Introduction to Construction Materials

Standard 01

Steel (Introduction to Construction Materials)

Objective 01 I can explain steel strengths and the characteristics of steel.
Objective 02 I can identify various types of steel used in vehicle construction.
Objective 03 I can explain some of the forming processes used for steel used in vehicle construction.
Objective 04 I can identify considerations when working with steel parts.

Standard 02

Aluminum and Magnesium (Introduction to Construction Materials)

Objective 01 I can identify properties and characteristics of aluminum.
Objective 02 I can identify where aluminum parts are used in vehicle construction.
Objective 03 I can explain considerations when working on aluminum parts.
Objective 04 I can identify properties and characteristics of magnesium.
Objective 05 I can identify where magnesium parts are used in vehicle construction.
Objective 06 I can explain considerations when working on magnesium parts.

Standard 03

Plastics and Carbon Fiber (Introduction to Construction Materials)

Objective 01 I can identify where plastic parts are used in vehicle construction.
Objective 02 I can identify properties and characteristics of plastic.
Objective 03 I can identify where carbon fiber parts are used in vehicle construction.
Objective 04 I can identify properties and characteristics of carbon fiber.
Objective 05 I can explain plastic type identification.
Objective 06 I can explain considerations when working on plastic and carbon fiber parts.

Standard 04

Collision Energy Management (Introduction to Construction Materials)

Objective 01 I can identify different build designs of vehicles.

Objective 02 I can explain parts that absorb collision energy.

Objective 03 I can explain parts and areas of a vehicle that transfer collision energy.

Objective 04 I can explain how collision energy travels through a vehicle during different types of collisions.

Objective 05 I can explain why different steel is used in vehicle construction.

Objective 06 I can explain the difference between a tailor-welded part and a tailor rolled part.

Objective 07 I can describe the function of a vehicle collapse zone.

Objective 08 I can explain how a constraint system works with the structure to protect occupants.

Introduction to Mechanical Systems Technology 1

Standard 05

Steering (Introduction to Mechanical Systems Technology 1)

Objective 01 I can identify parts of a steering column.

Objective 02 I can identify parts of a parallelogram steering system.

Objective 03 I can explain how a parallelogram steering system operates.

Objective 04 I can identify parts of a rack and pinion steering system.

Objective 05 I can explain how a rack and pinion steering system operates.

Objective 06 I can identify various types of power steering systems.

Objective 07 I can identify power steering system parts.

Standard 06

Wheels and Tires (Introduction to Mechanical Systems Technology 1)
Objective01 I can identify parts of a wheel.
Objective02 I can identify parts of a tire.

Standard 07

Brakes (Introduction to Mechanical Systems Technology 1)
Objective01 I can identify parts of a disc brake assembly.
Objective02 I can explain the operation of disc brakes.
Objective03 I can identify parts of a drum brake assembly.
Objective04 I can explain the operation of drum brakes.

Standard 08

Stability Control (Introduction to Mechanical Systems Technology 1)
Objective01 I can identify parts of an anti-lock brake system.
Objective02 I can explain the operation of an anti-lock brake system.
Objective03 I can identify parts of a traction control system.
Objective04 I can explain the operation of a traction control system.
Objective05 I can identify parts of an electronic stability control system.
Objective06 I can explain the operation of an electronic stability control system.

Introduction to Mechanical Systems Technology part 2

Standard 09

Suspension (Introduction to Mechanical Systems Technology 2)
Objective01 I can identify parts of a MacPherson strut suspension.
Objective02 I can identify parts of a short arm long arm (SLA) suspension.
Objective03 I can identify parts of a double wishbone suspension.
Objective04 I can identify types and parts of solid axle suspensions.
Objective 05 I can identify parts of advanced suspension systems.

Standard 10

Drivetrain (Introduction to Mechanical Systems Technology 2)
Objective 01 I can identifying the drivetrain.
Objective 02 I can explaining the engine.
Objective 03 I can identify the starting and charging system.

