



## Virtual Training Facility

Real simulated hands-on learning experiences.

The Transfr Virtual Training Facility's simulated hands-on learning experiences empower job seekers to master vital skills and get on pathways to well-paying jobs in high-growth industries.



Discipline

# Manufacturing and Construction: The Skilled Trades

This discipline gives students and job seekers the simulated hands-on skills they need to secure positions related to the manufacturing of vehicles, foodstuffs, household goods, and other products. Trainees also develop fundamental skills related to construction of buildings and homes, roads, and other infrastructure.

## Module: Plant Safety

### Intro to Simon, and Accidents and Injury Prevention

Trainee will learn and demonstrate accident and injury prevention awareness, including identifying fire hazards; safe lifting; basic lockout-tagout procedures; and workplace hazards.

Duration: 18 min

### Protective Equipment: Eye, Hearing, Hand, and Foot Protection and Hearing Conservation

Trainee will learn and demonstrate personal protective equipment (PPE) usage.

Duration: 12 min

### Hand Tools: Inspecting and Identifying Correctly

Trainee will learn and demonstrate how to identify and inspect the following common hand tools: slip-joint pliers, Phillips head screwdriver, sheet metal shears, torque wrench, utility knife, and wrench.

Duration: 7 min

### Hand Tools: Using Hand Tools Correctly

Trainee will learn and demonstrate how to use the following common hand tools: slip-joint pliers, Phillips head screwdriver, sheet metal shears, torque wrench, utility knife, and wrench.

Duration: 15 min

### Materials Handling: Situational Awareness

Trainee will learn and demonstrate situational awareness in a warehouse environment.

Duration: 6 min

### Materials Handling: Receiving and Storage Safety

Trainee will learn and demonstrate safe receiving and storage techniques.

Duration: 11 min

### Materials Handling: Manual Lifting

Trainee will learn and demonstrate safe manual lifting techniques.

Duration: 8 min

### Materials Handling: Metal/Glass Sheets and Cylindrical Objects

Trainee will learn and demonstrate how to safely lift and handle metal/glass sheets and cylindrical objects.

Duration: 7 min

### Materials Handling: Hoists & Cranes

Trainee will learn and demonstrate basic safety practices for working with and around hoists and cranes.

Duration: 22 min

### Energy Related Hazards (Electrical Safety, GFCI, and Electric Shock)

Trainee will learn and demonstrate awareness of energy-related hazards and the techniques to avoid or mitigate them.

Duration: 10 min

### Lockout & Tagout

Trainee will learn and demonstrate a lockout-tagout procedure.

Duration: 7 min

### Robotic Safety

Trainee will learn and demonstrate awareness of robotic work cell safety.

Duration: 10 min

### Ladder Safety: A-Frame Stepladders

Trainee will learn and demonstrate how to inspect, safely set up, and properly use an A-frame stepladder.

Duration: 10 min

### Ladder Safety: Straight Ladders

Trainee will learn and demonstrate how to inspect, safely set up, and properly use a straight ladder.

Duration: 12 min

### Fire Extinguisher Safety

Trainee will learn and demonstrate knowledge of the types of fire extinguishers and how to safely operate them.

Duration: 8 min

### Safety Data Sheets

Trainee will learn and demonstrate how to use Safety Data Sheets to identify chemical-related hazards, first aid measures, and personal protective equipment.

Duration: 10 min

### Bloodborne Pathogens

Trainee will learn and demonstrate knowledge of the types of bloodborne pathogens, as well as how to protect themselves with personal protective equipment and safety procedures.

Duration: 8 min

### Power Tools/Electrical Safety: Pneumatic Wrenches and Screwdrivers

Trainee will learn and demonstrate how to inspect and safely use pneumatic wrenches and screwdrivers.

Duration: 14 min

### Power Tools/Electrical Safety: Electric Drill

Trainee will learn and demonstrate how to inspect and safely use an electric drill.

Duration: 11 min

### Power Tools/Electrical Safety: Circular Saw

Trainee will learn and demonstrate how to inspect and safely use a circular saw.

Duration: 15 min

### Power Tools/Electrical Safety: Miter Saw

Trainee will learn and demonstrate how to inspect and safely use a miter saw.

Duration: 9 min

### Power Tools/Electrical Safety: Bench and Pedestal Grinders

Trainee will learn and demonstrate how to inspect and safely use a pedestal grinder.

Duration: 15 min

### Power Tools/Electrical Safety: Handheld Grinders

Trainee will learn and demonstrate how to inspect and safely use a handheld grinder.

Duration: 13 min

### Power Tools/Electrical Safety: Nibblers

Trainee will learn and demonstrate how to inspect and safely use a nibbler.

Duration: 10 min

### Welding Safety: Burn Safety

Trainee will learn and demonstrate knowledge of the types of burn risks associated with welding arcs, as well as how to protect themselves with personal protective equipment and safety procedures.

Duration: 8 min

### **Welding Safety: Spot Welding Safety**

Trainee will learn and demonstrate how to safely use resistance welding equipment.  
Duration: 9 min

### **Welding Safety: MIG Welding Safety**

Trainee will learn and demonstrate how to safely use MIG welding equipment.  
Duration: 12 min

### **Welding Safety: Oxy-Acetylene Safety**

Trainee will learn and demonstrate how to safely use oxy-acetylene welding equipment.  
Duration: 14 min

## Module: **Construction Safety**

### **Intro to Simon, and Accidents and Injury Prevention**

Trainee will learn and demonstrate accident and injury prevention awareness, including identifying fire hazards; safe lifting; basic lockout-tagout procedures; and workplace hazards.  
Duration: 18 min

### **Job Site Safety: Situational Awareness**

Trainee will learn and demonstrate job site situational awareness.  
Duration: 18 min

### **Personal Protective Equipment**

Trainee will learn and demonstrate personal protective equipment (PPE) usage.  
Duration: 12 min

### **Personal Protective Equipment: Respirators**

Trainee will learn and demonstrate awareness of respiratory hazards and how to use a respirator.  
Duration: 13 min

### **Extension Ladder Safety**

Trainee will properly inspect, set up, and use an extension ladder.  
Duration: 16 min

### **Scaffolds**

Trainee will learn and demonstrate how to safely use scaffolds.  
Duration: 14 min

### **Layout Tools: Squares, Plumb Bobs, and Levels**

Trainee will identify and use levels, squares, and a plumb bob.  
Duration: 14 min

### **Hand Tools: Hand Saws**

Trainee will learn and demonstrate how to inspect and safely use a hand saw.  
Duration: 16 min

### **Hand Tools: Hack Saws**

Trainee will learn and demonstrate how to inspect and safely use a hacksaw.  
Duration: 16 min

### **Power Tools: Impact Wrenches**

Trainee will learn and demonstrate how to inspect and safely use an impact wrench.  
Duration: 15 min

### **Power Tools: Hammer Drill**

Trainee will inspect and safely use a hammer drill.  
Duration: 12 min

### **Power Tools: Reciprocating Saw**

Trainee will learn and demonstrate how to inspect and safely use a reciprocating saw.  
Duration: 14 min

### **Power Tools: Portable Band Saw**

Trainee will learn and demonstrate how to inspect and safely use a portable band saw.  
Duration: 16 min

### **Power Tools: Cutoff Saw**

Trainee will inspect and safely use a cutoff saw.  
Duration: 12 min

### **Construction Drawings 1**

Trainee will learn and demonstrate how to identify various types of construction drawings, as well as interpret their purpose and fundamental components.  
Duration: 16 min

### **Construction Drawings 2**

Trainee will read construction drawings and measure dimensions with an architect's scale.  
Duration: 12 min

### **Materials Handling: Safety**

Concepts and Precautions  
Trainee will learn and demonstrate knowledge of common material handling safety precautions.  
Duration: 16 min

### **Materials Handling: Placards**

Trainee will learn and demonstrate how to identify and understand common hazardous materials placards.  
Duration: 15 min

### **Materials Handling: Non-Motorized Equipment**

Trainee will learn and demonstrate how to plan a safe route when using a pallet jack.  
Duration: 16 min

### **Materials Handling: Motorized Equipment**

Trainee will learn and demonstrate how to identify and safely be around motorized material handling equipment.  
Duration: 19 min

### **Intro to Rigging Equipment**

Trainee will learn about different types of slings and shackles commonly used in rigging.  
Duration: 19 min

### **Intro to Rigging Hitches**

Trainee will learn basic concepts and safety practices for bridle and double choker hitches.  
Duration: 18 min

### **Additional Construction related skills can be found in the following simulations from Plant Safety:**

Intro to Simon, and Accidents and Injury Prevention  
Personal Protective Equipment  
Energy Related Hazards  
Lockout Tagout  
Safety Data Sheets  
Hand Tools: Inspecting and Identifying Correctly  
Hand Tools: Using Hand Tools Correctly  
Power Tools: Pneumatic Wrenches and Screwdrivers  
Power Tools: Handheld Grinder  
Power Tools: Stationary Grinder  
Materials Handling: Situational Awareness  
Materials Handling: Manual Lifting  
Materials Handling: Receiving and Storage Safety

**Additional Construction related skills can be found in the following simulations from Precision Measurement:**

Fractional Inch Rule  
Decimal Inch Rule  
Metric Rule

## Module: Precision Measurement

### Intro to Simon

Trainee is introduced to the virtual coach.  
Duration: 1 min

### Controls Tutorial

Trainee will learn and demonstrate basic use of the VR controllers.  
Duration: 2 min

### Fractional Inch Rule

Trainee will learn to take measurements with a fractional inch rule.  
Duration: 7 min

### Decimal Inch Rule

Trainee will learn to take measurements with a decimal inch rule.  
Duration: 7 min

### Metric Rule

Trainee will learn to take measurements with a metric rule.  
Duration: 6 min

### Controls tutorial: Calipers

Trainee will learn and demonstrate how to use the caliper controls.  
Duration: 2 min

### Outside Caliper

Trainee will learn and demonstrate how to use an outside caliper to take a transfer measurement with a fractional inch rule.  
Duration: 5 min

