

MECHATRONICS, ROBOTICS AND AUTOMATION ASSOCIATE IN SCIENCE DEGREE

Division: Technology and Engineering

PROGRAM CODE: 1S43369

Financial Aid Eligible

The **Associate in Science in Mechatronics, robotics and Automation** is designed to prepare students for employment as smart operator or system technician depending on the pathway. The program prepares students for careers in the design, operation, and maintenance of mechatronics systems, industrial robots and industrial automation systems focusing on the local industries that utilize these technologies, such as food production, petroleum production, fabrication, and logistics etc. This program focuses on the application of electronics and computer technology to industrial automation systems, including instrumentation and control, industrial robotics, and process control systems. Significant emphasis is placed on project-based learning facilitated by significant laboratory work. To earn an Associate Degree students must complete: (1) all major course requirements with a minimum grade of "C"; (2) 25 units of General Education Graduation Requirements; (3) the Social Justice, Equity and Sustainability and reading requirements; (4) any elective courses needed to complete a minimum of 60 units; and, (5) have a minimum GPA of 2.0. At least 50% of all major course work must be completed at Cypress College. This major requires completion of 39-41 units, in addition to other degree requirements.

| Code | Title | Units |
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| Required Courses (29 Units): | | |
| Must take the required nine courses listed below in the suggested sequence (total of 29 units) plus choose one area of emphasis, (additional 10-12 units depending on emphasis selected). | | |
| ENGT 103 C | Introduction to Embedded Systems | 3 |
| ENGT 105 C | Instrumentation and Process Control | 3 |
| ENGT 107 C | Electricity and Electronics | 3 |
| ENGT 109 C | Industrial Design and Graphics | 4 |
| ENGT 115 C | Electric Motors and Controls | 3 |
| ENGT 120 C | Mechanical Systems | 3 |
| ENGT 125 C | Hydraulic and Pneumatic Systems | 3 |
| ENGT 150 C | Digital Fundamentals and PLC Programming | 4 |
| ENGT 160 C | Industrial Data Network and HMI | 3 |
| Select ONE Area of Emphasis (10-12 Units): | | 10-12 |
| <i>Mechatronics and Robotics Operator Emphasis:</i> | | |
| ENGT 210 C | Principles of Robotics Systems | 3 |
| ENGT 225 C | Robot and Automation Programming | 4 |
| ENGT 240 C | Advanced Robotics | 3 |
| <i>Mechatronics System Technician Emphasis:</i> | | |
| ENGT 250 C | Industrial Maintenance and Safety | 3 |
| ENGT 255 C | Integrated Automation Systems | 3 |
| ENGT 265 C | Manufacturing Operation Management | 3 |

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| ENGT 103 C | Introduction to Embedded Systems | 3 |
| ENGT 105 C | Instrumentation and Process Control | 3 |
| ENGT 107 C | Electricity and Electronics | 3 |
| ENGT 109 C | Industrial Design and Graphics | 4 |
| ENGT 115 C | Electric Motors and Controls | 3 |
| ENGT 120 C | Mechanical Systems | 3 |
| ENGT 125 C | Hydraulic and Pneumatic Systems | 3 |
| ENGT 150 C | Digital Fundamentals and PLC Programming | 4 |
| ENGT 160 C | Industrial Data Network and HMI | 3 |

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| ENGT 210 C | Principles of Robotics Systems | 3 |
| ENGT 225 C | Robot and Automation Programming | 4 |
| ENGT 240 C | Advanced Robotics | 3 |

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| ENGT 250 C | Industrial Maintenance and Safety | 3 |
| ENGT 255 C | Integrated Automation Systems | 3 |
| ENGT 265 C | Manufacturing Operation Management | 3 |

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| ENGT 290 C | Industry 4.0, IIoT, Digitization | 3 |
| Total Units | | 39-41 |

Program Student Learning Outcomes:

OUTCOME 1: Understand an automated system's structure and the role of different components in a fully integrated system.

OUTCOME 2: Demonstrate a deep understanding of an automated manufacturing platform and automation industry, including design, operation, preventative maintenance, troubleshooting, repair, and integration.

OUTCOME 3: Apply problem-solving skills in designing an automated system and product development.

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