Standard 11

Heating and Cooling (Introduction to Mechanical Systems Technology 2)
Objective 01 I can explain how the heating and cooling system works.
Objective 02 I can identify parts of the heating and cooling system.
Objective 03 I can identify the other systems that are used in conjunction with the heating and cooling system.

Standard 12

Air Conditioning (Introduction to Mechanical Systems Technology 2)
Objective 01 I can explain how refrigerant flows through the air conditioning system.
Objective 02 I can identify parts of an air conditioning system.
Objective 03 I can explain the operation of air conditioning system parts.

Introduction to Mechanical Repair Terms and Vehicle Protection

Standard 13

Electrical (Introduction to Mechanical Repair Terms and Vehicle Protection)
Objective 01 I can identify parts of a circuit.
Objective 02 I can identify circuit protection.
Objective 03 I can identify voltage, current, and resistance.
Objective04 I can identify electrical diagnostic terms.

Objective05 I can identify electrical diagrams.

Objective06 I can identify a scan tool.

**Standard 14**

**Mechanical** *(Introduction to Mechanical Repair Terms and Vehicle Protection)*

Objective01 I can identify cooling system repair terms.

Objective02 I can identify brake system repair terms.

Objective03 I can identify other mechanical repair terms.

**Standard 15**

**Steering and Suspension Systems** *(Introduction to Mechanical Repair Terms and Vehicle Protection)*

Objective01 I can identify wheel and tire repair terms.

Objective02 I can identify terms used for steering system diagnostics.

Objective03 I can identify quick checks used for diagnosing a suspension system.

**Standard 16**

**Protecting Electronic Systems** *(Introduction to Mechanical Repair Terms and Vehicle Protection)*

Objective01 I can identify electrical and electronic parts that are vulnerable to damage during the repair process.

Objective02 I can identify various repair operations that may damage electrical and electronic parts.

Objective03 I can explain how electrical and electronic parts removed from the vehicle are handled and stored properly.

**Standard 17**
Preventing Vehicle Damage during Repair (Introduction to Mechanical Repair Terms and Vehicle Protection)

Objective01 I can identify various repair processes that can cause unwanted damage to the vehicle.
Objective02 I can explain best practices for reducing the chance of damage during repairs.
Objective03 I can identify various products used to protect the vehicle during repairs.

Introduction to Personal Safety

Standard 18

General Protection (Introduction to Personal Safety)

Objective01 I can identify eye, body, respiratory, and hearing protection requirements.
Objective02 I can identify work safety regulations and hazardous material identification systems.

Standard 19

Structural Repairs (Introduction to Personal Safety)

Objective01 I can list safety requirements for lifts and jacks.
Objective02 I can identify safety equipment and safety procedures for anchoring and straightening a structure.
Objective03 I can list safety procedures for part removal and installation.
Objective04 I can identify personal safety protection when around gas metal arc and squeeze-type resistance spot welding.

Standard 20

Non-Structural Repairs (Introduction to Personal Safety)

Objective01 I can identify safety requirements with metal straightening.
Objective02 I can identify safety requirements with body filler application.
Objective03 I can identify safety requirements with weld-on dent removal.
Objective04 I can identify safety requirements with plastic repairs.

Standard 21

Hybrids (Introduction to Personal Safety)
Objective01 I can identify safety precautions with high voltage.
Objective02 I can identify hybrid electric vehicles.
Objective03 I can clean up spilled electrolyte.
Objective04 I can disable hybrid electric vehicles.

**Introduction to Refinishing and Corrosion Protection**

**Standard 22**

**Vehicle Maker Processes** *(Introduction to Refinishing and Corrosion Protection)*

Objective01 I can identify zinc coatings.
Objective02 I can identify metal treatment.
Objective03 I can identify coatings applied by the vehicle maker.
Objective 04 I can identify vehicle maker corrosion protection warranties.