### Inside Caliper

Trainee will learn and demonstrate how to use an inside caliper to take a transfer measurement with a fractional inch rule.  
Duration: 5 min

### Controls Tutorial: Calipers II

Trainee will learn and demonstrate how to use the dial inch and digital caliper controls.  
Duration: 2 min

### Dial Inch Caliper

Trainee will learn and demonstrate how to use a dial inch caliper to take inside, outside, and depth measurements.  
Duration: 8 min

### Digital Caliper

Trainee will learn and demonstrate how to use a digital caliper to take inside, outside, and depth measurements.  
Duration: 5 min

### Controls Tutorial: Micrometer

Trainee will learn and demonstrate how to use the micrometer control.  
Duration: 2 min

### Micrometer

Trainee will learn and demonstrate how to measure using an analog micrometer.  
Duration: 10 min

### Digital Micrometer

Trainee will learn and demonstrate how to measure using a digital micrometer.  
Duration: 5 min

### Calibration and Zeroing

Trainee will learn and demonstrate how to check the calibration of precision tools and how to zero digital calipers and micrometer.  
Duration: 9 min

### Simplify Fractions: Halves

Trainee will learn to recognize and simplify fractions with a denominator of 2.  
Duration: 8 min

### Simplify Fractions: Quarters

Trainee will learn to recognize and simplify fractions with a denominator of 4.  
Duration: 14 min

### Simplify Fractions: 8ths

Trainee will learn to recognize and simplify fractions with a denominator of 8.  
Duration: 16 min

### Simplify Fractions: 16ths and Compound Fractions

Trainee will learn to recognize and simplify fractions with a denominator of 16. They'll also learn to recognize compound fractions and convert them to whole numbers.  
Duration: 10 min

### Simplifying Fractions: 32nds, 64ths, and the Scale Rule

Trainee will learn to recognize and simplify fractions with denominators of 32 and 64. They'll also learn and demonstrate how to take measurements using a scale rule.  
Duration: 10 min

### Rounding Decimals

Trainee will learn and demonstrate how to round measurements to the nearest 10th, 100th, and 1000th decimal places.  
Duration: 12 min

## Module: Blueprint Reading

### Intro to Construction and Technical Drawings

Trainee will learn how to interpret "The Language of Lines," and use it in architectural and technical drawings.  
Duration: 13 min

### Interpreting Technical Drawings

Trainee will learn and demonstrate how to use "The Language of Lines" to interpret technical drawings.  
Duration: 15 min

### Technical Drawings: Dimensioning

Trainee will learn and demonstrate accepted dimensioning techniques used in technical drawing.  
Duration: 20 min

### Technical Drawings: General Standard Symbols, Screw Callouts, and Thread Symbols

Trainee will learn to identify common dimensioning symbols, interpret screw callouts, and examine thread symbols within a technical drawing.  
Duration: 21 min

### Technical Drawings: Finishing Surfaces and Symbols

Trainee will learn and demonstrate how to interpret surface finish symbols for use on technical drawings as part of the manufacturing process.  
Duration: 25 min

### **Technical Drawings: Terminology of Machined Slots**

Trainee will learn and demonstrate knowledge of terminology, common configurations, and features of the following machined parts and slots: chamfer, dovetails, keys and keyways, mortise and tenon, slotted holes, and T-grooves.

Duration: 20 min

### **Technical Drawings: Intro to Title Blocks & Assembly Drawings**

Trainee is introduced to the practice of using information from title blocks and assembly drawings to correctly identify machined parts.

Duration: 20 min

### **Technical Drawings: Using Title Blocks & Assembly Drawings**

Trainee will learn and demonstrate how to use information from title blocks and assembly drawings to correctly identify machined parts.

Duration: 15 min

### **Technical Drawings: Visualization & Views**

Trainee will learn and demonstrate how to communicate and verify the relationship between technical drawings and machined parts using visualization and interpretation.

Duration: 20 min

### **Technical Drawings: Section & Auxiliary Views**

Trainee will learn and demonstrate how to select and verify machined parts by interpreting sectional and auxiliary views.

Duration: 25 min

### **Technical Drawings: Assembly and Tolerance**

Trainee will learn and demonstrate how to identify the features of an assembly drawing and a matching drawing, as well as practice reading tolerances by defining a part's range of variation.

Duration: 15 min

## **Module: Mechatronics**

### **Variable Speed Motor: Assembly**

Trainee will learn and demonstrate how to assemble an AC variable speed motor with keyed shaft, pillow-block bearings, assorted gears, couplings, and standoffs.

Duration: 18 min

### **Variable Speed Motor: Wiring**

Trainee will learn and demonstrate how to interpret wiring diagrams to make proper connections, energize, and verify rotational direction on a variable speed motor.

Duration: 14 min

### **Variable Speed Motor: Measurements**

Trainee will learn and demonstrate how to use a multimeter to measure current, voltage, and resistance.

Duration: 18 min

### **Robotic Safety**

Trainee will learn and demonstrate how to work safely with and in proximity to robotic arms, work cells, and systems, as well as recognize hazards, emergency procedures, functions, work cell limits, and emergency stops.

Duration: 10 min

## **Module: Paint Robot Troubleshooting**

### **Intro to Simon and Tools**

Trainee is introduced to the virtual coach and will learn and demonstrate basic use of the VR controllers.

Duration: 5 min

### **Intro to the Virtual Paint Robot**

Trainee will learn the components of the paint robot.

Duration: 11 min

### **Paint Booth Safety Procedures**

Trainee will learn and demonstrate key safety procedures, like positioning the robot for maintenance; locking out process air; completing lockout-tagout procedures; cleaning out and super purging; and wearing proper PPE.

Duration: 11 min

### **Lockout & Tagout**

Trainee will learn and demonstrate how to perform a lockout-tagout procedure.

Duration: 7 min

### **Before Entering the Booth**

Trainee will learn and demonstrate how to complete a safety checklist before entering the paint booth. Trainee will also be introduced to the supply and return valves within the booth.

Duration: 3 min

### **Bell Cup: Paint Spit Visible on Part**

Trainee will learn and demonstrate how to identify the cause of paint spit/drips, as well as how to address it.

Duration: 11 min

### **Applicator: Signs of Moisture on the Shroud**

Trainee will learn and demonstrate how to identify the cause of moisture, as well as how to address it.

Duration: 12 min

### **Troubleshooting Assessment 1**

Trainee will be presented with a scenario and use their troubleshooting skills to identify and address the issue.

Duration: 20 min

**Applicator: Leak at Quick Disconnect**

Trainee will learn and demonstrate how to identify and assess the cause of moisture at the applicator quick disconnect, as well as how to address it.

Duration: 13 min

**Isolation Line Leakage**

Trainee will learn and demonstrate how to identify an isolation line pinhole leak, as well as how to address it.

Duration: 8 min

**Paint Valve Troubleshooting**

Trainee will learn and demonstrate how to identify and assess the cause of a leaking paint valve, as well as how to address it.

Duration: 15 min

**Troubleshooting Assessment 2**

Trainee will be presented with a scenario and use their troubleshooting skills to identify and address the issue.

Duration: 20 min

**Module:  
Electrical  
Fundamentals****Electrical Fundamentals:  
Circuits & Ohm's Law**

Trainee will learn and demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity (Ohm's Law).

Duration: 25 min

**Electrical Test Equipment -  
Multimeter: Voltage**

Trainee will learn and demonstrate how to use a multimeter to measure the voltages in specified devices—from line to neutral and neutral to ground—including setting it properly for expected readings and safely using probes to place the meter in parallel with the circuit.

Duration: 28 min

**Electrical Repair:  
Basic Soldering**

Trainee will learn and demonstrate basic soldering skills.

Duration: 16 min

\*Simulation duration are average estimated times for trainees to complete a simulation.

Individual trainee duration may vary as trainees move at their own pace through simulations



Discipline

# Hospitality & Tourism

Learners develop core knowledge and skills in professionalism, front desk services, and culinary arts and safety for entry-level employment in Hospitality & Tourism occupations.



## Module: Hospitality Soft Skills

### Introduction

Trainee is introduced to the virtual coach and will learn and demonstrate basic use of the VR controllers.  
Duration: 5 min

### First Impressions: Receiving a 5-Star Experience

Trainee will go through the 5-star hotel guest check-in experience. Trainee will learn the importance of using soft skills for guest interactions and the hallmarks of professionalism, including hygiene, dress, and coming to work prepared.  
Duration: 11 min

### First Impressions: Providing a 5 Star Experience

Trainee will learn and demonstrate how to welcome guests, make a connection, and ensure guest needs are met with guidance from their virtual coach.  
Duration: 12 min

## Module: Culinary: Intro to Culinary Arts and Basic Baking

### Identifying Tools & Equipment

Trainee will learn and demonstrate how to identify and utilize common culinary tools and equipment.  
Duration: 20 min

### Professional Uniform

Trainee will learn and demonstrate how to select and properly wear a professional culinary uniform.  
Duration: 14 min

### Knife Skills 1

Trainee will learn and demonstrate basic knife safety and skills, including peeling a potato, squaring it off, and performing dice and batonnet cuts.  
Duration: 12 min

### Knife Skills 2

Trainee will learn and demonstrate how to peel a carrot, perform rondelle, bias, paysanne, and lozenge cuts, peel and dice an onion, and chiffonade herbs.  
Duration: 13 min

### Measuring Dry/Wet Ingredients

Trainee will properly measure wet and dry ingredients using the appropriate tools.  
Duration: 20 min

### Stocks

Trainee will make both white and brown stocks.  
Duration: 20 min

### Soups and Sauces

Trainee will learn and demonstrate how to make a velouté sauce (one of the mother sauces) and a cream-based soup.  
Duration: 22 min

### Eggs

Trainee will learn and demonstrate how to make basic egg dishes, including sunny-side up eggs, an omelette, and a crepe.  
Duration: 21 min

### Quick Breads

Trainee will make quick breads using the biscuit mixing and muffin mixing methods.  
Duration: 20 min

### Yeast Breads

Trainee will make straight bread dough.  
Duration: 19 min

### Enriched Yeast Breads

Trainee will make enriched yeast doughs using the straight dough and enriched dough methods.  
Duration: 17 min

### Cookies and Brownies

Trainee will make drop cookies and sheet bar cookies.  
Duration: 17 min

### Pies and Tarts

Trainee will prepare pie dough, form a pie crust, and assemble a fruit tart.  
Duration: 14 min

### Cakes

Trainee will make cake batter using the creaming, two-stage, and sponge cake methods.  
Duration: 16 min

\*Simulation duration are average estimated times for trainees to complete a simulation.

