IST/MAINTENANCE TECHNOLOGY

ECC's Industrial Maintenance Program focuses on hands-on training in the fields of electricity, automation, mechanical systems, pneumatics, and hydraulics. The industrial maintenance certificates were designed and vetted with industry input. Students who earn certificates from ECC will have the breadth of skills necessary to enter the workforce. Well-trained maintenance workers are crucial in helping any organization maintain production schedules and save time and money. ECC's industrial maintenance program is suitable for those with no previous experience, for those who seek specialization or skills upgrade, and/or for those who seek quick entry into the workforce.

The curriculum is performance-based/student-centered and provides the information and knowledge for employment in jobs requiring multiple maintenance competencies. ECC's labs possess state-of-the-art trainers that students use to understand concepts, sharpen their skills, and become proficient troubleshooters. Faculty members are proven technicians with years of field experience.

Students who complete the program may find employment as industrial maintenance, process automation, electrical-automation, and supply chain technicians.

Entrance Requirements

None

Program Requirements

None

IST/Maintenance Technology - Associate of Applied Science

Course	Title	Credit Hours
First Semester		
IST 105	Electrical Control Circuits	3
IST 110	Electrical Motor Control	3
IST 121	Fluid Power Systems	3
IST 122	Hydraulics Troubleshooting	3
BUS 101	Business Communications I	3
	Total	**15**
Second Semester		
IST 130	Basic Mechanical Drives	3
IST 140	Programmable Controllers I	3
IST 142	Programmable Controllers II	3
IMT 107 or MTH 107	Technical Math I or Technical Math I	4
BUS 142	Business Communications II	3
	Total	**16**
Third Semester		
IST 135	Industrial Power/Piping Systems	4
IMT 103	Industrial Manufacturing Tech I	3
IMT 104	Industrial Manufacturing Tech II	3
HAC 101	Air Conditioning and Refrigeration I	3
Required Social or Behavioral Sciences Course		3
	Total	**16**
Fourth Semester		
WEL 101	Welding I	2.5
IST 235	AC Drives	3
WEL 102	Welding II	4
IST 245	Advanced Programmable Controllers	3
Required Liberal Education Course		3
	Total	**15.5**
	Program Total	**62.5**

Automated Electronic Systems - Basic Vocational Specialist

Course	Title	Credits
IST 140	Programmable Controllers I	3
IST 142	Programmable Controllers II	3
IST 245	Advanced Programmable Controllers	3
Total Credit Hours		**9**

Industrial Maintenance - Basic Vocational Specialist

Course	Title	Credit Hours
First Semester		
IST 105	Electrical Control Circuits	3
IST 110	Electrical Motor Control	3
IST 121	Fluid Power Systems	3
	Total	**9**
Second Semester		
IST 130	Basic Mechanical Drives	3
IST 140	Programmable Controllers I	3
IMT 107	Technical Math I	4
IST 142	Programmable Controllers II	3
	Total	**13**
	Program Total	**22**

IST/Maintenance Technology Courses

All IST courses numbered 100 and above may be applied to the major field and elective requirement for the Associate in Arts and Associate in Science degrees.

IST 105 Electrical Control Circuits (3) 2,2
Students will learn the fundamentals of basic (DC) electricity, including series, parallel, and combination circuits. The fundamentals of inductors and capacitors are also studied.(1.2) Proficiency Credit Available Pass/No Credit Available.
In-District Tuition/Fees: $496 (effective 2023/24 academic year)
In-district tuition rates are subject to change based on Board approval.
Prerequisite: None
Semester(s) Offered: Fall

IST 110 Electrical Motor Control (3) 2,2
In this course, students will learn lockout-tag- out procedures and how to read and develop ladder logic diagrams. Students will study 3- phase motor control systems, and the components of a 3-phase motor control system. Students will learn to troubleshoot a 3-phase motor control system with practical faults inserted.(1.2) Proficiency Credit Not Available Pass/No Credit Available.
In-District Tuition/Fees: $471 (effective 2023/24 academic year)
In-district tuition rates are subject to change based on Board approval.
Prerequisite: Grade of C or better in IST 105 or HAC 114
Semester(s) Offered: Fall

IST 121 Fluid Power Systems (3) 2,2
In this course the students will learn about fluid power systems. This will include principles of fluid power systems. This course will also cover hydraulic and pneumatic systems, symbols and schematics, flow control devices, and actuators. The student will learn to read pressure gauges, along with working with the different formulas associated with hydraulic and pneumatic systems. Besides the lecture the students will have a hands-on lab portion to help with the understanding of the material. (1.2) Proficiency Credit: Available (2 SIE) Pass/No Credit: Available.
In-District Tuition/Fees: $471 (effective 2023/24 academic year)
In-district tuition rates are subject to change based on Board approval.
Prerequisite: None
Semester(s) Offered: Fall and Spring

