Assessment: Course Four Column

Spring/Summer 2017

El Camino: Course SLOs (IND) - Air Conditioning and Refrigeration

ECC: ACR 21:Air Conditioning Fundamentals

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
SLO #1 Window Air Conditioning Manifold Gauges - 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 air conditioning system and check for correct charge of an operating system based on manufactures specification. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2014-15 (Fall 2014), 2016-17 (Spring 2017) **Input Date:** 11/12/2013 **Inactive Date:** **Comments::**	**Laboratory Project/Report -** Attaching refrigeration manifold gauge set and analyze system performance based on manifold gauge readings. **Standard and Target for Success:** Correctly determine system performance using manufactures performance guidelines **Additional Information:** Students learn the relationship between pressures, temperatures and ambient conditions.	**Semester and Year Assessment Conducted:** 2016-17 (Spring 2017) **Standard Met? :** Standard Met Students were assigned work on a rooftop packaged unit. Students were assigned the task of evaluating system charge through performance analysis. Each student recorded unit data and determined based on that data system condition and service requirements. Each student turned in a log that was graded based on student final evaluations and accuracy of log. 44% of the students received a grade of 85% or greater and 28% received a grade of 70% to 84% and 16% received 70% or below. (08/24/2017) **% of Success for this SLO:** **Faculty Assessment Leader:** Phyllis Barthel **Faculty Contributing to Assessment:** Barthel	**Action:** Continue to monitor test scores for student success and outcomes. (08/24/2018) **Action Category:** Teaching Strategies
SLO #2 Component Brazing - After completion of this course, students will acquire the skills necessary to successfully braze refrigeration components to meet basic industry standards. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2014-15 (Fall 2014), 2016-17 (Spring 2017)	**Laboratory Project/Report -** Students are assigned a pipe project which requires students to employ the use of several tools to create a instructor specified pipe design. Students are then required to braze the project together and leak test the pipe project. **Standard and Target for Success:**	**Semester and Year Assessment Conducted:** 2016-17 (Spring 2017) **Standard Met? :** Standard Met Students were assigned the task of constructing a project which required the use of a tubing bender, flare, and swedge tool to construct a leak free piping project. Each of the students pressurized and leak tested there projects 90% of the students passed the leak-test the first time and the remaining 9% additional attempts to complete the project.	**Action:** Continue to monitor test scores for student success and outcomes. (08/24/2018) **Action Category:** Teaching Strategies

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
Input Date: 11/12/2013 **Inactive Date:** **Comments::**	Students will leak test the pipe project to ~ 150 psig and test for leaks. Successful project will hold applied pressure for at least 15 minuets. **Additional Information:** This assessment provides students with hands on brazing skill development.	1% did not complete the project. (08/24/2017) **% of Success for this SLO:** **Faculty Assessment Leader:** Phyllis Barthel **Faculty Contributing to Assessment:** Barthel	

ECC: ACR 23:Commercial Refrigeration Applications

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
SLO #3 Troubleshooting with Diagrams & Schematics - Students completing this course will apply their knowledge to service and troubleshooting using electrical diagrams and schematics specific to commercial refrigeration. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2016-17 (Spring 2017) **Input Date:** 11/12/2013 **Inactive Date:** **Comments::**	**Laboratory Project/Report -** Students are assigned a system and required to create an electrical schematic that accurately depicts system wiring and operation. **Standard and Target for Success:** Accurate depiction of system wiring and operation. **Additional Information:** Students struggle with diagram comprehension this assignment helps students overcome that struggle.	**Semester and Year Assessment Conducted:** 2016-17 (Spring 2017) **Standard Met? :** Standard Met 75% of off students passed with a grade of 85% or better 25% passed with a grade of 80% or better. (08/27/2017) **% of Success for this SLO:** **Faculty Assessment Leader:** Phyllis Barthel **Faculty Contributing to Assessment:** Barthel	**Action:** Emphasis on the importance of understanding electrical wire diagrams and system sequence of operations to be introduce at the beginning of class, with focus on wire diagrams throughout the course. Wire diagram graph paper to be provided for final diagram assignment. (08/27/2018) **Action Category:** Teaching Strategies

ECC: ACR 25:Energy Efficient Residential, Commercial and Industrial Air Conditioning

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
SLO #3 Charging an A/C Unit - After reading the textbook and participating in classroom discussions, students will apply their knowledge of how to properly charge an A/C unit. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2016-17 (Spring 2017) **Input Date:** 11/12/2013 **Inactive Date:** **Comments::**	**Laboratory Project/Report -** Students are assigned a cooling system and required to properly charge a system to manufactures specifications. **Standard and Target for Success:** System performance aligns with manufactures specifications, **Additional Information:** This assessment validates student charging skills.	**Semester and Year Assessment Conducted:** 2016-17 (Spring 2017) **Standard Met? :** Standard Met 75% of off students passed with a grade of 85% or better 25% passed with a grade of 80% or better (08/27/2017) **% of Success for this SLO:** **Faculty Assessment Leader:** Phyllis Barthel **Faculty Contributing to Assessment:** Barthel	**Action:** Student to complete refrigeration service log in order to accurately determine system performance and appropriate refrigerant charge of an A/C unit. (08/27/2018) **Action Category:** Teaching Strategies

