Salt Lake Technical College
SALT LAKE COMMUNITY COLLEGE

Air Conditioning, Heating, and Refrigeration Program

TEAC 1255 Refrigeration Applications

Course Description:

Introduces the piping skills needed to install and repair refrigeration systems. This course also will examine more in depth the use and operation of metering devices, special purpose valves, and compressors used in refrigeration systems. The lubrication and accessories needed for proper compressor operation will also be examined. Students will demonstrate the process of recovery, evacuation, recharging, operation and testing on refrigeration.

Required Materials:

- Heating and Cooling Essentials, 4th Edition, Crawshaw, ISBN: 978-1-63126-059-9
- Heating and Cooling Essentials Lab Workbook, 4th Edition, Crawshaw, ISBN: 978-1- 63126-063-6

Scientific Calculator
Multi-Meter

Course Competencies/Objectives:

As a student you will be required to complete the following Competencies:

- Demonstrate the refrigeration piping skills needed to install and repair HVAC equipment.
- Demonstrate how to adjust and service the different types of refrigeration system metering devices.
- Demonstrate the application of some of the special purpose refrigerant control valves used in refrigeration systems.
- Describe the application of different compressors used in operation of refrigeration equipment, and compressor lubrication.

To accomplish these Competencies, you will be working to fulfill these Learning Objectives:

- Identify types and sizes of copper tubing.
- Demonstrate proper use of tubing cutter.
- Demonstrate proper use of tubing bender.
- Demonstrate the steps needed to make swaged connections.
- Demonstrate the steps needed to make flared connections.
- Demonstrate the steps needed to make steel pipe connections.
- Demonstrate the steps needed to make plastic pipe connections.

• Describe the proper soldering alloys and fluxes used in soldering copper tubing connections.
• Describe and demonstrate proper soldering techniques.
• Describe the proper brazing alloys and fluxes used in brazing copper tubing connections.
• Describe and demonstrate proper brazing techniques.
• Describe and demonstrate how to adjust automatic expansion valves.
• Describe and demonstrate the operation of a capillary tube system.
• Describe and demonstrate the operation of a fixed orifice system.
• Describe and demonstrate how to adjust thermostatic expansion valves.
• Identify hand valves and describe their installation and use.
• Identify check valves and describe their installation and use.
• Identify solenoid valves and describe their installation and use.
• Describe and demonstrate how to adjust EPR valves.
• Describe and demonstrate how to adjust CPR valves.
• Describe and demonstrate how to adjust hot gas bypass valves.
• Describe and demonstrate how to adjust head pressure control valves.
• Explain and demonstrate how to troubleshoot and correct problems with refrigerant flow control valves.
• Identify the five types of compressors and their operation and application used in the refrigeration field.
• Explain how to replace, size, align and adjust V-belts used in the refrigeration field.
• Identify and describe the refrigeration lubricants used in refrigeration compressors and their applications and properties.
• Explain the different lubrication systems used in refrigeration systems.
• Demonstrate how to change oil in a refrigeration compressor.
• Explain refrigeration compressor load capacity control.
• Perform refrigeration system recover, evacuation and recharge.
• Perform refrigeration system analyze for proper operation.

Attendance & Attendance Schedules:

This course is structured to allow students to work at their own pace. However, this course must be completed by the end of the semester the course was registered in. While substantial preparation work can be performed outside of the classroom and lab, most of the lab assignments are hands-on and require that students be in attendance for these assignments as well as for most quizzes and all exams. Students are expected to manage their schedules and complete all current (registered) coursework by the end of the current semester. Any course not completed by the end of the semester will receive a failing grade and the student will need to repeat the course before proceeding to other courses in the program.

Classroom and lab hours are Monday through Thursday 8:00AM—2:00PM and 6:00PM—10:00PM. However, if instructors have not had, or do not have, any students in the lab at 8:00PM, at their discretion, they may close the lab for the evening. Therefore, if you will be later than 7:30PM, please communicate with the instructor for

that evening. The classroom and lab are located in room TAB-109 of the Technical Arts Building (TAB) on the Taylorsville campus, 1902 Community Blvd.

Parking permits are available via the SLCC website. There are some parking spaces with meters.

Grading and Evaluation:

Each assignment, quiz, and exam has an assigned point value. The course grade is determined by summing all of the assignments, quizzes, and exams and dividing the sum by the total possible points. A letter grade is determined using the percentage of points earned and the following grading standard:

Range	Grade		Range	Grade
100% to 94%	A		<84% to 80%	B-
<94% to 90%	A-		<80% to 77%	C+
<90% to 87%	B+		<77% to 74%	C
<87% to 84%	B+		<74% to 0%	E