

MECHATRONICS TECHNOLOGY CERTIFICATE

38 Semester Credit Hours; Curriculum: 0254

This certificate offers a general multi-purpose curriculum which covers a broad area of mechatronics technology.

| Code | Title | Hours |
|---|--|-----------|
| Courses for a Certificate | | |
| CAD 116 | Basic AutoCAD | 3 |
| ELT 101 | Introduction to Electronics | 5 |
| ELT 106 | Semiconductor Theory | 3 |
| ELT 221 | Digital Circuit Fundamentals | 3 |
| ELT 223 | Integrated Circuits | 3 |
| ENG 120 | Engineering Graphics | 3 |
| MFG 135 | Hydraulics, Pneumatics and Controls | 3 |
| MFG 140 | Introduction to Robotics and Vision Systems | 4 |
| MFG 240 | Programmable Logic Controllers (PLC) | 4 |
| MFG 250 | Advanced Automation Applications (PLC/PAC/HMI) | 4 |
| Select at least three credits from the following: | | 3 |
| ELT 110 | Electronic Drafting Using CAD | |
| ELT 231 | Fundamentals of Microprocessors | |
| MFG 102 | Industrial Drafting and Design | |
| Total Hours | | 38 |

Program Learning Outcomes

1. Propose industrial automation project based on critical thinking and problem solving skills. Become a good communicator and effective team member.
2. Prepare and examine electrical system used in manufacturing based on their knowledge of analog and/or digital electronic circuits.
3. Compose electrical circuits and mechanical systems to design, build, install, configure, and deploy industrial automation projects.
4. Create a control circuit to move a number of valves and cylinders through a specified sequence of operations and meet OSHA safety requirements.
5. Plan a CIM work cell with a robot that can reach all the necessary locations in a safe manner complying with all the OSHA safety rules.
6. Evaluate problems with ladder sequence and I/O inputs using on-line editing and monitoring tools and self-written diagnostic programs.
7. Design, crate, and debug a large machine control program using a HMI screen for operator interface and error reporting.

Mechatronics Technology Certificate Pathway

The following Pathway is recommended for students pursuing the Mechatronics Technology Certificate.

| Course | Title | Hours |
|----------------------|--------------------------------------|-----------|
| First Year | | |
| Fall Semester | | |
| CAD 116 | Basic AutoCAD | 3 |
| ELT 101 | Introduction to Electronics | 5 |
| MFG 240 | Programmable Logic Controllers (PLC) | 4 |
| Hours | | 12 |

Spring Semester

| | | |
|------------------------------|--|-----------|
| ELT 106 | Semiconductor Theory | 3 |
| MFG 135 | Hydraulics, Pneumatics and Controls | 3 |
| MFG 250 | Advanced Automation Applications (PLC/PAC/HMI) | 4 |
| Select one of the following: | | 3 |
| ELT 110 | Electronic Drafting Using CAD | |
| ELT 231 | Fundamentals of Microprocessors | |
| MFG 102 | Industrial Drafting and Design | |
| Hours | | 13 |

Second Year

Fall Semester

| | | |
|--------------------|---|-----------|
| ELT 221 | Digital Circuit Fundamentals | 3 |
| ELT 223 | Integrated Circuits | 3 |
| ENG 120 | Engineering Graphics | 3 |
| MFG 140 | Introduction to Robotics and Vision Systems | 4 |
| Hours | | 13 |
| Total Hours | | 38 |