

Electronics Technology: Mechatronics

Award Type: Certificate of Achievement

The certificate offers students a comprehensive program of study in the software, electronics and the mechanics of technologies used in automation (process control), robotics, and machine design and maintenance.

The graduate of the Certificate of Achievement in Electronics Technology: Mechatronics will:

- Demonstrate a fundamental mastery of knowledge and the use of electronic equipment in electrical, digital and analog circuits.
- Use computer simulation and design software to conduct, analyze and interpret electrical, digital and analog circuits.
- Make calculations involving various electrical laws, formulas and principles for predicting circuit parameters using algebra and trigonometry required for electronics.
- Use research strategies to acquire information pertinent to the solution of electronic circuits and systems.
- Write technical laboratory reports with conclusions.
- Demonstrate learned skills with a capstone project requiring you to design, build and evaluate a piece of electronic equipment.
- Apply current knowledge and adapt to emerging applications of automation and control.

Program Requirements

A total of 49 units is required for the certificate.

Required core courses (34 units):

| Course Number | Course Title | Units |
|---------------|--|-------|
| CS 111 | Fundamentals of Programming 1 | 4.0 |
| EL 104 | Introduction to Robotics and Mechatronics | 3.0 |
| | or | |
| CEL 104 | Introduction to Robotics and Mechatronics | 3.0 |
| | or | |
| ET 104 | Introduction to Robotics and Mechatronics | 3.0 |
| EL 118 | Fundamentals of DC and AC Circuits Analysis | 3.0 |
| EL 119 | Fundamentals of DC and AC Circuits Analysis Laboratory | 2.0 |
| EL 122 | Electronic Devices and Circuits | 3.0 |
| EL 123 | Electronic Devices and Circuits Laboratory | 2.0 |
| EL 125 | Digital Devices and Circuits | 3.0 |
| EL 126 | Digital Devices and Circuits Lab | 2.0 |
| MT 117 | Print Reading and Interpretation | 3.0 |
| | or | |
| WLDT 306 | Layout and Fabrication Interpretation | 3.0 |
| EL 146 | Electronic Product Design, Fabrication and Documentation | 2.0 |
| ET 140 | Engineering Drawing | 3.0 |
| MT 109 | Survey of Machining and Manufacturing | 4.0 |

Plus a minimum of 15 units selected from the following:

| Course Number | Course Title | Units |
|---------------|---|-------|
| EL 105 | PC Preventive Maintenance and Upgrading | 3.0 |
| | or | |
| EL 320 | A+ Certification | 2.5 |
| EL 106 | Networking Essentials 1 | 3.0 |

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| EL 107 | Networking Essentials 2 | 3.0 |
| EL 135 | Electronic Measurement and Instrumentation | 3.0 |
| EL 136 | Electronics Measurement and Instrumentation Laboratory | 2.0 |
| EL 128 | Introduction to Renewable Energy | 3.0 |
| | or | |
| CEL 128 | Introduction to Renewable Energy | 3.0 |
| | or | |
| ET 128 | Intro to Renewable Energy | 3.0 |
| EL 131 | Programmable Logic Controllers and Control Design | 3.0 |
| | or | |
| CEL 131 | Programmable Logic Controllers and Control Design | 3.0 |
| | or | |
| ET 131 | Programmable Logic Controllers and Control Design | 3.0 |
| EL 133 | Mechatronic Systems 1 | 3.0 |
| | or | |
| CEL 133 | Mechatronic Systems 1 | 3.0 |
| | or | |
| ET 133 | Mechatronic Systems 1 | 3.0 |
| EL 139 | Electrical Power, Motors, and Controls | 3.0 |
| | or | |
| CEL 139 | Electrical Power, Motors, and Controls | 3.0 |
| | or | |
| ET 139 | Electrical Power, Motors, and Controls | 3.0 |
| EL 162 | Fluid Power And Control | 2.0 |
| | or | |
| CEL 162 | Fluid Power and Control | 2.0 |
| | or | |
| ET 162 | Fluid Power and Control | 2.0 |
| ET 100 | Computer Aided Drafting and Design | 3.0 |
| PHYS 100 | Concepts In Physics | 3.0 |
| | or | |
| PHYS 110 | Introductory Physics | 3.0 |
| | or | |
| PHSC 111 | Matter, Energy and Molecules | 4.0 |
| WLDT 106 | Beginning Welding | 3.0 |
| WLDT 107 | Advanced Welding | 3.0 |
| WLDT 307 | G.M.A.W. Welding | 3.0 |
| | or | |
| WLDT 308 | T.I.G. Welding | 3.0 |
| WLDT 315 | Metal Fabrication | 4.0 |