IST 122 Hydraulics Troubleshooting (3) 2,2
Students will learn to troubleshoot and repair a hydraulic system with real-world faults installed. They will learn how various components work in a hydraulics system and how they interact with other components. They will learn how to take pressure and flow readings. (1.2) Proficiency Credit Available (2 EIS) Pass/No Credit Available.
In-District Tuition/Fees: $471 (effective 2023/24 academic year)
In-district tuition rates are subject to change based on Board approval.
Prerequisite: Grade of C or better in IST 121 or consent of instructor.
Semester(s) Offered: Fall

IST 130 Basic Mechanical Drives (3) 2,2
Students will learn how to align and level a motor and how to align various shafts to a motor. Students will also install drive belts and drive chains to a motor. Students will learn how to use various tools to measure belt and chain tension and how to use various specialized tools and measuring devices such as calipers and micrometers when installing mechanical devices.(1.2) Proficiency Credit Not Available Pass/No Credit Available.
In-District Tuition/Fees: $471 (effective 2023/24 academic year)
In-district tuition rates are subject to change based on Board approval.
Prerequisite: None
Semester(s) Offered: Spring

IST 135 Industrial Power/Piping Systems (4) 2,4
In this course the student will learn the various piping methods that are used in industrial applications. The student will learn how to connect and install various styles of metal and plastic pipes, how to read symbols used in piping installations, and how to bend and install conduit piping. The National Electrical Code (NEC) will be used to identify safety practices and selecting circuit protection in an industrial setting. (1.2) Proficiency Credit Available (2 SIE) Pass/No Credit Not Available.
In-District Tuition/Fees: $648 (effective 2023/24 academic year)
In-district tuition rates are subject to change based on Board approval.
Prerequisite: Grade of C or better in HAC 114 or IST 105 or IST 110
Semester(s) Offered: Fall, Spring and Summer

IST 140 Programmable Controllers I (3) 2,2
This course offers students the fundamentals of a Programmable Logic Controller (PLC) using the Allen Bradley SLC 500 PLC. Students learn the basic parts of a PLC system, digital fundamentals, and PLC addressing. Students also learn how to troubleshoot and repair a PLC when a "real world" fault is inserted.(1.2) Proficiency Credit Available Pass/No Credit Available.
In-District Tuition/Fees: $471 (effective 2023/24 academic year)
In-district tuition rates are subject to change based on Board approval.
Prerequisite: Grade of C or better in IST-105 or IST-110.
Semester(s) Offered: Fall

IST 142 Programmable Controllers II (3) 2,2
This course is an extension of IST 140. Students learn to program an Allen Bradley SLC500 PLC for advanced sequencing operation. Students also learn to program timers and counters that are used in a PLC application, as well as to write a PLC program using advanced math and data functions. The troubleshooting section from IST 140 is also used during the course.(1.2) Proficiency Credit Not Available Pass/No Credit Available.
In-District Tuition/Fees: $471 (effective 2023/24 academic year)
In-district tuition rates are subject to change based on Board approval.
Prerequisite: Grade of C or better in IST 140
Semester(s) Offered: Fall

IST 235 AC Drives (3) 2,2
The student will learn the theory and practical fundamentals of AC Drive systems including servomotor, vector drive motor, and a variable speed drive motor. They will also learn the various types of troubleshooting techniques and procedures and be exposed to real world faults that are inserted into any of the various types of drive systems. The student will also learn advanced motor control principals including SRC units, power generation and distribution, and reduced voltage starting methods. Finally, the student will wire a motor control panel using an electrical print.(1.2) Proficiency Credit Not Available Pass/No Credit Available.
In-District Tuition/Fees: $496 (effective 2023/24 academic year)
In-district tuition rates are subject to change based on Board approval.
Prerequisite: Grade of C or better in IST 110 or consent of instructor
Semester(s) Offered: Spring

IST 245 Advanced Programmable Controllers (3) 2,2
This is an advanced Programmable Logic Controllers (PLC) course. In this course, students will learn to program an Input/Output Allen Bradley Analog module card. They will learn how data sampling takes place and how this module card interfaces with 'real world' devices. Students will also learn how to set up and program the Allen Bradley PLC for DH485 and RIO Communication. In the final part of this course, students will learn how to set up and program Panelview software to communicate with an Allen Bradley PLC program.(1.2) Proficiency Credit Not Available Pass/No Credit Available.
In-District Tuition/Fees: $471 (effective 2023/24 academic year)
In-district tuition rates are subject to change based on Board approval.
Prerequisite: Prerequisite:Grade of C or better in IST 142
Semester(s) Offered: Spring