ECC: ACR 27:Heating Technologies

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
SLO #2 Strip-Heating System Ladder Diagram - After reading the textbook and participating in classroom discussions, students will apply their knowledge of electric strip-heating system. Students will draw a ladder diagram of an electric strip-heating system. They will collect and analyze data, and present the sequence of operations of the system. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2016-17 (Spring 2017) **Input Date:** 11/12/2013 **Inactive Date:** **Comments::**	**Laboratory Project/Report -** Students are assigned an electric strip-heating system and required to log system performance and sequence of operation. **Standard and Target for Success:** Using acquired data students will successfully calculate system performance and document system sequence of operation. **Additional Information:** Success in this assessment demonstrates student success in skill acquisition	**Semester and Year Assessment Conducted:** 2016-17 (Spring 2017) **Standard Met? :** Standard Met Of the student who were assigned an electric strip-heating system and required to log system performance and sequence of operation the assignment, 90% scored an 85% or better on the first attempt. The remaining 15% completed the assignment with and 80% or better on the second attempt. (08/29/2017) **% of Success for this SLO:** **Faculty Assessment Leader:** Stephan Shute **Faculty Contributing to Assessment:** Stephan Shute	**Action:** Emphasis on the importance of understanding electrical wire diagrams and system sequence of operations to be introduced at the beginning of class. (08/29/2018) **Action Category:** Teaching Strategies **Follow-Up:** Electrical theory was introduced at the beginning of class and students were given electrical diagrams to study and wire in the lab. (03/07/2018)

ECC: ACR 31:HVAC Electronics

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
SLO #2 Basic Entry Level Industry Standards in Automation Systems - After completion of this course students will have the basic knowledge and skills necessary to meet basic entry level industry standards in automation systems. Students will apply the skills learned in identifying and defining communication protocols, automation system components, and motor controls. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2016-17 (Summer 2017) **Input Date:** 05/19/2015 **Inactive Date:** **Comments::**	**Exam/Test/Quiz -** Students are tested on their knowledge in identifying and defining communication protocols, automation system components, and motor controls. **Standard and Target for Success:** Student receiving a passing grade for the tests. **Additional Information:**	**Semester and Year Assessment Conducted:** 2016-17 (Summer 2017) **Standard Met? :** Standard Met The students, 29 total, met or exceeded the requirements. 18 achieved 90% or greater, 10 achieved 80% or greater and 1 achieved 70% or greater. (09/20/2017) **% of Success for this SLO:** **Faculty Assessment Leader:** Phil Jeffrey **Faculty Contributing to Assessment:**	**Action:** Incorporate current technologies documentation and or literature. (09/20/2018) **Action Category:** Curriculum Changes **Follow-Up:** Reassess student testing results. (09/20/2018) **Action:** Refining of the course in order to provide additional challenge facilitating student growth. (09/20/2018) **Action Category:** Teaching Strategies **Follow-Up:** Reassess student testing results based on instructional changes. (09/20/2018)

ECC: ACR 34:HVAC Customer Service

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
SLO #3 Selling a PM Plan - After participating in classroom discussions, students will apply their knowledge of appropriate communicating to sell a PM plan to a customer with all the positives of a PM. Students must know the difference in plans for the different seasons. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2016-17 (Summer 2017) **Input Date:** 11/12/2013 **Inactive Date:** **Comments::**	**Essay/Written Assignment -** Students are assigned to develop a proposal for a preventative maintenance plane for a customer. **Standard and Target for Success:** Passing grade on assignment **Additional Information:** Preventative maintenance contracts is a key driver of organizational success.	**Semester and Year Assessment Conducted:** 2016-17 (Summer 2017) **Standard Met? :** Standard Met 85% of the students received an 89% or better in this project. The remaining 15% of the students received 75% or better grade on the project. (09/06/2017) **% of Success for this SLO:** **Faculty Assessment Leader:** Phyllis Barthel **Faculty Contributing to Assessment:** Phyllis Barthel	**Action:** More emphasis on the importance of customer interaction and service within the industry might help students to recognize the importance of their assignments. (09/13/2018) **Action Category:** Teaching Strategies

ECC: ACR 62:Energy Control and Optimization Systems

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
SLO #1 Develop an energy and control optimization strategy for a single building control system - After reading the textbook, participating in class discussions and laboratory exercises students will apply their knowledge toward developing an energy and control optimization strategy for a single building control system. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2016-17 (Spring 2017) **Input Date:** 08/24/2015 **Inactive Date:** **Comments::**	**Project -** Students will apply their knowledge toward developing an energy and control optimization strategy for a single building control system. **Standard and Target for Success:** Provide and demonstrate an energy and control optimization strategy for a single building control system. **Additional Information:** This is a vital assignment in relation to current and developing technologies as applied to the HVACR industry.	**Semester and Year Assessment Conducted:** 2016-17 (Spring 2017) **Standard Met? :** Standard Met Of the students who developed an energy and control optimization strategy for a single building control system, 62% achieved a score of at least 90% and 38% achieved a score of at least 80%. (08/28/2017) **% of Success for this SLO:** **Faculty Assessment Leader:** Phil Jeffrey **Faculty Contributing to Assessment:** P. Jeffrey	**Action:** Re-acess test scores for student success and outcomes while increasing hands-on activities. (08/01/2018) **Action Category:** Teaching Strategies **Follow-Up:** Re-assess test scores for student success and outcomes while increasing hands-on activities (08/01/2018)