Individual trainee duration may vary as trainees move at their own pace through simulations



Discipline

## Automotive

The Automotive discipline gives students and job seekers the simulated hands-on skills they need to obtain positions related to general automotive inspection and repair.

Module:  
**Automotive Fundamentals**

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**Controls Tutorial: Automotive**

Trainee will learn and demonstrate basic use of the VR controllers.  
Duration: 3 min

**Engine Oil Change**

Trainee will learn and demonstrate how to perform an oil and filter change.  
Duration: 10 min

**Battery Safety and Service**

Trainee will learn and demonstrate how to safely remove, replace, clean, test, and charge batteries.  
Duration: 18 min

**Starting and Charging Fundamentals**

Trainee will learn and demonstrate how to identify and test for basic starting and charging system components (DTAC).  
Duration: 19 min

**Jacks, Jack Stands, and Lift Safety**

Trainee will learn and demonstrate how to safely and properly place jacks, jack stands, and lifts.  
Duration: 22 min

**Automotive Safety Awareness: Airbag, ABS, ADAS and HV Batteries**

Trainee will learn and demonstrate how to disable and handle air bags.  
Duration: 15 min

**Disc Brake Pad Replacement**

Trainee will learn and demonstrate how to identify, inspect, remove, and replace disc brake components, including brake pads.  
Duration: 13 min

**Drum Brake Shoe Replacement**

Trainee will learn and demonstrate how to identify, inspect, remove, and replace drum brake components, including brake shoes.  
Duration: 15 min

**Suspension System Types**

Trainee will learn to identify various types of suspension system designs.  
Duration: 14 min

**Fuel System Fundamentals**

Trainee will learn to identify air induction and fuel system components.  
Duration: 15 min

**Fuel System Safety**

Trainee will learn and demonstrate how to perform a fuel system bleeding procedure.  
Duration: 17 min

**Engine Cylinder Compression Test**

Trainee will learn and demonstrate how to perform a cylinder compression test.  
Duration: 18 min

**Steering System Types**

Trainee will learn to identify various types of steering system designs.  
Duration: 16 min

Module:  
**Auto Body/ Collision Repair**

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**Hand Tools Used in Auto Body**

Trainee will learn and demonstrate knowledge of common auto body hand tools.  
Duration: 20 min

**Power Tools Used in Auto Body**

Trainee will learn and demonstrate how to inspect and safely use power tools used in auto body.  
Duration: 15 min

**Hammer & Dolly**

Trainee will learn and demonstrate how to use a hammer and dolly for basic dent repair.  
Duration: 9 min

**Weld-On Pulling**

Trainee will learn and demonstrate how to use weld-on pulling equipment for basic dent repair.  
Duration: 15 min

**Basic Auto Body Filler: Prep**

Trainee will learn and demonstrate how to prepare a workpiece to receive body filler.  
Duration: 13 min

**Basic Auto Body Filler: Application**

Trainee will learn and demonstrate how to efficiently apply filler, keeping imperfections to a minimum so the need for extra sanding can be mitigated.  
Duration: 12 min

**Basic Auto Body Filler: Sanding**

Trainee will learn and demonstrate how to sand and contour filler using both power tools and hand sanding.  
Duration: 17 min

**Masking for Priming**

Trainee will learn and demonstrate how to use tape and plastic to mask parts of the car prior to priming and painting.  
Duration: 15 min

**Paint Gun: Inspect and Clean**

Trainee will learn and demonstrate how to inspect, clean, and disassemble a paint gun.  
Duration: 14 min

**Paint Gun: Set up and Spray Patterns**

Trainee will learn and demonstrate how to properly set up and adjust spray patterns for a paint gun.  
Duration: 14 min

**Priming Panels**

Trainee will learn and demonstrate how to test primer and apply a single-stage topcoat to a workpiece.  
Duration: 20 min

**Primer Prep for Painting**

Trainee will learn and demonstrate how to prepare a workpiece for painting, including dry-block sanding and applying a guide coat.  
Duration: 16 min

**Paint Selection and Mixing**

Trainee will learn and demonstrate how to measure and mix different paint colors.  
Duration: 15 min

**Basic Painting**

Trainee will learn and demonstrate the basics of paint spraying.  
Duration: 19 min

**Advanced Painting**

Trainee will learn and demonstrate how to test paint spray and apply a basecoat and clearcoat.  
Duration: 20 min

### Basic Electrical Tools: Test Light

Trainee will learn and demonstrate how to use a test light to check fuses, relays, and wires for ground and continuity.

Duration: 6 min

### Electrical Repair: Connectors, Terminals, and Splicing

Trainee will learn and demonstrate construction, splicing, repair, and use of connectors and terminals.

Duration: 15 min

### Bead Blasting

Trainee will learn and demonstrate how to remove paint and rust using high pressure blasting tools without damaging the part's surface.

Duration: 15 min

### Powder Coating

Trainee will learn and demonstrate how to apply electrostatically-charged powder coating to the part's surface.

Duration: 28 min

### Additional Construction related skills can be found in the following simulations from Plant Safety:

Hand Tools: Inspecting and Identifying Correctly

Hand Tools: Using Hand Tools Correctly

Pneumatic Wrenches and Screwdrivers

Electric Drill

Handheld Grinders

## Module: Precision Measurement

### Intro to Simon

Trainee is introduced to the virtual coach.

Duration: 1 min

### Controls Tutorial

Trainee will learn and demonstrate basic use of the VR controllers.

Duration: 2 min

### Fractional Inch Rule

Trainee will learn to take measurements with a fractional inch rule.

Duration: 7 min

### Decimal Inch Rule

Trainee will learn to take measurements with a decimal inch rule.

Duration: 7 min

### Metric Rule

Trainee will learn to take measurements with a metric rule.

Duration: 6 min

### Controls tutorial: Calipers

Trainee will learn and demonstrate how to use the caliper controls.

Duration: 2 min

### Outside Caliper

Trainee will learn and demonstrate how to use an outside caliper to take a transfer measurement with a fractional inch rule.

Duration: 5 min

### Inside Caliper

Trainee will learn and demonstrate how to use an inside caliper to take a transfer measurement with a fractional inch rule.

Duration: 5 min

### Controls Tutorial: Calipers II

Trainee will learn and demonstrate how to use the dial inch and digital caliper controls.

Duration: 2 min

### Dial Inch Caliper

Trainee will learn and demonstrate how to use a dial inch caliper to take inside, outside, and depth measurements.

Duration: 8 min

### Digital Caliper

Trainee will learn and demonstrate how to use a digital caliper to take inside, outside, and depth measurements.

Duration: 5 min

### Controls Tutorial: Micrometer

Trainee will learn and demonstrate how to use the micrometer control.

Duration: 2 min

### Micrometer

Trainee will learn and demonstrate how to measure using an analog micrometer.

Duration: 10 min

### Digital Micrometer

Trainee will learn and demonstrate how to measure using a digital micrometer.

Duration: 5 min

### Calibration and Zeroing

Trainee will learn and demonstrate how to check the calibration of precision tools and how to zero digital calipers and micrometer.

Duration: 9 min

### Simplify Fractions: Halves

Trainee will learn to recognize and simplify fractions with a denominator of 2.

Duration: 8 min

### Simplify Fractions: Quarters

Trainee will learn to recognize and simplify fractions with a denominator of 4.

Duration: 14 min

### Simplify Fractions: 8ths

Trainee will learn to recognize and simplify fractions with a denominator of 8.

Duration: 16 min

### Simplify Fractions: 16ths and Compound Fractions

Trainee will learn to recognize and simplify fractions with a denominator of 16.

They'll also learn to recognize compound fractions and convert them to whole numbers.

Duration: 10 min

### Simplifying Fractions: 32nds, 64ths, and the Scale Rule

Trainee will learn to recognize and simplify fractions with denominators of 32 and 64.

They'll also learn and demonstrate how to take measurements using a scale rule.

Duration: 10 min

### **Rounding Decimals**

Trainee will learn and demonstrate how to round measurements to the nearest 10th, 100th, and 1000th decimal places.

Duration: 12 min

## **Module: Electrical Fundamentals**

### **Electrical Fundamentals: Circuits & Ohm's Law**

Trainee will learn and demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity (Ohm's Law).

Duration: 25 min

### **Electrical Test Equipment - Multimeter: Voltage**

Trainee will learn and demonstrate how to use a multimeter to measure the voltages in specified devices—from line to neutral and neutral to ground—including setting it properly for expected readings and safely using probes to place the meter in parallel with the circuit.

Duration: 28 min

### **Electrical Repair: Basic Soldering**

Trainee will learn and demonstrate basic soldering skills.

Duration: 16 min

## **Module: Plant Safety**

### **Intro to Simon, and Accidents and Injury Prevention**

Trainee will learn and demonstrate accident and injury prevention awareness, including identifying fire hazards; safe lifting; basic lockout-tagout procedures; and workplace hazards.

Duration: 18 min

### **Protective Equipment: Eye, Hearing, Hand, and Foot Protection and Hearing Conservation**

Trainee will learn and demonstrate personal protective equipment (PPE) usage.

Duration: 12 min

### **Hand Tools: Inspecting and Identifying Correctly**

Trainee will learn and demonstrate how to identify and inspect the following common hand tools: slip-joint pliers, Phillips head screwdriver, sheet metal shears, torque wrench, utility knife, and wrench.

Duration: 7 min

### **Hand Tools: Using Hand Tools Correctly**

Trainee will learn and demonstrate how to use the following common hand tools: slip-joint pliers, Phillips head screwdriver, sheet metal shears, torque wrench, utility knife, and wrench.

