Advanced Manufacturing and Skilled Trades

Industrial Electronics Technology

Award: Associate of Applied Science
Length: 67 credits

Industrial Controls

Award: Career Studies Certificate
Length: 25 credits

Industrial Maintenance Electronics

Award: Career Studies Certificate
Length: 27 credits

Mechatronics (Pending Approval)

Award: Career Studies Certificate
Length: 16 credits

Residential/Commercial/Industrial Electrician

Award: Career Studies Certificate
Length: 22 credits

PROGRAM CONTENT COMPARISONS					
	Industrial Electronics Technology (AAS)	**Industrial Controls (CSC)**	**Industrial Maintenance Electronics (CSC)**	**Mechatronics CSC (Pending Approval)**	**Residential/Commercial/ Industrial/Electrician (CSC)**
CST 110 (3)	●				
ENG 111 (3) or ENG 131 (3)	●				
MTH 111 (3)	●				
HUM EEE (3)	●				
SOC EEE (3)	●				
TEC (EEE) Elective (6)	●	● (3)	●		●
ELE 110 (3)	●				●
EGR 216 (3)	●		●		
ELE 113 (3)	●	●			●
ELE 156 (3)	●	●	●		●
ETR 141 (3)	●		●		
ETR 150 (3)	●	●			●
ETR 156 (4)	●	●	●		
ETR 230 (3)	●				
ETR 266 (3)	●	●			
ETR 298 (1)	●				
HLT 105 (1)	●				●
INS 210 (3)	●	●			●
IND 243 (3)	●			●	
MEC 140 (3)	●		●	●	●
MEC 155 (3)	●		●	●	
MEC 165 (3)	●	●	●	●	
MEC 290 (2)			●		
SAF 126 (3)			●		
SDV 108 (1)	●				

Industrial Electronics Technology

Award: Associate of Applied Science
Length: 67 credits

Purpose: The focus of this program is to provide highly skilled industrial technicians for a regional workforce. Qualified electronic technicians are needed in ever increasing numbers to assist local business and industry in taking full advantage of computerized systems, automation, and controls. The manufacturing environment of the 21st century integrates several advanced technologies including sensors, transducers, automated controls, programmable logic controls, motor control circuits, motor drives, pneumatics, microprocessors, computer hardware, and software applications. A strong educational background is required to install, maintain, troubleshoot, and repair such advanced systems.

Program Learning Outcomes: A student will be able to:

- demonstrate proficiency in oral communication;
- demonstrate effective written communication skills;
- demonstrate proficiency in mathematical skills to solve problems;
- demonstrate proficiency in scientific reasoning;
- demonstrate proficiency in information technology;
- demonstrate the ability to reason critically and apply logic to solve problems;
- demonstrate the ability to write a ladder program with two inputs and one output;
- learn schematic symbols that apply to building a circuit with electronic devices on a bread board from a schematic diagram;
- three phase motor structure and function will be emphasized to enable students to wire a single start-stop control station with a motor starter from a line diagram.

Potential Certifications: Students will have the opportunity to earn a number of industry recognized certifications designed to enhance their abilities and ultimately improve their performance in specialized areas. All certifications listed below are offered through Siemens, the industry leader in automation.

NOTE: Students will be responsible for testing fees.

*Siemens Certification in Level 1 Mechatronics
*Siemens Certification in Level 2 Mechatronics
*Siemens Certification in Programmable Logic Controllers
*Siemens Certification in Variable Frequency Drives

Occupational Objectives: Employment opportunities for graduates of this program include positions as electronics technician, industrial electronics technician or service technician.

General Education Requirements (15 Credits):

CST	110	Introduction to Communication (3)	
ENG	111	College Composition I (3)	
MTH	111	Basic Technical Math (3)	
HUM	EEE	Humanities Elective (3)	*See pages 163-165*
SOC	EEE	Social Sciences Elective (3)	*See pages 163-165*

Program Requirements (52 Credits):

EGR	216	Computer Methods in Engineering (3)
ELE	110	Home Electric Power (3)
ELE	113	Electricity I (3)
ELE	156	Electrical Control Systems (3)
ETR	141	Electronics I (3)
ETR	150	Machine Control Using Relay & Programmable Logic (3)
ETR	156	Digital Circuits and Microprocessor (4)
ETR	230	Mechatronic Process Control (3)
ETR	266	Microprocessor Applications (3)
ETR	298	Seminar and Project (1)
HLT	105	Cardiopulmonary Resuscitation (1)
INS	210	Principals of Instrumentation (3)
IND	243	Principals and Applications of Mechatronics (3)
MEC	140	Introduction to Mechatronics (3)
MEC	155	Mechanisms (3)
MEC	165	Applied Hydraulic, Pneumatics and Hydrostatics (3)
SDV	108	College Survival Skills (1)
TEC	EEE	Technical Elective (6)

Minimum required for degree: 67 Credits

Industrial Controls

Award: Career Studies Certificate
Length: 25 credits

Purpose: This program is designed to prepare students for Siemens PLC certification. Students will also receive skills needed for installation, maintenance and repair of advanced technology production equipment.

Program Learning Outcomes: Graduates will have fundamental skills for installation and repair of electrical control systems. Graduates will demonstrate proficiency in programmable logic controllers and mechatronic process controls.

