EMBEDDED SYSTEMS TECHNICIAN, CERTIFICATE OF ACHIEVEMENT

Banner Code: 1_CN_ELES
Control Number: 41436
Not Financial Aid Eligible

The Embedded Systems Technician Certificate is geared towards students who want to take their programming and circuit building skills to the next level. Students will become proficient in programming a variety of microcontrollers to perform tasks in an embedded application in C-based programming languages. Students who have obtained this certificate will be proficient at the use of multimeters and oscilloscopes to analyze circuit design and troubleshoot problems. Students will gain familiarity with digital communication protocols. This certificate is designed to teach students the skills necessary to build a career working with embedded electronics commonly found in consumer devices, IoT-connected devices, and autonomous vehicles.

Students earning this certificate are encouraged to continue their education by completing the additional requirements for the Associate of Science degree. They are also encouraged to pursue a bachelor's degree in an Electrical Engineering or Computer Science discipline. Students must complete the Robotics Technician Certificate of Achievement (12-13 units) as a prerequisite to entry into the Embedded Systems Technician program.

Program Outcomes

1. Students will acquire skills necessary to program common microcontrollers using C.
2. Students will gain familiarity with different communication protocols to interface between electronic systems.
3. Students will be proficient at using multimeters, oscilloscopes, and spectrum analyzers to analyze circuits.
4. Students will acquire the skills necessary to methodically identify problems in circuits and propose solutions.

Review Graduation Requirements (https://catalog.cccd.edu/orange-coast/graduation-requirements/associate-degree/) and General Education (https://catalog.cccd.edu/orange-coast/general-education-patterns/).

Required Prerequisite

Robotics Technician Certificate of Achievement (12-13 Units)

Course	Title	Units
Required Courses		
ELEC A100	Electronic Problem Solving	3-4
or MATH A115	College Algebra	
or MATH A120	Trigonometry	
ELEC A111	D.C. Circuits	3
ELEC A121	Robotics 1- Mechanics & Design	3

Course	Title	Units
ELEC A122	Robotics 2- Sensors, Control Theory, and Programming	3
Total Units		**12-13**

Required Courses

Course	Title	Units
ELEC A102	Safety, Maintenance, and Calibration	1
ELEC A103	Computer Hardware Configuration & Diagnostics	3
or ELEC A290	Electronic Troubleshooting	
ELEC A223	Embedded Control Systems	4
ELEC A224	Digital Communication Systems	3
Total Units		**11**

Program Sequence

These sequences at Orange Coast College are curriculum maps for students to finish all requirements for the certificate. There may be advisories, prerequisites, or time requirements that students need to consider before following these maps. **Students are advised to meet with an Orange Coast College Counselor for alternate sequencing.**

Course	Title	Units
Year 1		
Semester 1		
ELEC A100	Electronic Problem Solving	3-4
or MATH A115	or College Algebra	
or MATH A120	or Trigonometry	
ELEC A111	D.C. Circuits	3
ELEC A121	Robotics 1- Mechanics & Design	3
ELEC A122	Robotics 2- Sensors, Control Theory, and Programming	3
	Units	**12-13**
Semester 2		
Spring Semester: Students must complete the Robotics Technition Certificate of Achievement (12-13 units) as a prerequisite to entry into the Embedded Systems Program.		
ELEC A223	Embedded Control Systems	4
ELEC A224	Digital Communication Systems	3
ELEC A102	Safety, Maintenance, and Calibration	1
ELEC A103	Computer Hardware Configuration & Diagnostics	3
or ELEC A290	or Electronic Troubleshooting	
	Units	**11**
	Total Units	**23-24**