Duration: 15 min

### **Materials Handling: Situational Awareness**

Trainee will learn and demonstrate situational awareness in a warehouse environment.

Duration: 6 min

### **Materials Handling: Receiving and Storage Safety**

Trainee will learn and demonstrate safe receiving and storage techniques.

Duration: 11 min

### **Materials Handling: Manual Lifting**

Trainee will learn and demonstrate safe manual lifting techniques.

Duration: 8 min

### **Materials Handling: Metal/Glass Sheets and Cylindrical Objects**

Trainee will learn and demonstrate how to safely lift and handle metal/glass sheets and cylindrical objects.

Duration: 7 min

### **Materials Handling: Hoists & Cranes**

Trainee will learn and demonstrate basic safety practices for working with and around hoists and cranes.

Duration: 22 min

### **Energy Related Hazards (Electrical Safety, GFCI, and Electric Shock)**

Trainee will learn and demonstrate awareness of energy-related hazards and the techniques to avoid or mitigate them.

Duration: 10 min

### **Lockout & Tagout**

Trainee will learn and demonstrate a lockout-tagout procedure.

Duration: 7 min

### **Robotic Safety**

Trainee will learn and demonstrate awareness of robotic work cell safety.

Duration: 10 min

### **Ladder Safety: A-Frame Stepladders**

Trainee will learn and demonstrate how to inspect, safely set up, and properly use an A-frame stepladder.

Duration: 10 min

### **Ladder Safety: Straight Ladders**

Trainee will learn and demonstrate how to inspect, safely set up, and properly use a straight ladder.

Duration: 12 min

### **Fire Extinguisher Safety**

Trainee will learn and demonstrate knowledge of the types of fire extinguishers and how to safely operate them.

Duration: 8 min

### **Safety Data Sheets**

Trainee will learn and demonstrate how to use Safety Data Sheets to identify chemical-related hazards, first aid measures, and personal protective equipment.

Duration: 10 min

### **Bloodborne Pathogens**

Trainee will learn and demonstrate knowledge of the types of bloodborne pathogens, as well as how to protect themselves with personal protective equipment and safety procedures.

Duration: 8 min

### **Power Tools/Electrical Safety: Pneumatic Wrenches and Screwdrivers**

Trainee will learn and demonstrate how to inspect and safely use pneumatic wrenches and screwdrivers.

Duration: 14 min

### **Power Tools/Electrical Safety: Electric Drill**

Trainee will learn and demonstrate how to inspect and safely use an electric drill.

Duration: 11 min

### **Power Tools/Electrical Safety: Circular Saw**

Trainee will learn and demonstrate how to inspect and safely use a circular saw.

Duration: 15 min

### **Power Tools/Electrical Safety: Miter Saw**

Trainee will learn and demonstrate how to inspect and safely use a miter saw.

Duration: 9 min

### **Power Tools/Electrical Safety: Bench and Pedestal Grinders**

Trainee will learn and demonstrate how to inspect and safely use a pedestal grinder.

Duration: 15 min

### **Power Tools/Electrical Safety: Handheld Grinders**

Trainee will learn and demonstrate how to inspect and safely use a handheld grinder.

Duration: 13 min

### **Power Tools/Electrical Safety: Nibblers**

Trainee will learn and demonstrate how to inspect and safely use a nibbler.

Duration: 10 min

### **Welding Safety: Burn Safety**

Trainee will learn and demonstrate knowledge of the types of burn risks associated with welding arcs, as well as how to protect themselves with personal protective equipment and safety procedures.

Duration: 8 min

### **Welding Safety: Spot Welding Safety**

Trainee will learn and demonstrate how to safely use resistance welding equipment.

Duration: 9 min

### **Welding Safety: MIG Welding Safety**

Trainee will learn and demonstrate how to safely use MIG welding equipment.

Duration: 12 min

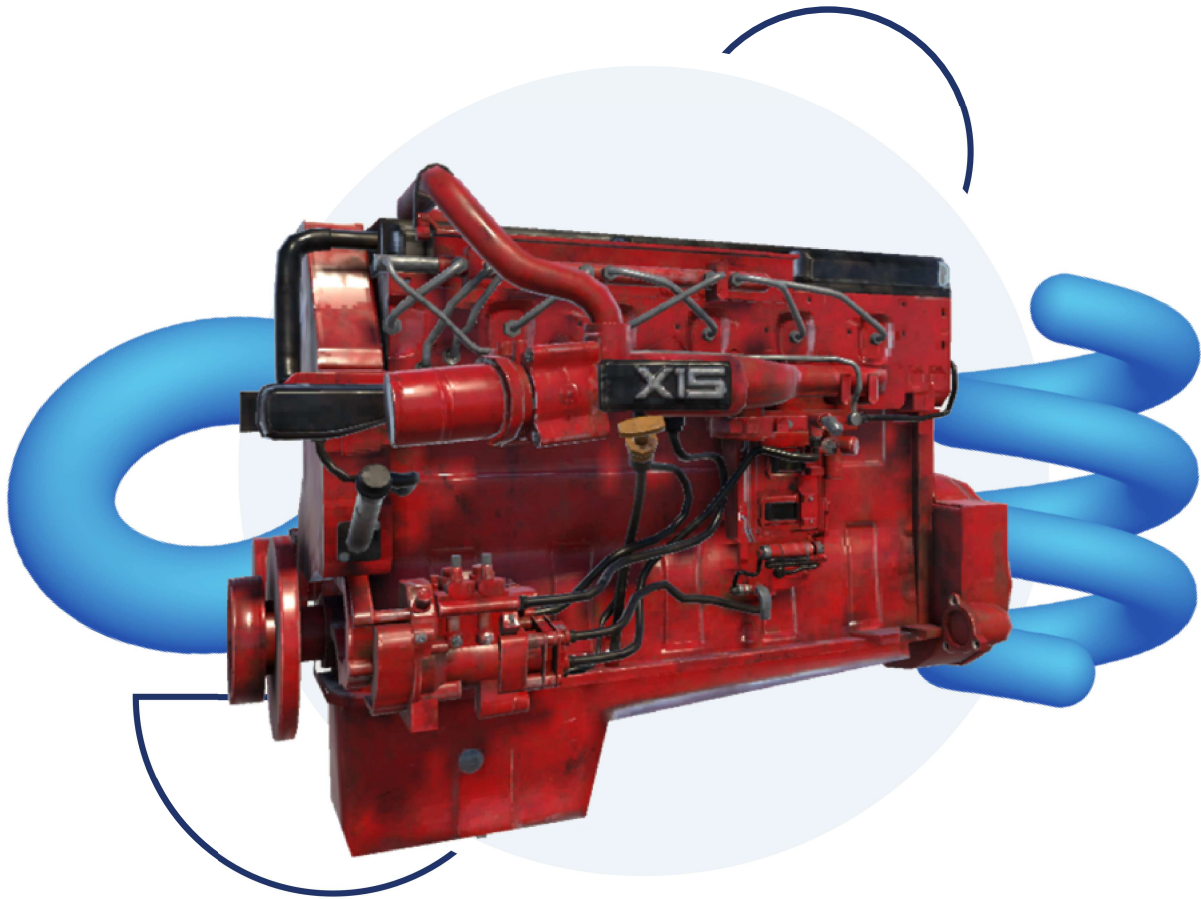
### **Welding Safety: Oxy-Acetylene Safety**

Trainee will learn and demonstrate how to safely use oxy-acetylene welding equipment.

Duration: 14 min

\*Simulation duration are average estimated times for trainees to complete a simulation.

Individual trainee duration may vary as trainees move at their own pace through simulations



Discipline

# Diesel Technology

The Diesel Technology discipline gives students and job seekers the simulated hands-on skills they need to obtain positions related to general Diesel and Trucking inspection and repair.

## Module: Diesel Vehicle Maintenance

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### Lifting Devices

Trainee will properly place jack stands and lift a diesel truck.

Duration: 16 min

### Tire Inspection

Trainee will inspect and service a tire on a commercial dual-tire fitment.

Duration: 17 min

### Tire Replacement

Trainee will remove and replace two tires in a diesel vehicle.

Duration: 21 min

### Oil and Filter Service

Trainee will perform an oil and filter service on both Cummins X15 and Detroit DD15 engines.

Duration: 23 min

### Fuel System Service

Trainee will replace a fuel filter, as well as prime and bleed the fuel systems for Cummins X15 and Detroit DD15 engines.

Duration: 20 min

### Fundamental Analysis: Air Compressor Replacement

Trainee will identify the brake system components and configurations of air S-cam brakes, as well as operate and replace an air compressor.

Duration: 20 min

### Intro to Simon, Accidents and Injury Prevention

Trainee will remove and replace the air governor, dryer, and reservoir.

Duration: 19 min

### Fundamental Analysis: Air Valve Arrangement

Trainee will identify and replace air supply and service system components.

Duration: 19 min

### Drum Brake Inspection and Repair

Trainee will remove, clean, and inspect a drum brake.

Duration: 15 min

### Parking Brakes Analysis and Repair

Trainee will cage and uncage the spring brakes, identify and inspect slack adjusters, and replace the spring brake chamber.

Duration: 22 min

### CAM Brake Replacement

Trainee will perform an S-cam brake replacement, including removing the drum brake and shoes, assembling replacement shoes, and adjusting and uncaging the brakes.

Duration: 19 min

### Wheel Ends

Trainee will disassemble and assemble a wheel-end assembly, including lubricating, chocking, and replacing and adjusting wheel bearings and races/cups, as well as inspecting spindles/tubes and other hardware. Trainee will also check the hub assembly fluid level and condition and verify end play using the dial indicator method.

Duration: 31 min

### Controls Tutorial: Picking Up Objects

Trainee will remove and replace a power steering gearbox. Trainee will complete the post installation inspection.

Duration: 20 min

### Tie Rod End Replacement

Trainee will replace tie rods and ball joints.

Duration: 19 min

### Remove & Replace Steering Linkages

Remove and replace steering linkage components including: drag link, Pitman arm, and steering shaft.

Duration: 20 min

### Kingpin Assembly Inspection

Trainee will inspect parts of the lower steering system including the kingpin assembly and tie rod ends.

