Electromechanical Automation Systems AAS DEGREE

Program Overview

Electromechanical systems, also referred to as mechatronics, is a high demand field that integrates electronics, mechanics, hydraulics, pneumatics, and computer control systems to create new and improved automated manufacturing production systems. This program is designed for people who are interested in industrial maintenance, process set up, installation, and upgrades.

Electromechanical Systems moves 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.

Students should have an interest and aptitude in math, science, and problem solving. 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, waste water treatment, manufacturing plants, chemical, medical, electronics, agriculture, biotechnology and automotive industries.

Program Outcomes

1. Demonstrate business and management skills necessary to move into a lead technician position.
2. Build various systems that will harness mechanical, electrical, pneumatic, and hydraulic power.
3. Program using multiple, industry specific, languages.
4. Build various electric, pneumatic, and hydraulic circuits.

Program Faculty

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Program Delivery

This program was designed with the nontraditional student in mind. The core technical classes are delivered in a hybrid program which means that the course work is delivered online and students coming in to complete lab work.

Additional Program Requirements/Costs

- Student must attend orientation.
- Textbooks are required the first day of class. Visit saintpaulcollegebookstore.com for textbook information.
- Students are responsible for having their own Personal Protective Equipment (PPE) to participate in the labs.

Program Requirements

☑ Check off when completed

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

Course	Cr
☐ EMEC 1511 AC/DC Fundamentals	4
☐ EMEC 1521 Electrical Motors	4
☐ EMEC 1530 Motor Controls	4
☐ EMEC 1540 Motor Drives	4
☐ EMEC 2400 Industrial Basics	4
☐ EMEC 2620 Mechanical Fundamentals 1	4
☐ EMEC 2625 Mechanical Fundamentals 2	4
☐ EMEC 2500 Fluid System Fundamentals	4
☐ EMEC 2751 Automated Process Control	4
☐ EMEC 2760 Programming for Robotic Manufacturing	4
☐ EMEC 2770 Advanced PLC Programming	4
Subtotal	**44**

General Education/MnTC Requirements	Cr
Refer to the Minnesota Transfer Curriculum Course List for each Goal Area	
☐ Goal 1: Communication ENGL 1711 Composition 1 – 4 cr COMM 17XX – 3 cr	7
☐ Goal 3 or Goal 4 Goal 3: Natural Sciences OR Goal 4: Mathematical/Logical Reasoning	3
☐ Goal 5: History, Social Science, and Behavioral Sciences	3
☐ Goal 6: Humanities and Fine Arts	3
General Education Requirements	**16**

Total Program Credits 60

Program Start Dates

Fall or Spring Semester

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

Course Sequence

This course sequence is recommended for a full-time student; however, this sequence is not required. Students should consult with the Program Advisor each semester.

Not all courses are offered each semester.

First Semester

EMEC 1511 AC/DC Fundamentals 4
EMEC 1521 Electrical Motors 4
EMEC 1530 Motor Controls 4
EMEC 1540 Motor Drives 4
Total Semester Credits 16

Second Semester

EMEC 2400 Industrial Basics 4
EMEC 2500 Fluid System Fundamentals 4
EMEC 2620 Mechanical Fundamentals I 4
EMEC 2625 Mechanical Fundamentals 2 4
Total Semester Credits 16

Third Semester

EMEC 2751 Automated Process Controls 4
EMEC 2760 Programming for Robotic Manufacturing 4
EMEC 2770 Advanced PLC Programming 4
Total Semester Credits 12

Fourth Semester

ENGL 1711 Composition 1 4
Goal 1: COMM 17XX 3
Goal Area 3 or 4 3
Goal Area 5 3
Goal Area 6 3
Total Semester Credits 16

Any Semester

General Education requirement courses may be taken before, after or concurrently with the EMEC courses.
General Education Requirements 16

Total Program Credits 60

Minimum Program Entry Requirements
Students entering this program must meet the following minimum program entry requirements:

Reading: Score of 240+ or grade of "C" or better in READ 0721 or READ 0724 or EAPP 0860

Writing: Score of 240+ or grade of "C" or better in ENGL 0921 or EAPP 0870

Arithmetic: Score of 237+ or grade of "C" or better in MATH 0745

Assessment Results and Prerequisites: Students admitted into 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.

401A

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