

# KACC-0100 Safety Fundamentals

## Author

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## Competency and Learning Objectives

Explain the safety rules and practices as they apply to the HVACR industry.

1. Describe safety rules and regulations applicable to the HVAC industry as contained in the federal OSHA safety standards and SLCC safety policy. [module 1]
2. 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. [module 2]
3. Describe safe practices regarding fall protection and ladder safety as per OSHA standards. [module 3]
4. Describe safe practices in using pressurized cylinders and refrigerants safely as per OSHA standards through completion of related lab exercises. [module 4]
5. Describe safe practices in torch safety and fire protection as per OSHA standards [module 5]
6. Describe safe practices in working with combustion (gas fired) appliances as per OSHA [module 6]
7. Describe safe practices in dealing with hazardous materials safety as per OSHA standards [module 7]
8. Describe safe practices of drug & alcohol abuse safety as per OSHA standards. [module 8]
9. Describe safe practices of first aid/heat stress safety as per OSHA standards [module 9]

## Orientation to Course

I want to welcome you to the beginning of a great adventure as you begin your education in the HVAC field.

I want to let you know that you have made a great career choice. But if you still have some doubts, please watch the video. It will let you know that you are in the right place and going into the right career.

[Skilled Trade-HVAC \(Heating and Air Conditioning\) in 2018 and beyond](#)

So, if you are ready, let's get started on your HVAC education by clicking on the KACC 0100 Safety Fundamentals Introduction page.

# KACC 0100 Safety Fundamentals Introduction

## Course Description

In this course you will be introduced to safety rules and practices that apply to the HVAC Industry. Occupational safety training as applied to the HVAC industry is a critical part of your training.

## Competency

Upon completion of the course, you will be rated as MC (Mastered Competency) or NM (Not-Mastered Competency) based on your demonstrated ability of the course's established competencies. You will demonstrate your competency by taking a final exam. In this course you have one main competency:

- Explain the safety rules and practices as they apply to the HVAC industry.

## Orientation to Course Process

First, you will meet with your instructor for a face to face meeting for your New Student Orientation.

Second, you will receive your Safety Handbook. You can also download a copy of the \*SLCC Safety Handbook if you would like to. *\*Note: The handbook is written by the college for students who are in the HVAC program.*

Third, you will want to read over the syllabus. The course syllabus will provide you with important information about this course and other important college information.

After your face to face meeting you will then continue this Safety Fundamentals course by working on the training modules. This Safety Course is designed to have all assignments completed in the classroom not online. Each module covers a different topic on safety. Each module contains either a PowerPoint presentation and/or a Video. After looking at the PowerPoint and watching the DVD you will be given a 20-question quiz to make sure that you do recognize and recall the safety rules and practices that were presented.

At the end of this course you will take an exam that covers all of the safety areas you have studied over after passing the exam you will need to print out and sign the Safety Statement of Acknowledgment and hand it in to your instructor.

## Assessment

At the end of the course you will be given a written exam that you must pass with at least a score of 80% before you will be rated with an MC as your grade for the course.

## Course Navigation

In the left navigation bar, there is a Course Tools menu. It provides information about what tools you need for the course, and how to navigate in Canvas. You can also click on the Modules link in the left navigation bar to navigate through the course. The first module is the foundational information for the course.

Again, welcome to Salt Lake Community College and the HVAC program of the School of Applied Technology and Technology Specialties. Let's get started by clicking on the first module.

## Modules

### Module 1: Basic Safety

#### Basic Safety Overview

In this module you will be looking at a basic overview of general safety practices.

When you have completed this module, you will know how to:

Describe safety rules and regulations applicable to the HVAC industry as contained in the federal OSHA safety standards and SLCC safety policy.

Watch this short video about why safety matters.

[Safety Matters – Apex Tool Group Safety Video](#)

Below are optional links to some additional safety references, both on YouTube and online information sites.

Video on [why OSHA was created](#).

View the [OSHA website](#) for reference.

#### Basic Safety Assignments

Work on the following assignments.

Safety Handbook

Review the Safety Handbook.

Then, take a quiz on the Safety Handbook.

#### Check Your Knowledge: Safety Handbook Quiz

This quiz will help you and your instructor determine your progress in the course. If you scored 79% or less, talk with your instructor. If you scored 80% or better, move on to the next assignment.

#### Basic Safety Fundamentals Part 2

View Safety Basics PowerPoint Presentation.

Watch the \*Safety Orientation DVD. Use one of the classroom computers and your earphones to watch the DVD. *(Note: The instructor uses a series of safety videos that he has received permission to stream on the learning management system.)*

Check your knowledge by taking a 20-question quiz on the DVD video.