Duration: 16 min

### Kingpin Replacement

Trainee will replace the kingpin.

Duration: 26 min

### Controls Tutorial: Calipers

Trainee will replace shock absorbers, bushings, brackets, and mounts in a diesel truck.

Duration: 19 min

### Leaf Spring Replacement

Trainee will replace leaf springs, center bolts, pins, bushings, shackles, and U-bolts in a diesel truck.

Duration: 19 min

### Drivetrain Inspection

Trainee will lubricate the clutch and U-joints, and service both the transmission and rear axles of a diesel truck.

Duration: 20 min

### Battery Replacement

Trainee will diagnose, remove, and replace a battery in a diesel truck.

Duration: 19 min

### Starter Replacement

Trainee will diagnose, remove, and replace a starter motor in a diesel truck.

Duration: 13 min

### Engine Analysis

Trainee will diagnose and test engine oil, DEF, and engine coolant in a diesel truck.

Duration: 18 min

## Module: Diesel Engine Overhaul

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### Exhaust System Removal

Trainee will remove the turbocharger, exhaust manifold, and thermostat housing.

Duration: 26 min

### Air Intake, EGR, and Crankcase Ventilation Removal

Trainee will remove the air intake, EGR, and crankcase ventilation.

Duration: 20 min

### Fuel Supply System and Cam Gear Removal

Trainee will remove the external engine fuel system components and camshaft gears.

Duration: 15 min

### Cylinder Head Overhaul

Trainee will disassemble the valve cover, valve train, camshafts, and injectors, then remove the cylinder head.

Duration: 21 min



### **Cylinder Head Analysis**

Trainee will inspect the surface of a cylinder head for damage using two non-destructive tests.

Duration: 16 min

### **Cylinder Head Integrity Process**

Trainee will measure and assess cylinder head warpage.

Duration: 15 min

### **Cylinder Liner and Head Valve Protrusion Tests**

Trainee will perform cylinder liner and head valve protrusion tests using a dial indicator.

Duration: 19 min

### **Cylinder Head Installation**

Trainees will install the cylinder head, valve bridge, and engine injectors.

Duration: 16 min

### **Dual Overhead Cam and Valve Train Installation**

Trainee will install the dual overhead camshaft and valve train.

Duration: 15 min

### **Fuel Supply System Installation**

Trainee will install the fuel supply system.

Duration: 15 min

### **Air Intake, EGR, and Crankcase Ventilation Assembly**

Trainee will assemble the air intake, EGR, and crankcase ventilation.

Duration: 15 min

### **Exhaust System Installation**

Trainee will assemble and install the turbocharger, exhaust manifold, and thermostat housing.

Duration: 20 min

### **Cylinder Head Disassembly and Assembly**

Trainee will disassemble and reassemble the cylinder head valves and injectors.

Duration: 17 min

### **Timing and Backlash Procedure: Part 1**

Trainees will learn to inspect and install the timing gear train.

Duration: 6 min

### **Timing and Backlash**

#### **Procedure: Part 2**

Trainee will inspect and install the timing gear train and adjust gear backlash.

Duration: 27 min

### **Valve and Injector Adjustments**

Trainee will adjust valve bridges, valve clearances, and injector settings.

Duration: 18 min

### **Piston and Connecting Rod Removal**

Trainee will remove the piston cooling jets, and the piston and connecting rod assembly.

Duration: 15 min

### **Crankshaft Removal**

Trainee will prepare the engine and remove the crankshaft.

Duration: 16 min

### **Cylinder Liner Removal and Reinstallation**

Trainee will remove and reinstall the cylinder liners and seals.

Duration: 13 min

### **Main Bearing Replacement**

Trainee will replace main bearings and thrust bearings.

Duration: 14 min

### **Crankshaft End Play Measurement**

Trainee will check and correct crankshaft end play.

Duration: 13 min

### **Piston Assembly and Measurement**

Trainee will measure clearances, install piston rings, and put together the assembly.

Duration: 18 min

### **Piston and Bearing Installation**

Trainee will install a piston, connecting rod, and bearings into a cylinder liner.

Duration: 16 min

## **Module:**

# **Precision Measurement**

### **Intro to Simon**

Trainee is introduced to the virtual coach.

Duration: 1 min

### **Controls Tutorial**

Trainee will learn and demonstrate basic use of the VR controllers.

Duration: 2 min

### **Fractional Inch Rule**

Trainee will learn to take measurements with a fractional inch rule.

Duration: 7 min

### **Decimal Inch Rule**

Trainee will learn to take measurements with a decimal inch rule.

Duration: 7 min

### **Metric Rule**

Trainee will learn to take measurements with a metric rule.

Duration: 6 min

### **Controls tutorial: Calipers**

Trainee will learn and demonstrate how to use the caliper controls.

Duration: 2 min

### **Outside Caliper**

Trainee will learn and demonstrate how to use an outside caliper to take a transfer measurement with a fractional inch rule.

Duration: 5 min

### **Inside Caliper**

Trainee will learn and demonstrate how to use an inside caliper to take a transfer measurement with a fractional inch rule.

Duration: 5 min

### **Controls Tutorial: Calipers II**

Trainee will learn and demonstrate how to use the dial inch and digital caliper controls.

Duration: 2 min

### **Dial Inch Caliper**

Trainee will learn and demonstrate how to use a dial inch caliper to take inside, outside, and depth measurements.

Duration: 8 min

### Digital Caliper

Trainee will learn and demonstrate how to use a digital caliper to take inside, outside, and depth measurements.

Duration: 5 min

### Controls Tutorial: Micrometer

Trainee will learn and demonstrate how to use the micrometer control.

Duration: 2 min

### Micrometer

Trainee will learn and demonstrate how to measure using an analog micrometer.

Duration: 10 min

### Digital Micrometer

Trainee will learn and demonstrate how to measure using a digital micrometer.

Duration: 5 min

### Calibration and Zeroing

Trainee will learn and demonstrate how to check the calibration of precision tools and how to zero digital calipers and micrometer.

Duration: 9 min

### Simplify Fractions: Halves

Trainee will learn to recognize and simplify fractions with a denominator of 2.

Duration: 8 min

### Simplify Fractions: Quarters

Trainee will learn to recognize and simplify fractions with a denominator of 4.

Duration: 14 min

### Simplify Fractions: 8ths

Trainee will learn to recognize and simplify fractions with a denominator of 8.

Duration: 16 min

### Simplify Fractions: 16ths and Compound Fractions

Trainee will learn to recognize and simplify fractions with a denominator of 16.

They'll also learn to recognize compound fractions and convert them to whole numbers.

Duration: 10 min

### Simplifying Fractions: 32nds, 64ths, and the Scale Rule

Trainee will learn to recognize and simplify fractions with denominators of 32 and 64. They'll also learn and demonstrate how to take measurements using a scale rule.

Duration: 10 min

### Rounding Decimals

Trainee will learn and demonstrate how to round measurements to the nearest 10th, 100th, and 1000th decimal places.

Duration: 12 min

## Module: Electrical Fundamentals

### Electrical Fundamentals: Circuits & Ohm's Law

Trainee will learn and demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity (Ohm's Law).

Duration: 25 min

### Electrical Test Equipment - Multimeter: Voltage

Trainee will learn and demonstrate how to use a multimeter to measure the voltages in specified devices—from line to neutral and neutral to ground—including setting it properly for expected readings and safely using probes to place the meter in parallel with the circuit.

Duration: 28 min

### Electrical Repair: Basic Soldering

Trainee will learn and demonstrate basic soldering skills.

Duration: 16 min

\*Simulation duration are average estimated times for trainees to complete a simulation.

Individual trainee duration may vary as trainees move at their own pace through simulations



Discipline

# Aviation Maintenance

The Aviation Maintenance discipline gives students and job seekers the simulated hands-on skills they need to obtain positions related to general aircraft equipment inspection and repair.

Module:  
**Aviation Maintenance:  
General Skills**

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**Ground Operations:  
Moving and Securing**

Trainee will move and secure an aircraft on a ramp.

Duration: 18 min

**Ground Operations:  
Fueling Preparation**

Trainee will learn and demonstrate how to fuel and service a parked aircraft.

Duration: 16 min

**Ground Operations:  
Starting and Running**

Trainee will learn and demonstrate how to start and run an aircraft.

Duration: 17 min

**Ground Operations:  
Taxiing and Shutdown**

Trainee will learn and demonstrate how to taxi and shutdown an aircraft.

Duration: 17 min

**Aircraft Weight and Balance**

Trainee will calculate an aircraft's empty weight and empty weight center of gravity, and adjust calculations following a component change.

Duration: 19 min

**Precision Measurements:  
Dial Indicator**

Trainee will learn and demonstrate how to set up and use a dial indicator to determine the amount of runout or bend in a circular component.

Duration: 20 min

**Precision Measurements:  
Hole Gauge**

Trainee will use T-bore hole gauges and digital calipers to determine a hole size.

Duration: 8 min

**Aircraft Cleaning and Corrosion  
Treatment: Metal Structure**

Trainee will inspect metal structures for corrosion and remove the damage, then clean and prepare the structures for corrosion prevention and painting.

Duration: 13 min

**Preparation for Applying  
N-Number: Composite  
Structure**

Trainee will prepare composite structures for painting and apply registration markings.

Duration: 17 min

**Non-Destructive Testing:  
Dye Penetrant**

Trainee will demonstrate the basics of dye penetrant testing, including preparing for and performing the test and interpreting results.

Duration: 15 min

**Non-Destructive Testing:  
Eddy Current**

Trainee will demonstrate the basics of eddy current testing, including preparing for and performing the test and interpreting results.

Duration: 20 min

**Non-Destructive Testing:  
Ultrasonic**

Trainee will demonstrate the basics of ultrasonic testing, including preparing for and performing the test and interpreting results.

Duration: 13 min

**Non-Destructive Testing:  
Magnetic Particle**

Trainee will demonstrate the basics of magnetic particle testing, including preparing for and performing the test and interpreting results.

Duration: 19 min

**Non-Destructive Testing:  
Tap Test**

Trainee will demonstrate the basics of tap testing, including preparing for and performing the test and interpreting results.