ELE	113	Electricity I (3)
ELE	156	Electrical Control Systems (3)
ELE	233	Programmable Logic Controller Systems I (3)*
ETR	150	Machine Control (3)
ETR	156	Digital Circuits and Microprocessor (4)
ETR	266	Microprocessor Applications (3)*
INS	210	Principals of Instrumentation (3)
MEC	165	Applied Hydraulics and Pneumatics (3)*

Minimum required for career studies certificate: 25 Credits

Industrial Maintenance Electronics

Award: Career Studies Certificate
Length: 27 credits

Purpose: This program is designed to prepare students for Siemens VFD certification. Students will also receive skills and knowledge needed for maintenance and repair of modern production equipment.

Program Learning Outcomes: Graduates will have fundamental skills for installation and repair of electrical systems. Graduates will demonstrate proficiency in machine technology and mechanical systems maintenance.

EGR	216	Computer Methods/ Engineering and Tech. (3)
ELE	156	Electrical Control Systems (3)

ETR	156	Digital Circuits and Microprocessor (4)
ETR	246	Electronic Motor Drive Systems (3)
MEC	155	Mechanisms (3)*
MEC	140	Introduction to Mechatronics (3)
MEC	165	Applied Hydraulics and Pneumatics (3)
MEC	290	Coordinated Internship (2)
SAF	126	Principle of Industrial Safety Sections (3)

Minimum required for career studies certificate: 27 Credits

Mechatronics **(Pending Approval)**

Award: Career Studies Certificate
Length: 16 credits

ETR	156	Digital Circuits and Microprocessor Fundamentals (4)
IND	243	Principles and Applications of Mechatronics (3)
MEC	140	Introduction to Mechatronics (3)
MEC	155	Mechanisms (3)
MEC	165	Applied Hydraulic, Pneumatics and Hydrostatics (3)

Minimum required for career studies certificate: 16 Credits

Residential/Commercial/Industrial Electrician

Award: Career Studies Certificate
Length: 22 credits

Purpose: This program is designed to provide skills for entry-level positions in the practice of electrical servicing and preparation of the National Electrical Code Examination.

Program Learning Outcomes: Graduates will have fundamental skills for entry-level electrical installation and repair. Graduates will demonstrate proficiency in electrical codes, OSHA safety criteria, wiring circuits and mechatronic system troubleshooting.

ELE	110	Home Electric Power (3)
ELE	113	Electricity I (3)
ELE	156	Electrical Control Systems (3)
ELE	138	National Electric Code (3)
ETR	150	Machine Control Using Relay & Programmable Logic (3)
HLT	105	Cardiopulmonary Resuscitation (1)
INS	210	Principals of Instrumentation (3)
MEC	140	Introduction to Mechatronics (3)

Minimum required for career studies certificate: 22 Credits

Advising Sheet Suggested Schedules: Courses in advising sheets are displayed under the semester in which the courses are regularly offered. It is possible that a course shown on the schedule for a particular semester may not be offered due to low enrollment or other factors.

Advising Sheet for AAS: Industrial Electronics Technology 2018-2019

Developmental English Pre-requisites met: _____yes _____no			
Required	ENF1	ENF2	ENF3
Met			

Developmental Math Pre-requisites met: _____yes _____no									
Required	MOD1	MOD2	MOD3						
Met									

Fall Semester Courses:			**Completed**
ELE 113	Electricity I	3.0	_____
ETR 141	Electronics I	3.0	_____
ELE 156	Electrical Control Systems	3.0	_____
MEC 140	Introduction to Mechatronics	3.0	_____
MEC 155	Mechanisms	3.0	_____
SDV 108	College Survival Skills	1.0	_____
		Total 16	

Next actions which follow or can be accomplished during the First semester
1. During Early Bird Registration, meet with your academic advisor to enroll in next semester.

Spring Semester Courses:			**Completed**
ETR 156	Digital Circuits and Microprocessor	4.0	_____
ELE 110	Home Electric Power	3.0	_____
ENG 111	College Composition I	3.0	_____
IND 243	Principals and Applications of Mechatronics	3.0	_____
TEC EEE	Electronics/Electricity Elective	3.0	_____
TEC EEE	Electronics/Electricity Elective	3.0	
		Total 19	

Next actions which follow or can be accomplished during the Second semester
1. During Early Bird Registration, meet with your academic advisor to enroll in next semester.

Fall Semester Courses:			**Completed**
EGR 216	Computer Methods in Engineering	3.0	_____
ETR 266	Microprocessor Applications	3.0	_____
HLT 105	Cardiopulmonary Resuscitation	1.0	_____
HUM EEE	Humanities Elective	3.0	_____
MEC 165	Applied Hydraulic, Pneumatics and Hydrostatics	3.0	_____
MTH 111	Basic Technical Math	3.0	_____
		Total 16	

Next actions which follow or can be accomplished during the Third semester
1. During Early Bird Registration, meet with your academic advisor to enroll in the next semester.
2. Meet with your academic advisor or transfer advisor to discuss four-year transfer options.
4. Apply for graduation.

Spring Semester Courses:			**Completed**
CST 110	Introduction to Communication	3.0	_____
ETR 150	Machine Control Using Relay & Programmable Logic	3.0	_____
ETR 230	Mechatronic Process Control	3.0	_____
ETR 298	Seminar and Project	1.0	_____
INS 210	Principals of Instrumentation	3.0	_____
SOC EEE	Social Sciences Elective	3.0	_____
		Total 16	