## Check Your Knowledge: Safety Orientation Quiz

This quiz will help you and your instructor determine your progress in the course. You need to achieve at least 80%. If you scored 79% or less, talk with your instructor. If you scored 80% or better, move on to the next assignment.

## Module 2: Personal Protective Equipment- Tools

### Personal Protective Equipment & Tools Overview

This module will cover Personal Protective Equipment (PPE) and Tool Safety. Understanding PPE is a must. There would be a lot less injuries if more people followed proper PPE guidelines and practices. Hand and power tool safety is also a must. Using tools improperly can result in unnecessary injuries as well.

When you have completed this module, you will know how to:

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.

Explore the online information sites and/or watch the optional YouTube videos to further your knowledge.

[Hand & Power Tool Safety](#)

OSHA "[Hand and Power Tools](#)"

### Personal Protective Equipment and Tools Assignments

Work on the following assignments. Ask the instructor for the DVD.

#### Tool Safety

View the Safety Tools presentation.

Watch the "Hand and Power Tool Safety" DVD. Use one of the classroom computers and your earphones.

Check your knowledge by taking a 20-question quiz on the DVD video.

### Check Your Knowledge: Hand and Power Tool Safety Quiz

This quiz will help you and your instructor determine your progress in the course. You need to achieve at least 80%. If you scored 79% or less, talk with your instructor. If you scored 80% or better, move on to the next assignment.

### Personal Protective Equipment and Tools Part 2

Watch the "Personal Protective Equipment (PPE) Safety" DVD. Ask the instructor for the DVD. Use one of the classroom computers and your earphones to watch the DVD.

Check your knowledge by taking a 20-question quiz on the DVD video.

## Check Your Knowledge: Personal Protective Equipment Safety Quiz

This quiz will help you and your instructor determine your progress in the course. You need to achieve at least 80%. If you scored 79% or less, talk with your instructor. If you scored 80% or better, move on to the next assignment.

## Module 3: Fall Protection and Ladder Safety

### Fall Protection and Ladder Safety Overview

This module will cover Ladders and Fall Protection. In this field you will have the opportunity to work off of ladders and from heights from time to time and you need to always pay attention to the safety practices relating to working with ladders and heights.

When you have completed this module, you will know how to:

Describe safe practices regarding fall protection and ladder safety as per OSHA standards.

Explore the online information sites and/or watch the optional YouTube videos to further your knowledge.

[Fall Protection](#)

[Fall Protection Can Save Your Life](#)

[Am I Safe?](#)

[Don't Fall For It](#)

[You're a Pro Fall Protection](#)

[OSHA Funny Video](#)

[Extension Ladder](#)

[Single Extension Ladders](#)

[Step Ladders](#)

[What NOT to do with Ladders](#)

### Fall Protection and Ladder Safety Assignments

Work on the following assignments.

#### Fall Protection

View the Ladders and Fall Protection presentation.

Watch the "Fall Protection" DVD. Ask the instructor for the DVD. Use one of the classroom computers and your earphones to watch the DVD.

Check your knowledge by taking a 20-question quiz on the DVD video.

### Check Your Knowledge: Fall Protection Safety Quiz

This quiz will help you and your instructor determine your progress in the course. You need to achieve at least 80%. If you scored 79% or less, talk with your instructor. If you scored 80% or better, move on to the next assignment.

## Fall Protection and Ladder Safety Assignments Part 2

Watch the "Ladder Safety" DVD. Ask the instructor for the DVD. Use one of the classroom computers and your earphones to watch the DVD.

Check your knowledge by taking a 20-question quiz on the DVD video.

### Check Your Knowledge: Ladder Safety Quiz

This quiz will help you and your instructor determine your progress in the course. You need to achieve at least 80%. If you scored 79% or less, talk with your instructor. If you scored 80% or better, move on to the next assignment.

## Module 4: Pressurized Cylinders and Refrigerant Safety

### Pressurized Cylinders and Refrigerant Safety Overview

This module covers pressurized cylinders and refrigerant safety. When you have pressurized gases contained in closed containers they have to be handled carefully. Overheating or rupture can result in injury or death. You must know what you are doing when working with these pressure vessels.

When you have completed this module, you will know how to:

Describe safe practices in using pressurized cylinders and refrigerants safely as per OSHA standards.

Explore the online information sites and/or watch the optional YouTube videos to further your knowledge.

[Compressed Gas Training Video](#)

[Basics of Cylinder Handling](#)

[Basics of Compressed Gas Hazards](#)

[Installing Regulators](#)

[Setting up a Recovery Cylinder](#)

[LP Gas - Know the Facts](#)

[Oxygen & Acetylene Regulator Setup](#)

[Proper Refrigeration Gauge Connections](#)

[Refrigerant Standards and Safety](#)

### Pressurized Cylinders and Refrigerant Safety Assignments

Work on the following assignments. You will need to go to class to watch the DVD.