Duration: 6 min

**Fabrication of Rigid Fluid Lines**

Trainee will cut, bend, and flare rigid lines, and install proper fittings.

Duration: 14 min

**Fabrication of Flexible  
Fluid Lines**

Trainee will cut, bend, and flare flexible lines, and install proper fittings.

Duration: 15 min

Module:  
**Aviation Maintenance:  
Airframe Skills**

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**Sheet Metal Fabrication**

Trainee will fabricate a sheet metal doubler plate for an antenna installation, including cutting sheet metal to proper dimensions and determining proper rivet layout.

Duration: 15 min

**Sheet Metal Repair**

Trainee will install a flush patch for a damaged sheet metal skin, including riveting the patch to the aircraft skin.

Duration: 18 min

**Composite Repair**

Trainee will cut out and repair the damaged area of a composite surface on a Lear 35.

Duration: 21 min

**Plastic Repair**

Trainee will learn how to repair a cracked acrylic window using two different methods.

Duration: 16 min

**Rudder Balance and Cable  
Terminal End Swaging**

Trainee will check the balance of the rudder, then swage the cable terminal end to the specified dimension.

Duration: 15 min

**Aileron Rigging**

Trainee will confirm the following are rigged to specification and adjust as needed: bellcrank stop bushing position, carry-through cable tension, aileron flushness with adjacent flap, and aileron travel.

Duration: 16 min

**LG Maintenance: Shock Struts**

Trainee will remove, rebuild, replace, and service shock struts.

Duration: 18 min

**LG Maintenance: Brake Bleeding**

Trainee will service a brake system with hydraulic fluid, including performing gravity brake bleeding and pressure brake bleeding.

Duration: 18 min

### **LG Maintenance: Brake Lining Replacement**

Trainee will perform brake system maintenance, including replacing the brake lining.

Duration: 20 min

### **LG Maintenance: Wheel Bearings**

Trainee will remove the wheel and remove, inspect, pack, and reinstall wheel bearings.

Duration: 23 min

### **LG Maintenance: Wheel and Tire Replacement**

Trainee will disassemble the wheel, remove the tire from the wheel and inspect it, and then reassemble the wheel.

Duration: 15 min

### **LG Maintenance: Retraction Test**

Trainee will perform a retraction test, including swinging the landing gear, and a position indication system check.

Duration: 12 min

### **LG Maintenance: Wheel Alignment**

Trainee will check landing gear alignment for camber and toe-in/out.

Duration: 13 min

### **Hydraulic and Pneumatic System Maintenance: Component R&R**

Trainee will remove and replace the hydraulic accumulator and the hydraulic system filter.

Duration: 17 min

### **Hydraulic and Pneumatic System Maintenance: Component Servicing**

Trainee will service a hydraulic reservoir and accumulator.

Duration: 15 min

### **Static and Pitot Leak Checks**

Trainee will perform leakage checks on the static and pitot systems.

Duration: 15 min

### **ELT Inspection**

Trainee will inspect and install an emergency locator transmitter.

Duration: 12 min

### **Antenna Installation**

Trainee will install a GPS antenna on an aircraft, including setting proper antenna placement, measuring and marking for the antenna, and attaching the antenna to the aircraft.

Duration: 22 min

### **Fuel System Maintenance: Inspect & Service**

Trainee will inspect, check, and service a fuel system on a Cessna 172.

Duration: 15 min

### **Fuel System Component: Remove & Replace**

Trainee will remove and replace the fuel quantity transmitter and selector valve, then prime the aircraft fuel system.

Duration: 15 min

### **AC Electrical System Troubleshooting**

Trainee will troubleshoot electrical shorts in the alternator system and remove the alternator.

Duration: 18 min

### **DC Electrical System Troubleshooting**

Trainee will troubleshoot a DC electrical system and repair a broken circuit wire.

Duration: 13 min

### **Inspect and Check Anti-Ice Systems**

Trainee will engage, inspect, and troubleshoot anti-ice systems on a Cessna 172 aircraft.

Duration: 15 min

Module:

## **Aviation Maintenance: Powerplant Skills**

### **Reciprocating Engine: Baffling Repair**

Trainee will repair the baffling on a reciprocating engine.

Duration: 16 min

### **Reciprocating Engine: Induction Filter Change**

Trainee will replace the induction air filter and inspect the carburetor airbox.

Duration: 6 min

### **Reciprocating Engine: Exhaust Inspection**

Trainee will inspect, and perform a pressure test on, the exhaust system of a reciprocating engine.

Duration: 17 min

### **Reciprocating Engine: Starter System Inspection and Replacement**

Trainee will inspect the starter system and replace the starter.

Duration: 13 min

### **Reciprocating Engine: Carburetor System Maintenance**

Trainee will install and adjust the carburetor fuel metering system.

Duration: 15 min

### **Reciprocating Engine: Oil Pressure Gauge Troubleshooting**

Trainee will troubleshoot the oil pressure system and replace a faulty gauge.

Duration: 15 min

### **Propeller: Inspection and Repair**

Trainee will measure the blade angle, perform static tracking, and file out a nick.

Duration: 12 min

### **Reciprocating Engine: Operational Check**

Trainee will perform an engine operation check to ensure instruments and systems are functional.

Duration: 13 min

### **Turbine Engine: Compressor Inspection**

Trainee will remove components to access the compressor and inspect it for damage.

Duration: 14 min

### **Turbine Engine: EGT Inspection**

Trainee will inspect the turbine engine exhaust gas temperature thermocouple.

Duration: 15 min

## Module: Precision Measurement

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### Intro to Simon

Trainee is introduced to the virtual coach.  
Duration: 1 min

### Controls Tutorial

Trainee will learn and demonstrate basic use of the VR controllers.  
Duration: 2 min

### Fractional Inch Rule

Trainee will learn to take measurements with a fractional inch rule.  
Duration: 7 min

### Decimal Inch Rule

Trainee will learn to take measurements with a decimal inch rule.  
Duration: 7 min

### Metric Rule

Trainee will learn to take measurements with a metric rule.  
Duration: 6 min

### Controls tutorial: Calipers

Trainee will learn and demonstrate how to use the caliper controls.  
Duration: 2 min

### Outside Caliper

Trainee will learn and demonstrate how to use an outside caliper to take a transfer measurement with a fractional inch rule.  
Duration: 5 min

### Inside Caliper

Trainee will learn and demonstrate how to use an inside caliper to take a transfer measurement with a fractional inch rule.  
Duration: 5 min

### Controls Tutorial: Calipers II

Trainee will learn and demonstrate how to use the dial inch and digital caliper controls.  
Duration: 2 min

### Dial Inch Caliper

Trainee will learn and demonstrate how to use a dial inch caliper to take inside, outside, and depth measurements.  
Duration: 8 min

### Digital Caliper

Trainee will learn and demonstrate how to use a digital caliper to take inside, outside, and depth measurements.  
Duration: 5 min

### Controls Tutorial: Micrometer

Trainee will learn and demonstrate how to use the micrometer control.  
Duration: 2 min

### Micrometer

Trainee will learn and demonstrate how to measure using an analog micrometer.  
Duration: 10 min

### Digital Micrometer

Trainee will learn and demonstrate how to measure using a digital micrometer.  
Duration: 5 min

### Calibration and Zeroing

Trainee will learn and demonstrate how to check the calibration of precision tools and how to zero digital calipers and micrometer.  
Duration: 9 min

### Simplify Fractions: Halves

Trainee will learn to recognize and simplify fractions with a denominator of 2.  
Duration: 8 min

### Simplify Fractions: Quarters

Trainee will learn to recognize and simplify fractions with a denominator of 4.  
Duration: 14 min

### Simplify Fractions: 8ths

Trainee will learn to recognize and simplify fractions with a denominator of 8.  
Duration: 16 min

### Simplify Fractions: 16ths and Compound Fractions

Trainee will learn to recognize and simplify fractions with a denominator of 16. They'll also learn to recognize compound fractions and convert them to whole numbers.  
Duration: 10 min

### Simplifying Fractions: 32nds, 64ths, and the Scale Rule

Trainee will learn to recognize and simplify fractions with denominators of 32 and 64. They'll also learn and demonstrate how to take measurements using a scale rule.  
Duration: 10 min

### Rounding Decimals

Trainee will learn and demonstrate how to round measurements to the nearest 10th, 100th, and 1000th decimal places.  
Duration: 12 min

## Module: Electrical Fundamentals

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### Electrical Fundamentals: Circuits & Ohm's Law

Trainee will learn and demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity (Ohm's Law).  
Duration: 25 min

### Electrical Test Equipment - Multimeter: Voltage

Trainee will learn and demonstrate how to use a multimeter to measure the voltages in specified devices—from line to neutral and neutral to ground—including setting it properly for expected readings and safely using probes to place the meter in parallel with the circuit.  
Duration: 28 min

### Electrical Repair: Basic Soldering

Trainee will learn and demonstrate basic soldering skills.  
Duration: 16 min

\*Simulation duration are average estimated times for trainees to complete a simulation.

Individual trainee duration may vary as trainees move at their own pace through simulations



Discipline

# Electrical Construction

The Electrical Construction discipline gives students and job seekers the simulated hands-on skills they need to secure positions in the electrical field and other related settings, including manufacturing. Trainees also develop fundamental skills related the construction of buildings and homes, roads, and other infrastructure.

