Salt Lake Technical College
SALT LAKE COMMUNITY COLLEGE

Air Conditioning, Heating, and Refrigeration Program

TEAC 1410 Commercial HVAC Systems

Course Description:

Introduces the student to the fundamentals of commercial heating and air conditioning systems. Both light commercial and commercial systems will be discussed. Rooftop units, boilers, constant air and variable air systems will be explored. Emphasis is on energy efficiency in operation and service of these systems. Direct Digital Controls, alternative HVAC systems and Indoor Air Quality will also be covered. Troubleshooting skills of commercial HVAC equipment will be discussed.

Required Materials:

- The Complete HVAC Lab Manual ISBN: 978-1-337-39938-8
- Scientific Calculator
- Multi-Meter

Course Competencies/Objectives:

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

- Recognize and identify different types of commercial air conditioning systems, including rooftop units, chillers, air handlers and split systems. Demonstrate how to setup these different systems for efficient operation.
- Recognize and identify different types of commercial heating systems, including rooftop units, boilers, air handlers and split systems. Demonstrate how to setup these different systems for efficient operation.
- Demonstrate knowledge and ability to work with alternative HVAC systems like, water source heat pump systems and variable refrigerant flow systems.
- Identify and describe the importance of a Direct Digital Control system. Demonstrate knowledge and ability to install, program and test a DDC system.
- Identify and describe the importance that Indoor Air Quality plays in commercial buildings.
- Demonstrate knowledge and ability to troubleshoot Commercial HVAC equipment.

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

- Demonstrate and apply skills needed to service the air conditioning on rooftop HVAC units, including adjusting economizer for proper operation.

• Demonstrate and apply skills needed to service the air conditioning on split-system HVAC units, including adjusting for proper operation.
• Identify and explain the operation of chilled water systems used for air conditioning.
• Identify and explain the operation of different air handling systems used for air conditioning and heating, including constant volume and variable volume systems.
• Demonstrate and apply skills need to service the heating on rooftop HVAC units, including adjusting economizer for proper operation.
• Demonstrate and apply skills need to service the heating on split-system HVAC units, including adjusting for proper operation.
• Identify and explain the operation of hot water and steam boiler systems used for heating.
• Identify and explain the operation of closed loop water source heat pump systems used for heating and air conditioning.
• Identify and explain the operation of variable refrigerant flow (VRF) systems used for heating and air conditioning.
• Demonstrate and apply skills needed to install DDC systems on commercial heating and air conditioning building systems.
• Demonstrate and apply skills needed to program DDC systems on commercial heating and air conditioning building systems.
• Demonstrate and apply skills needed to test and commission DDC systems on commercial heating and air conditioning building systems.
• Explain and summarize the importance of Indoor Air Quality testing and implementation.
• Demonstrate ability to troubleshoot different types of commercial HVAC equipment.

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