Industry and Technology
Institutional (ILO), Program (PLO), and Course (SLO) Alignment

Program: Air Conditioning and Refrigeration			**Number of Courses:** 11	**Date Updated:** Fall 2012	**Submitted by:** Vic Cafarchia Ext. 3306	
Institutional Learning Outcomes	I. Content Knowledge	II. Critical, Creative, and Analytical Thinking	III. Communication and Comprehension	IV. Professional and Personal Growth	V. Community and Collaboration	VI. Information and Technology Literacy
Program Rating	**3**	**2**	**2**	**1**	**1**	**1**

Program Level SLOS	**ILOS to Program SLO Alignment**					
	I	**II**	**III**	**IV**	**V**	**VI**
1. Students successfully completing air conditioning and refrigeration program, whether in the certificate program or degree program, will acquire and be able to use specific safety knowledge and skills relating to the air conditioning and refrigeration discipline and will be able to apply those skills to specific job requirements.	3	2	1	1	1	1
2. Upon completion of a course of study in air conditioning and refrigeration, a student will be able to install, service, and repair ACR systems as required by the industry guidelines.	3	2	1	1	2	2
3. Upon completion of a course of study, students in air conditioning and refrigeration will be able to properly pressure test, evacuate, and charge ACR system.	3	2	2	1	2	2
4. Students completing a course of study in air conditioning and refrigeration will successfully earn a certificate/graduate/transfer to 4 year universities and will successfully compete for jobs in which they can apply their knowledge and communicative skills acquired in the air conditioning and refrigeration program.	3	1	2	1	2	2

Course Level SLOs	**Course to Program SLOs Alignment**				**ILOs to Courses Alignment**					
	P1	P2	P3	P4	**I**	**II**	**III**	**IV**	**V**	**VI**
ACR 5 Electrical Appliances: After reading the textbook and participating in class discussions, students will apply their knowledge of appropriate lab practices, concepts and theories by troubleshooting a faulty air conditioning unit with the use of a wiring schematic and voltmeter. After finding the problem they will run the unit and make sure it is operating at the manufacturer's specifications.	X	X		X	**2**	**3**	**1**	**1**	**1**	**1**
ACR 6 Refrigeration and Air Conditioning Control Systems: After reading the textbook and participating in class discussions, students will apply their knowledge of appropriate lab practices, concepts and theories by observing and testing the proper operation of an air conditioning electrical control relay.	X	X		X	**3**	**2**	**1**	**1**	**1**	**1**
ACR 20 Solar Energy Applications-Photovoltaics and Solar Thermal: After reading the textbook and participating in class discussions, students will apply their knowledge of appropriate lab practices, concepts and theories by naming the parts of a Solar Thermal unit in correct sequence and know how a Solar Thermal unit converts solar energy into hot water. Naming the parts of a Photovoltaic (PV) unit in correct sequence and know how a PV unit converts solar energy into electrical energy.	X	X	X	X	**3**	**1**	**1**	**1**	**1**	**1**
ACR 21 Air Conditioning Fundamentals: After reading the textbook and participating in class discussions, students will apply their knowledge of appropriate lab practices, concepts and theories placing refrigeration manifold gauges on a window air conditioning unit an check for correct charge of an operating system based on the type of refrigerant used in the system.	X		X	X	**3**	**1**	**1**	**1**	**1**	**1**
ACR 22 Basic Refrigeration: After reading the textbook and participating in class discussions, students will apply their knowledge of appropriate lab practices, concepts and theories placing refrigeration manifold gauges on a refrigerator and check for the correct charge of an operating refrigerator based on the type of refrigerant used in the system.	X		X	X	**3**	**1**	**1**	**1**	**1**	**1**

Course Level SLOs	Course to Program SLOs Alignment				ILOs to Courses Alignment					
	P1	P2	P3	P4	I	II	III	IV	V	VI
ACR 23 Commercial Refrigeration Applications: After reading the textbook and participating in class discussions, students will apply their knowledge of appropriate lab practices, concepts and theories to an operating low temperature walk-in freezer. Students will check proper freezer temperatures, amperage draw on the operating compressor, subcooling and superheat temperatures.	X	X		X	**3**	**1**	**1**	**1**	**1**	**1**
ACR 25 Energy Efficient Residential, Commercial and Industrial Air Conditioning: After reading the textbook and participating in class discussions, students will apply their knowledge of appropriate lab practices, concepts and theories to an operating 2 ton 13 SEER Air Conditioning Package Unit. Students will take air temperature readings, compressor amperage draw, subcooling and superheat readings and apply the data to the appropriate lab exercise.	X	X		X	**3**	**1**	**1**	**1**	**1**	**1**
ACR 27 Heating Technologies: After reading the textbook and participating in class discussions, students will apply their knowledge of appropriate lab practices, concepts and theories to an operating High Efficiency Gas Furnace. Students will take gas pressure readings with a manometer and record the readings with the appropriate lab assignment and compare the reading with manufacturer's specifications.	X			X	**3**	**2**	**1**	**1**	**1**	**1**
ACR 30 Electric Controls: After reading the textbook and participating in class discussions, students will apply their knowledge of appropriate lab practices, concepts and theories to an operating Air Conditioning Control Board. Students will check a A/C wire schematic for proper wiring of the board and energize the board taking electrical readings at each control device	X			X	**3**	**2**	**1**	**1**	**1**	**1**
ACR 32 Fundamentals of Pneumatic Controls: After reading the textbook and participating in class discussions, students will apply their knowledge of appropriate lab practices, concepts and theories to a pneumatic thermostat. Student will calibrate the thermostat to the manufacturer's specification and check the proper operation of thermostat and the pneumatic actuator.	X			X	**3**	**1**	**1**	**1**	**1**	**1**
ACR 34 HVAC Customer Service: After reading the textbook and participating in class discussions, students will apply their knowledge of appropriate communication skills to calm down an irate customer who is complaining that it took too long for the technician to arrive and it is very hot due to an air conditioning system not cooling	X			X	**3**	**1**	**3**	**1**	**1**	**1**