## Module: **Electrical Construction**

**Electrical Construction sims are all accessed in the Electrical Construction app sometimes referred to as VTF Electrical Construction**

### **Conduit Bending: Introduction to 90-Degree Stub-Ups**

Trainee will be introduced to 90-degree stub-ups and will learn and demonstrate how to measure, mark, and bend them.  
Duration: 25 min

### **Conduit Bending: Calculating and Performing 90-Degree Bends**

Trainee will learn and demonstrate how to take measurements, then calculate and perform a 90-degree bend.  
Duration: 27 min

### **Conduit Bending: Introduction to Offsets**

Trainee will be introduced to offsets, then learn and demonstrate how to bend and evaluate them.  
Duration: 30 min

### **Conduit Bending: Preparing and Performing Offsets**

Trainee will learn and demonstrate how to evaluate and measure obstacles, then bend offsets around them.  
Duration: 30 min

### **Conduit Bending: Calculating and Evaluating Offsets**

Trainee will learn and demonstrate how to calculate and convert measurements interpreted from a job site, then lay out and evaluate offset bends according to specifications.  
Duration: 23 min

### **Single MC Prefab Assembly**

Trainee will learn and demonstrate how to assemble, then install, a prefab device for a single MC.  
Duration: 18 min

### **Single Conduit Prefab Assembly**

Trainee will learn and demonstrate how to build a single conduit box bracket prefab device.  
Duration: 17 min

### **Assessment 1**

Trainee will assemble and install a prefab device for a single MC installation, prepare an EMT, bend a 90-degree stub-up, and bend and evaluate an offset.  
Duration: 20 min

### **Single MC 1**

Trainee will learn and demonstrate how to complete a single MC installation without an HR box present.  
Duration: 20 min

### **Single MC 2**

Trainee will complete a single MC installation with an overhead box present.  
Duration: 22 min

### **Single MC 3**

Trainee will learn and demonstrate how to complete a single MC installation with an obstruction.  
Duration: 14 min

### **Single MC 4**

Trainee will learn and demonstrate how to complete a single MC installation when extra vertical and horizontal supports are required.  
Duration: 22 min

### **Assessment 2**

Trainee will assess the jobsite to determine correct measurements and calculations for 90-degree conduit and offset bends, and complete a single MC installation in an OH box.  
Duration: 20 min

### **Horizontal MC 1**

Trainee will learn and demonstrate how to run a horizontal MC between boxes of the same height, with a focus on taking measurements and punching holes in studs.  
Duration: 30 min

### **Horizontal MC 2**

Trainee will learn and demonstrate how to run a horizontal MC between boxes of different heights.  
Duration: 24 min

### **Horizontal MC 3**

Trainee will learn and demonstrate how to run a horizontal MC between boxes with obstructions.  
Duration: 20 min

### **Horizontal Conduit 1**

Trainee will learn and demonstrate how to run conduit between boxes of the same height, with a focus on taking measurements and punching holes in studs.  
Duration: 30 min

### **Horizontal Conduit 2**

Trainee will learn and demonstrate how to run conduit between boxes of different heights.  
Duration: 29 min

### **Horizontal Conduit 3**

Trainee will learn and demonstrate how to run conduit between boxes with obstructions.  
Duration: 32 min

### **Single Conduit Install 1**

Trainee will install single conduit that must be trimmed to meet elevation requirements and connect to an HR box present.  
Duration: 32 min

### **Single Conduit Install 2**

Trainee will learn and demonstrate how to install a single conduit that must have a 90-degree stub bent to fit a predetermined elevation and that may have an HR box present.  
Duration: 35 min

### **Single Conduit Install 3**

Trainee will learn and demonstrate how to install a single conduit that must be extended in length to meet the predetermined elevation.  
Duration: 34 min

### **Single Conduit Install 4**

Trainee will determine elevation and alter a prefab conduit with 90-degree stubs to proper elevation when an OH box is present.  
Duration: 32 min

### **Supporting Boxes and Racks Overhead**

Trainee will learn and demonstrate how to install overhead supports for use in concrete and steel, including wedge anchors, actuated fasteners, and beam clamps.  
Duration: 25 min

### **Assessment 3**

Trainee will install a wedge anchor for an HR box, prepare and install horizontal conduit between two wall device boxes, and install single conduit between a wall box and the HR box.  
Duration: 24 min



### Installing HR & OH 2100 Boxes

Trainee will learn and demonstrate how to mark locations for ceiling fasteners, as well as safely install HR and OH 2100 boxes using actuated fasteners, wedge anchors, and beam clamps.

Duration: 29 min

### Overhead MC Install 1

Trainee will learn and demonstrate how to install an overhead MC, with a focus on installing the MC.

Duration: 20 min

### Overhead MC Install 2

Trainee will learn and demonstrate how to install and support an overhead MC, with a focus on supporting the MC.

Duration: 24 min

### Overhead MC Install 3

Trainee will learn and demonstrate how to install an overhead MC when there is insufficient room to support the MC above the box.

Duration: 21 min

### Wall Wire Pulling

Trainee will learn and demonstrate how to prepare for, label, and safely pull wire from wall boxes to an overhead box.

Duration: 17 min

### Overhead Branch Conduit 1

Trainee will learn and demonstrate how to install EMT conduit that includes overhead supports and couplings, per specifications.

Duration: 20 min

### Overhead Branch Conduit 2

Trainee will learn and demonstrate how to install EMT conduit that includes overhead supports, couplings, and type-C conduit bodies, per specifications.

Duration: 19 min

### Overhead Branch Conduit 3

Trainee will learn and demonstrate how to calculate, bend, and install EMT conduit that includes overhead supports, couplings, and type-C conduit bodies, per specifications.

Duration: 20 min

### Assessment 4

Trainee will prepare and install horizontal conduit between two wall device boxes, install single MC, install an OH 2100 box, and run branch conduit with a 30-degree offset.

Duration: 20 min

## Module: Precision Measurement

### Intro to Simon

Trainee is introduced to the virtual coach.

Duration: 1 min

### Controls Tutorial

Trainee will learn and demonstrate basic use of the VR controllers.

Duration: 2 min

### Fractional Inch Rule

Trainee will learn to take measurements with a fractional inch rule.

Duration: 7 min

### Decimal Inch Rule

Trainee will learn to take measurements with a decimal inch rule.

Duration: 7 min

### Metric Rule

Trainee will learn to take measurements with a metric rule.

Duration: 6 min

### Controls tutorial: Calipers

Trainee will learn and demonstrate how to use the caliper controls.

Duration: 2 min

### Outside Caliper

Trainee will learn and demonstrate how to use an outside caliper to take a transfer measurement with a fractional inch rule.

Duration: 5 min

### Inside Caliper

Trainee will learn and demonstrate how to use an inside caliper to take a transfer measurement with a fractional inch rule.

Duration: 5 min

### Controls Tutorial: Calipers II

Trainee will learn and demonstrate how to use the dial inch and digital caliper controls.

Duration: 2 min

### Dial Inch Caliper

Trainee will learn and demonstrate how to use a dial inch caliper to take inside, outside, and depth measurements.

Duration: 8 min

### Digital Caliper

Trainee will learn and demonstrate how to use a digital caliper to take inside, outside, and depth measurements.

Duration: 5 min

### Controls Tutorial: Micrometer

Trainee will learn and demonstrate how to use the micrometer control.

Duration: 2 min

### Micrometer

Trainee will learn and demonstrate how to measure using an analog micrometer.

Duration: 10 min

### Digital Micrometer

Trainee will learn and demonstrate how to measure using a digital micrometer.

Duration: 5 min

### Calibration and Zeroing

Trainee will learn and demonstrate how to check the calibration of precision tools and how to zero digital calipers and micrometer.

Duration: 9 min

### Simplify Fractions: Halves

Trainee will learn to recognize and simplify fractions with a denominator of 2.

Duration: 8 min

### Simplify Fractions: Quarters

Trainee will learn to recognize and simplify fractions with a denominator of 4.

Duration: 14 min

### Simplify Fractions: 8ths

Trainee will learn to recognize and simplify fractions with a denominator of 8.

Duration: 16 min

### Simplify Fractions: 16ths and Compound Fractions

Trainee will learn to recognize and simplify fractions with a denominator of 16.

They'll also learn to recognize compound fractions and convert them to whole numbers.

Duration: 10 min

### Simplifying Fractions: 32nds, 64ths, and the Scale Rule

Trainee will learn to recognize and simplify fractions with denominators of 32 and 64.

They'll also learn and demonstrate how to take measurements using a scale rule.

Duration: 10 min

### **Rounding Decimals**

Trainee will learn and demonstrate how to round measurements to the nearest 10th, 100th, and 1000th decimal places.

Duration: 12 min

## **Module: Electrical Fundamentals**

### **Electrical Fundamentals: Circuits & Ohm's Law**

Trainee will learn and demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity (Ohm's Law).

Duration: 25 min

### **Electrical Test Equipment- Multimeter: Voltage**

Trainee will learn and demonstrate how to use a multimeter to measure the voltages in specified devices—from line to neutral and neutral to ground—including setting it properly for expected readings and safely using probes to place the meter in parallel with the circuit.

Duration: 28 min

### **Electrical Repair: Basic Soldering**

Trainee will learn and demonstrate basic soldering skills.

Duration: 16 min

## **Module: Plant Safety**

### **Intro to Simon, and Accidents and Injury Prevention**

Trainee will learn and demonstrate accident and injury prevention awareness, including identifying fire hazards; safe lifting; basic lockout-tagout procedures; and workplace hazards.

Duration: 18 min

### **Protective Equipment: Eye, Hearing, Hand, and Foot Protection and Hearing Conservation**

Trainee will learn and demonstrate personal protective equipment (PPE) usage.

Duration: 12 min

### **Hand Tools: Inspecting and Identifying Correctly**

Trainee will learn and demonstrate how to identify and inspect the following common hand tools: slip-joint pliers, Phillips head screwdriver, sheet metal shears, torque wrench, utility knife, and wrench.

Duration: 7 min

### **Hand Tools: Using Hand Tools Correctly**

Trainee will learn and demonstrate how to use the following common hand tools: slip-joint pliers, Phillips head screwdriver, sheet metal shears, torque wrench, utility knife, and wrench.

Duration: 15 min

### **Materials Handling: Situational Awareness**

Trainee will learn and demonstrate situational awareness in a warehouse environment.

Duration: 6 min

### **Materials Handling: Receiving and Storage Safety**

Trainee will learn and demonstrate safe receiving and storage techniques.

Duration: 11 min

### **Materials Handling: Manual Lifting**

Trainee will learn and demonstrate safe manual lifting techniques.

Duration: 8 min

### **Materials Handling: Metal/Glass Sheets and Cylindrical Objects**

Trainee will learn and demonstrate how to safely lift and handle metal/glass sheets and cylindrical objects.