#### Pressurized Cylinders

The safe handling of liquids and gases under pressure is a very important skill to learn in this trade. You will work with inert and flammable gases stored at extremely high pressures, to which you will control their use to a manageable level. You will also work with pressurized

liquids that present their own kinds of safety risks. The skills learned in safely handling these materials will prove very beneficial in your career.

View the Pressurized Gases and Cylinders presentation.

Check your knowledge by taking a 10-question quiz on the PowerPoint presentation. [link to quiz already in Canvas]

### Check Your Knowledge: Pressurized Gases and Cylinders Quiz

This quiz will help you and your instructor determine your progress in the course. You need to achieve at least 80%. If you scored 79% or less, talk with your instructor. If you scored 80% or better, move on to the next assignment.

### Refrigerant Safety

One safety aspect that is particularly unique to the HVAC skill set is our ability to handle refrigerants under pressures and use the pressure/temperature relationships to make things heat and cool efficiently. There are particular safety risks associated with these skills, that are important to understand very well.

View the Working with Refrigerants presentation.

Check your knowledge by taking a 10-question quiz on the PowerPoint presentation.

### Check Your Knowledge: Working with Refrigerants Quiz

This quiz will help you and your instructor determine your progress in the course. You need to achieve at least 80%. If you scored 79% or less, talk with your instructor. If you scored 80% or better, move on to the next assignment.

## Module 5: Fire Prevention and Torch Safety

### Fire Prevention and Torch Safety Overview

This module will deal with Fire Prevention and Torch Safety. One of the tasks you will have to perform in the HVAC field is brazing and soldering of refrigerant lines. So, you will be working with fire and you must always use fire safety practices to prevent damage from out of control fires.

When you have completed this module, you will know how to:

Describe safe practices in torch safety and fire protection as per OSHA standards.

Explore the online information sites and/or watch the optional YouTube videos to further your knowledge.

[Definitions: Soldering, Brazing and Welding](#)

[Opening and Closing Oxy-Acet Tanks](#)

[Torch Leak Check](#)

[Lighting and Shutting Down the Torch](#)

[Brazing Copper Tubes](#)

## [Why Flow Nitrogen when Brazing](#)

### Fire Prevention and Torch Safety Assignments

Work on the following assignments.

#### Soldering and Brazing

The skills learned in soldering and brazing as it applies to the HVAC service technician are both essential to your ability to efficiently repair system leaks. You will find these skills apply to many other projects and work you will be called to do. The ability to handle these pressurized and flammable products as a tool is one of the primary skills of a good technician. This quiz will help you recall some of the more important safety practices you will need to be a safe and efficient technician. This presentation will help you learn some of the more important safety practices you will need to be a safe and efficient technician.

View the Soldering and Brazing Safety presentation.

Check your knowledge by taking a 10-question quiz on the PowerPoint presentation.

#### Check Your Knowledge: Soldering and Brazing Quiz

This quiz will help you and your instructor determine your progress in the course. You need to achieve at least 80%. If you scored 79% or less, talk with your instructor. If you scored 80% or better, move on to the next assignment.

### Fire Prevention and Torch Safety Part 2

Watch the "Workplace Fire Safety" DVD. Ask the instructor for the DVD. Use one of the classroom computers and your earphones to watch the DVD.

Check your knowledge by taking a 20-question quiz on the DVD video.

#### Check Your Knowledge: Workplace Fire Safety Quiz

This quiz will help you and your instructor determine your progress in the course. You need to achieve at least 80%. If you scored 79% or less, talk with your instructor. If you scored 80% or better, move on to the next assignment.

## Module 6: Combustion Appliance Safety

### Combustion Appliance Safety Overview

Working in the HVAC field, you will almost certainly have to work on some type of gas fired appliance. Understanding the safe practices that are required to work on these appliances is so important.

When you have completed this module, you will know how to:

Describe safe practices in working with combustion (gas fired) appliances as per OSHA standards.



## Combustion Appliance Safety Assignments

We've come a long way since people heated their homes with a wood or coal stove. Gas fired, comfortable heating systems are becoming more efficient all the time, and the changes in these designs also presents new factors in installing and using them safely. This module has dealt with some of these more basic safety concerns. This presentation will help you remember some of those key points.

Work on the following assignment.

View the Combustion Heating Systems Safety presentation.

Check your knowledge by taking a 10-question quiz on the PowerPoint presentation.

### Check Your Knowledge: Combustion Heating Quiz

This quiz will help you and your instructor determine your progress in the course. You need to achieve at least 80%. If you scored 79% or less, talk with your instructor. If you scored 80% or better, move on to the next assignment.

