

# ROBOTICS & AUTOMATION

ENGINEERING, MANUFACTURING AND INDUSTRIAL TECHNOLOGY



## Course Overview:

**Program Location:** Lansing Community College (LCC) West Campus

**Sessions Offered:** AM

**Average Lecture Days/Week:** 1-2 Days

**Average Lab Days/Week:** 3-4 Days

**Academic Rigor:** 4 out of 5

**Homework:** Rarely

**Required Reading:** College-level textbooks and manuals

## Course Description

This program is offered to juniors and seniors. Students will focus on the installation and repair of electrical, hydraulic, pneumatic and digital controls that operate Automated Mechanical and Robotic Systems.

Students will learn the scope and application of local, state and federal safety regulations as they apply to both industrial and construction worksites.

## Student Leadership Opportunities

Students have the opportunity for leadership, competition and community service through membership in SkillsUSA.

## Success Indicators

- Mechanically inclined
- Detail-oriented
- Focused
- Good at troubleshooting
- Strong hand/eye coordination
- Able to read and understand service manuals
- Strong communication skills

## College Credits (10)

- ELTE 108 - Practical Electricity (1)
- METS 125 - Intro to Hydraulics/Pneumatics (4)
- METS 160 - Introduction to Robotics (3)
- TECH 100 - Safety OSHA 10 (2)

## Learning outcomes include, but are not limited to:

- Describe appropriate safety procedures
- Explain the basics of fire, building, and facility safety
- Demonstrate knowledge of basic first aid
- Describe the basic physical properties of hydraulic and pneumatic systems
- Trace and describe the flow of energy in a given hydraulic or pneumatic system
- Correct malfunctions in hydraulic or pneumatic circuits
- Apply safety rules while working on a robotic system.
- Perform robot start-up, control coordinate systems and motion systems
- Set up and create robot PGMS
- Operate robotic PGMS in manual and automatic modes
- Learn and utilize robotic terminology
- Define and spell electric vocabulary
- Solve series, parallel, and combination DC circuit problems
- Construct basic circuits and measure electrical quantities using multimeters, ammeters, ohmmeters, and wattmeters.

## Available Certifications:

- CPR/First Aid
- OSHA 10

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FOR MORE INFO:  
CONTACT YOUR COUNSELOR,  
CALL 517.483.1596, OR  
VISIT [EATONRESA.ORG/CPC](https://eatonresa.org/cpc)



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## PROFESSIONAL CAREERS

- Electrical Engineer
- Engineering Instructor/Professor
- Manufacturing Engineer
- Mechatronics Engineer
- NASA Engineer
- Project Manager
- Robotics Engineer
- Systems Engineer

## TECHNICAL CAREERS

- Advanced Manufacturing Technician
- Automated Machinery Technician
- Electrical Engineering Technician
- Engineering Technician
- Industrial Maintenance Technician
- Mechatronics Technician
- Robot Programmer
- Robotics Designer

## ENTRY-LEVEL CAREERS

- Amusement Ride Maintenance Technician
- Electrical/Mechanical Equipment Assembler
- Equipment Sales
- General Maintenance Technician
- Manufacturing Technician
- Mechanical/Electrical Assembler
- Programmable Logic Controller Maintenance Tech
- Robotics Technician

ACADEMICS

PROFESSIONAL SKILLS

EXPERIENCES

PASSION

Education with Purpose.

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## Capital Region Technical Early College (CRTEC)

Students enrolled in this program may choose to participate in the Capital Region Technical Early College (CRTEC) program. This is a high school-to-college program where students start in grade 11 and end their 13th year with a degree or certification. This program gives students relevant career related experiences.



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