Duration: 7 min

### **Materials Handling: Hoists & Cranes**

Trainee will learn and demonstrate basic safety practices for working with and around hoists and cranes.

Duration: 22 min

### **Energy Related Hazards (Electrical Safety, GFCI, and Electric Shock)**

Trainee will learn and demonstrate awareness of energy-related hazards and the techniques to avoid or mitigate them.

Duration: 10 min

### **Lockout & Tagout**

Trainee will learn and demonstrate a lockout-tagout procedure.

Duration: 7 min

### **Robotic Safety**

Trainee will learn and demonstrate awareness of robotic work cell safety.

Duration: 10 min

### **Ladder Safety: A-Frame Stepladders**

Trainee will learn and demonstrate how to inspect, safely set up, and properly use an A-frame stepladder.

Duration: 10 min

### **Ladder Safety: Straight Ladders**

Trainee will learn and demonstrate how to inspect, safely set up, and properly use a straight ladder.

Duration: 12 min

### **Fire Extinguisher Safety**

Trainee will learn and demonstrate knowledge of the types of fire extinguishers and how to safely operate them.

Duration: 8 min

### **Safety Data Sheets**

Trainee will learn and demonstrate how to use Safety Data Sheets to identify chemical-related hazards, first aid measures, and personal protective equipment.

Duration: 10 min

### **Bloodborne Pathogens**

Trainee will learn and demonstrate knowledge of the types of bloodborne pathogens, as well as how to protect themselves with personal protective equipment and safety procedures.

Duration: 8 min

### **Power Tools/Electrical Safety: Pneumatic Wrenches and Screwdrivers**

Trainee will learn and demonstrate how to inspect and safely use pneumatic wrenches and screwdrivers.

Duration: 14 min

### **Power Tools/Electrical Safety: Electric Drill**

Trainee will learn and demonstrate how to inspect and safely use an electric drill.

Duration: 11 min

### **Power Tools/Electrical Safety: Circular Saw**

Trainee will learn and demonstrate how to inspect and safely use a circular saw.

Duration: 15 min

### **Power Tools/Electrical Safety: Miter Saw**

Trainee will learn and demonstrate how to inspect and safely use a miter saw.

Duration: 9 min

### **Power Tools/Electrical Safety: Bench and Pedestal Grinders**

Trainee will learn and demonstrate how to inspect and safely use a pedestal grinder.

Duration: 15 min

### **Power Tools/Electrical Safety: Handheld Grinders**

Trainee will learn and demonstrate how to inspect and safely use a handheld grinder.

Duration: 13 min

### **Power Tools/Electrical Safety: Nibblers**

Trainee will learn and demonstrate how to inspect and safely use a nibbler.

Duration: 10 min

### **Welding Safety: Burn Safety**

Trainee will learn and demonstrate knowledge of the types of burn risks associated with welding arcs, as well as how to protect themselves with personal protective equipment and safety procedures.

Duration: 8 min

### **Welding Safety: Spot Welding Safety**

Trainee will learn and demonstrate how to safely use resistance welding equipment.

Duration: 9 min

### **Welding Safety: MIG Welding Safety**

Trainee will learn and demonstrate how to safely use MIG welding equipment.

Duration: 12 min

### **Welding Safety: Oxy-Acetylene Safety**

Trainee will learn and demonstrate how to safely use oxy-acetylene welding equipment.

Duration: 14 min

## **Module: Blueprint Reading**

### **Intro to Construction and Technical Drawings**

Trainee will learn how to interpret "The Language of Lines," and use it in architectural and technical drawings.

Duration: 13 min

### **Interpreting Technical Drawings**

Trainee will learn and demonstrate how to use "The Language of Lines" to interpret technical drawings.

Duration: 15 min

### **Technical Drawings: Dimensioning**

Trainee will learn and demonstrate accepted dimensioning techniques used in technical drawing.

Duration: 20 min

### **Technical Drawings: General Standard Symbols, Screw Callouts, and Thread Symbols**

Trainee will learn to identify common dimensioning symbols, interpret screw callouts, and examine thread symbols within a technical drawing.

Duration: 21 min

### **Technical Drawings: Finishing Surfaces and Symbols**

Trainee will learn and demonstrate how to interpret surface finish symbols for use on technical drawings as part of the manufacturing process.

Duration: 25 min

### **Technical Drawings: Terminology of Machined Slots**

Trainee will learn and demonstrate knowledge of terminology, common configurations, and features of the following machined parts and slots: chamfer, dovetails, keys and keyways, mortise and tenon, slotted holes, and T-grooves.

Duration: 20 min

### **Technical Drawings: Intro to Title Blocks & Assembly Drawings**

Trainee is introduced to the practice of using information from title blocks and assembly drawings to correctly identify machined parts.

Duration: 20 min

### **Technical Drawings: Using Title Blocks & Assembly Drawings**

Trainee will learn and demonstrate how to use information from title blocks and assembly drawings to correctly identify machined parts.

Duration: 15 min

### **Technical Drawings: Visualization & Views**

Trainee will learn and demonstrate how to communicate and verify the relationship between technical drawings and machined parts using visualization and interpretation.

Duration: 20 min

### **Technical Drawings: Section & Auxiliary Views**

Trainee will learn and demonstrate how to select and verify machined parts by interpreting sectional and auxiliary views.

Duration: 25 min

### **Technical Drawings: Assembly and Tolerance**

Trainee will learn and demonstrate how to identify the features of an assembly drawing and a matching drawing, as well as practice reading tolerances by defining a part's range of variation.

Duration: 15 min

## Module: Construction Safety

### Intro to Simon, and Accidents and Injury Prevention

Trainee will learn and demonstrate accident and injury prevention awareness, including identifying fire hazards; safe lifting; basic lockout-tagout procedures; and workplace hazards.

Duration: 18 min

### Job Site Safety: Situational Awareness

Trainee will learn and demonstrate job site situational awareness.

Duration: 18 min

### Personal Protective Equipment

Trainee will learn and demonstrate personal protective equipment (PPE) usage.

Duration: 12 min

### Personal Protective Equipment: Respirators

Trainee will learn and demonstrate awareness of respiratory hazards and how to use a respirator.

Duration: 13 min

### Extension Ladder Safety

Trainee will properly inspect, set up, and use an extension ladder.

Duration: 16 min

### Scaffolds

Trainee will learn and demonstrate how to safely use scaffolds.

Duration: 14 min

### Layout Tools: Squares, Plumb Bobs, and Levels

Trainee will identify and use levels, squares, and a plumb bob.

Duration: 14 min

### Hand Tools: Hand Saws

Trainee will learn and demonstrate how to inspect and safely use a hand saw.

Duration: 16 min

### Hand Tools: Hack Saws

Trainee will learn and demonstrate how to inspect and safely use a hacksaw.

Duration: 16 min

### Power Tools: Impact Wrenches

Trainee will learn and demonstrate how to inspect and safely use an impact wrench.

Duration: 15 min

### Power Tools: Hammer Drill

Trainee will inspect and safely use a hammer drill.

Duration: 12 min

### Power Tools: Reciprocating Saw

Trainee will learn and demonstrate how to inspect and safely use a reciprocating saw.

Duration: 14 min

### Power Tools: Portable Band Saw

Trainee will learn and demonstrate how to inspect and safely use a portable band saw.

Duration: 16 min

### Power Tools: Cutoff Saw

Trainee will inspect and safely use a cutoff saw.

Duration: 12 min

### Construction Drawings 1

Trainee will learn and demonstrate how to identify various types of construction drawings, as well as interpret their purpose and fundamental components.

Duration: 16 min

### Construction Drawings 2

Trainee will read construction drawings and measure dimensions with an architect's scale.

Duration: 12 min

### Materials Handling: Safety Concepts and Precautions

Trainee will learn and demonstrate knowledge of common material handling safety precautions.

Duration: 16 min

### Materials Handling: Placards

Trainee will learn and demonstrate how to identify and understand common hazardous materials placards.

Duration: 15 min

### Materials Handling: Non-Motorized Equipment

Trainee will learn and demonstrate how to plan a safe route when using a pallet jack.

Duration: 16 min

### Materials Handling: Motorized Equipment

Trainee will learn and demonstrate how to identify and safely be around motorized material handling equipment.

Duration: 19 min

### Intro to Rigging Equipment

Trainee will learn about different types of slings and shackles commonly used in rigging.

Duration: 19 min

### Intro to Rigging Hitches

Trainee will learn basic concepts and safety practices for bridle and double choker hitches.

Duration: 18 min

### Additional Construction related skills can be found in the following simulations from Plant Safety:

Intro to Simon, and Accidents and Injury Prevention

Personal Protective Equipment

Energy Related Hazards

Lockout Tagout

Safety Data Sheets

Hand Tools: Inspecting and Identifying Correctly

Hand Tools: Using Hand Tools Correctly

Power Tools: Pneumatic Wrenches and Screwdrivers

Power Tools: Handheld Grinder

Power Tools: Stationary Grinder

Materials Handling: Situational Awareness

Materials Handling: Manual Lifting

Materials Handling: Receiving and Storage Safety

## Module: **Mechatronics**

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### **Variable Speed Motor: Assembly**

Trainee will learn and demonstrate how to assemble an AC variable speed motor with keyed shaft, pillow-block bearings, assorted gears, couplings, and standoffs.

**Duration: 18 min**

### **Variable Speed Motor: Wiring**

Trainee will learn and demonstrate how to interpret wiring diagrams to make proper connections, energize, and verify rotational direction on a variable speed motor.

**Duration: 14 min**

### **Variable Speed Motor: Measurements**


Trainee will learn and demonstrate how to use a multimeter to measure current, voltage, and resistance.

**Duration: 18 min**

### **Robotic Safety**

Trainee will learn and demonstrate how to work safely with and in proximity to robotic arms, work cells, and systems, as well as recognize hazards, emergency procedures, functions, work cell limits, and emergency stops.

**Duration: 10 min**

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\*Simulation duration are average estimated times for trainees to complete a simulation.

Individual trainee duration may vary as trainees move at their own pace through simulations