Salt Lake Technical College
SALT LAKE COMMUNITY COLLEGE

Air Conditioning, Heating, and Refrigeration Program

TEAC 1205 Safety Fundamentals and Basic Electricity for HVAC

Course Description:

As a student, you will be introduced to safety rules and practices that apply to the HVACR Industry. Occupational Safety training as applied to the HVACR industry is a critical part of your training. Additionally, you will study Electrical theory and applications in HVACR service. This course teaches resistance, current, voltage and power in AC and DC circuits; measurements; computations of series and parallel circuits; circuit analysis and troubleshooting with basic test equipment.

Required Materials:

You are required to purchase a personal pair of safety glasses. General safety rated plastic glasses or prescription safety glasses are acceptable. The textbook we will use is Electricity for Refrigeration, Heating and Air Conditioning 9th Edition ISBN 1-285-17998-6 and the lab book is Electricity for Refrigeration, Heating and Air Conditioning 9th Edition ISBN 978-1-2851-8001-4. You will also need a scientific calculator and a clamp-on multi-meter.

Course Competencies/Objectives:

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

- Explain the safety rules and practices as they apply to the HVACR industry.
- Explain the electricity safety rules and practices as they apply to the HVAC industry.
- Obtain correct electric circuit measurements using electrical test equipment.
- Determine the electrical characteristics of each component in series and parallel circuits.
- Interpret and draw wiring diagrams and wire electrical circuits.
- Wire HVAC equipment control circuits from wiring diagrams.

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

- Describe safety rules and regulations applicable to the HVAC industry as contained in the federal OSHA safety standards and SLCC safety policy.
- Describe the proper application of PPE (Personal Protective Equipment) safety as required per OSHA standards and of safety practices in the use of shop tools and equipment.
- Describe safe practices regarding fall protection and ladder safety as per OSHA standards.

• Describe safe practices in using pressurized cylinders and refrigerants safely as per OSHA standards through completion of related lab exercises.
• Describe safe practices in torch safety and fire protection as per OSHA standards.
• Describe safe practices in working with combustion (gas fired) appliances as per OSHA.
• Describe safe practices in dealing with hazardous materials safety as per OSHA standards.
• Describe safe practices of drug & alcohol abuse safety as per OSHA standards.
• Demonstrate knowledge of safe practices of first aid/heat stress safety as per OSHA standards.
• Describe the electricity safety rules and practices as they apply to the HVAC industry.
• Describe multimeter and megger in evaluating electrical circuits.
• Evaluate electrical circuits using an electric multimeter and a megger.
• Describe electron flow and the components that control them.
• Differentiate between series and parallel circuits.
• Draw and wire basic series and parallel circuits.
• Measure voltage, amperage, resistance, and wattage using a multimeter.
• Calculate the voltage, amperage, resistance, and wattage using Ohm's Law.
• Identify HVAC electrical components and their respective symbols used in wiring diagrams.
• Interpret schematic diagrams.
• Draw wiring diagrams using a sequence of operation.
• Wire electrical circuits.
• Identify the basic components used in electrical controlling HVAC equipment.
• Wire basic heating and cooling control circuits.

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