Salt Lake Technical College
SALT LAKE COMMUNITY COLLEGE

Air Conditioning, Heating, and Refrigeration Program

TEAC 1253 Air Conditioning and Refrigeration Controls

Course Description:

Applies the fundamentals of electricity in specific HVAC applications. Residential HVAC control circuits, and electrical motors and their controls are emphasized. Motor and HVAC equipment control circuits troubleshooting and problem solving will also be covered.

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
- Electricity for Refrigeration, Heating and Air Conditioning, 9th Edition, Smith, ISBN: 978- 1-2851-7998-8
- Electricity for Refrigeration, Heating and Air Conditioning Lab Manual, 9th Edition, Smith, ISBN: 978-1-2851-8001-4

Scientific Calculator
Multi-Meter

Course Competencies/Objectives:

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

- Explain the fundamental principles of electric motors.
- Interpret and draw diagrams for residential motor wiring.
- Analyze, construct, and apply wiring diagrams to properly control different types of residential HVAC equipment.
- Diagnose and correct electrical problems in residential HVAC equipment.

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

- Explain how motors work.
- Identify motor types.
- Define and determine motor speed, torque, and performance.
- Differentiate between types of single-phase motors.
- Identify the characteristics of an electronically commutated motor (ECM).
- Identify motor starting components.

• Identify and wire the starting components for open motors.
• Identify and wire the starting components for compressor motors.
• Identify motor control circuit components.
• Interpret wiring diagrams to wire residential motors.
• Draw wiring diagrams to wire residential motor circuits.
• Identify residential HVAC control circuit components and related wiring diagram symbols.
• Interpret wiring diagrams to wire residential HVAC equipment.
• Draw wiring diagrams per sequence of operation and wire control circuits.
• Identify the steps for troubleshooting.
• Diagnose electrical control problems in residential equipment.
• Repair electrical control problems in residential 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