## Module 7: Hazard Communication Safety

### Hazard Communication Safety Overview

In the HVAC field you may at times need to work with mild hazardous materials. Understanding how to handle these materials is very important. A few simple steps can help keep you and others safe.

When you have completed this module, you will know how to:

Describe safe practices in dealing with hazardous materials safety as per OSHA standards

### Hazard Communication Safety Assignments

Work on the following assignment.

Watch the "Hazard Communication Safety" DVD. Ask the instructor for the DVD. Use one of the classroom computers and your earphones to watch the DVD.

Check your knowledge by taking a 20-question quiz on the DVD video.

### Check Your Knowledge: Hazard Communication Safety Quiz

This quiz will help you and your instructor determine your progress in the course. You need to achieve at least 80%. If you scored 79% or less, talk with your instructor. If you scored 80% or better, move on to the next assignment.

## Module 8: Drug and Alcohol Abuse

### Drug and Alcohol Abuse Overview

Drug and alcohol abuse can be known as the silent problem. Either people don't know someone at work has this problem or they know and don't want to report their fellow employee.

This module will take a look at this problem and how to handle it.

When you have completed this module, you will know how to:

Describe safe practices of drug & alcohol abuse safety as per OSHA standards

### Drug and Alcohol Abuse Overview Assignments

Work on the following assignment.

Watch the Drug and Alcohol Abuse DVD. Ask the instructor for the DVD. Use one of the classroom computers and your earphones to watch the DVD.

Check your knowledge by taking a 20-question quiz on the DVD video.

### Check Your Knowledge: Drug & Alcohol Abuse Quiz

This quiz will help you and your instructor determine your progress in the course. You need to achieve at least 80%. If you scored 79% or less, talk with your instructor. If you scored 80% or better, move on to the next assignment.

## Module 9: First Aid and Heat Stress Safety

### First Aid and Heat Stress Safety Overview

Sometimes accidents will happen on the job site and the victim needs medical attention even before the emergency medical personnel can arrive. You need to be able to offer first aid assistance before help arrives.

This module will help give you some instruction on what you can do to be prepared. You will also be looking at what to do to prevent and help with heat stress.

When you have completed this module, you will know how to:

Demonstrate knowledge of safe practices of first aid/heat stress safety as per OSHA standards.

### First Aid and Heat Stress Safety Assignments

Work on the following assignments.

#### First Aid

Watch the "First Aid Safety" DVD. Ask the instructor for the DVD. Use one of the classroom computers and your earphones to watch the DVD.

Check your knowledge by taking a 20-question quiz on the DVD video.

### Check Your Knowledge: First Aid Safety Quiz

This quiz will help you and your instructor determine your progress in the course. You need to achieve at least 80%. If you scored 79% or less, talk with your instructor. If you scored 80% or better, move on to the next assignment.

## First Aid and Heat Stress Safety Part 2

Watch the “Heat Stress Safety” DVD. Ask the instructor for the DVD. Use one of the classroom computers and your earphones to watch the DVD.

Check your knowledge by taking a 20-question quiz on the DVD video.

### Check Your Knowledge: Heat Stress Safety Quiz

This quiz will help you and your instructor determine your progress in the course. You need to achieve at least 80%. If you scored 79% or less, talk with your instructor. If you scored 80% or better, move on to the next assignment.

## Module 10: Final Exam and Safety Statement of Acknowledgment

### Final Safety Overview

Congratulations on finishing the PowerPoint presentations, the DVD videos and having passed the safety topic exams.

I hope by now (if you didn't already) you have a better understanding on how important it is to be safe not only on the job site but here in the HVAC lab. Safety can't be taken for granted ever. Because of this you will be required to take one more safety exam that covers all of the safety topic you have studied in this course.

When you have completed this module, you will be authorized to use the HVAC lab as you start your education in the exciting HVAC field.

### Final Safety Assignment

Complete the following.

Take the final written safety exam.

Print and sign the SAFETY STATEMENT OF ACKNOWLEDGMENT. After you have signed the agreement please give it to your instructor.

### Final Safety Exam Version A (*There is a Version B if student does not pass Version A*)

This assessment will measure your knowledge in basic safety rules and policies. The assessment consists of 36 questions. To pass this assessment, you will need a score of 80% (29 out of 36 points).

If you do not pass on the first attempt, you will have the opportunity to meet with your instructor, study and practice the content further, and retake a different version of the assessment.

### Testing Procedures:

1. Click **Take this Quiz**.
2. Read each question and choose the best answer(s).
3. When you have answered all the questions, click the **Submit** button. You will be shown your score.