fundamentals 1	4
EMEC 2625 Mechanical Fundamentals 2	4
<b>Total Semester Credits</b>	<b>16</b>

### Second Semester

EMEC 2741 Electromechanical Troubleshooting & Maintenance	4
EMEC 2751 Automated Process Control	4
EMEC 2760 Programming for Robotic Manufacturing	4
EMEC 2770 Advanced PLC Programming	4
<b>Total Semester Credits</b>	<b>16</b>

**Total Program Credits 32**

## Minimum Program Entry Requirements

Students entering this program must meet the following minimum program entry requirements:

**Reading:** Score of 60+ or grade of "C" or better in READ 0721

**Writing:** Score of 60+ or grade of "C" or better in ENGL 0921

**Arithmetic:** Score of 52+

### Assessment Results and Prerequisites:

Students admitted to Saint Paul College programs may need to complete additional courses based on assessment results and course prerequisite requirements. Certain MATH, READ, and ENGL courses have additional prerequisites.

349C

*Information is subject to change.  
This Program Requirements Guide is not a contract.*