HVAC A111: ICE MACHINE SERVICE & REPAIR

Item	Value
Curriculum Committee Approval Date	12/02/2020
Top Code	094600 - Environmental Control Technology
Units	3 Total Units
Hours	81 Total Hours (Lecture Hours 45; Lab Hours 36)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S)

Course Description

The operation, diagnostics, repair, and service of current ice machines. Course to include hands-on training with tools of the trade, i.e., gauges, electrical meters and all hand tools used for service and repair. PREREQUISITE: HVAC A100 and HVAC A101. ADVISORY: HVAC A102. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Identify, discuss and develop skills related to current ice machine technology including troubleshooting a malfunctioning machine, diagnose the malfunction, make the necessary recommendations for the repair of the machine using the Technicians Handbook or Manual included with each machine.
2. Apply those skills to a student project with one or more of the machines present in the lab that would include a malfunctioning machine which would require the use of gauges, meters, and tools of the trade to repair and place the machine back on the line making ice.

Course Objectives

- 1. Determine which type of ice machine will be best for the operation, i.e., cubers or flakers.
- 2. Determine when a machine needs maintenance, and, or, cleaning.
- 3. To learn the specifics of a particular machine and get comprehensive training from factory representatives.
- 4. Determine the best method of water treatment for ice machines since 70% of all service calls are related to water problems.

Lecture Content

Description of ice machine types and applications, i.e., ice cuber and flaked ice. Describe the differences and mechanical operation of a cubed ice machine and a flaked ice machine and the quality of ice produced and application of the ice. 2. Explain basic ice machine operation, specifically, the sequence of operation of a cubed ice machine beginning with the water fill, freeze cycle, harvest cycle (hot gas defrost), and automatic shut off. 3. Understand installation-related service beginning with machine location, water supply, electrical supply, drain location and ventilation. 4. Troubleshoot ice machines by symptoms using the technicians handbook for the particular machine.

Lab Content

1. Installation of gauges and temperature instruments. 2. Use of electrical meters to determine the electrical characteristics of the machines as it pertains to maintenance and troubleshooting. 3. Reading of the diagnostic service board to determine the troubleshooting faults that are displayed. 4. Care and maintenance of the mechanical and water sections of the ice machines. 5. How to determine if the machine is producing the correct amount of ice as per the manufacturers specifications.6. Undertake ice machine maintenance and cleaning and demonstrate the use of cleaners and safety measures when using cleaners and proper handling and storage. 7. Troubleshoot ice machines.8. How to properly make out service tickets and warranty information for factory reimbursement.

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- Lab (04)
- DE Live Online Lab (04S)

Instructional Techniques

Lecture, demonstrations, discussions, students working cooperatively, instructor feedback and hands on instruction.

Reading Assignments

As assigned from text and handouts.

Writing Assignments

In class writing assignments as appropriate to topic.

Out-of-class Assignments

Homework as assigned from handouts.

Demonstration of Critical Thinking

Identifying and troubleshooting maintenance and repair problems.

Required Writing, Problem Solving, Skills Demonstration

In class writing assignments as appropriate to topic; hands on demonstration with meters and gauges using tools of the trade.

Eligible Disciplines

Air conditioning, refrigeration, heating (solar energy technician): Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience.

Other Resources

1. Selected handout materials will be provided and distributed by the instructor.