**Standard 23**

**Refinish Terms** *(Introduction to Refinishing and Corrosion Protection)*

Objective01 I can identify masking, sanding, and scuffing procedures.
Objective02 I can identify a spot repair.
Objective03 I can discuss flash times.
Objective04 I can identify the paint code on a vehicle.
Objective05 I can discuss the mixing process, tinting, making spray-out panels, and the application of topcoats.
Objective06 I can identify jambing and blending.
Objective07 I can identify panel refinishing.
Objective08 I can identify the baking process, drying, and curing.

**Standard 24**

**Refinish Materials** *(Introduction to Refinishing and Corrosion Protection)*
Objective01 I can identify basecoat, clear coat and midcoat paint systems.
Objective02 I can identify reducers.
Objective03 I can identify waterborne materials.
Objective04 I can discuss paint maker warranties.

Standard 25

Personal Safety (Introduction to Refinishing and Corrosion Protection)
Objective01 I can identify safety issues with isocyanate exposure.
Objective02 I can identify clothing that is worn in the refinishing area.
Objective03 I can identify eye protection in the refinishing area.
Objective04 I can identify safety issues in the mixing room and prep deck.
Objective05 I can identify safety requirements when detailing.

Introduction to Refinish Material and Corrosion Materials part 2

Standard 26

Refinishing Tools (Introduction to Refinish Material and Corrosion Materials part 2)
Objective01 I can identify some types of equipment found in a mixing room.
Objective02 I can explain how mixing cups and sticks function.
Objective03 I can explain the parts of a spray booth.
Objective04 I can explain how color matching tools are used.
Objective05 I can describe the functions of detailing tools.

Standard 27

Refinishing Preparation (Introduction to Refinish Material and Corrosion Materials part 2)
Objective01 I can identify a solvent test.
Objective02 I can identify masking materials.
Objective03 I can identify primer-surfacer sand primer-sealers.

Objective04 identify preparation abrasives.

Objective05 I can identify adhesion promoter.

**Standard 28**

**Refinishing Defects** *(Introduction to Refinish Material and Corrosion Materials part 2)*

Objective01 I can identify nib sanding and buffing for removing some refinishing defects.

Objective02 I can identify different types of refinishing defect sand common causes of these defects.

**Standard 29**

**Corrosion Protection** *(Introduction to Refinish Material and Corrosion Materials part 2)*

Objective01 I can identify weld-through primer.

Objective02 I can identify corrosion-inhibiting adhesive.

Objective03 I can identify primers.

Objective04 I can identifying chip-resistant coating.

Objective05 I can identify seam sealers, anti-corrosion compound, and undercoating.

**Introduction to Collision repair Overview**

**Standard 30**

**The Collision Repair Process** *(Introduction to Collision repair Overview)*

Objective01 I can identify the different types of collision damage.

Objective02 I can explain the creation and function of a damage report.

Objective03 I can define repair blue printing and supplements.

Objective04 I can explain insurance policy basics.
Objective05 I can describe vehicle tear down and parts ordering.

Objective06 I can explain exterior lighting, and heating and cooling systems.

Standard 31

Structural and Non-Structural Repair (Introduction to Collision repair Overview)

Objective01 I can explain why vehicles are measured and considerations for straightening.

Objective02 I can explain structural part repairs and replacement.

Objective03 I can explain exterior panel and nonstructural repairs.

Objective04 I can discuss the role of stationary glass and replacement considerations.

Standard 32

Electrical and Mechanical Repair (Introduction to Collision repair Overview)

Objective01 I can identify types of restraints and restraint systems.

Objective02 I can explain the importance of wheel alignments.

Objective03 I can list types of vehicle electronics and electrical damage.

Objective04 I can identify hybrid-electric vehicles and listing high voltage considerations.

Standard 33

Refinishing and Delivery (Introduction to Collision repair Overview)

Objective01 I can explain the refinishing process.

Objective02 I can list corrosion protection considerations.

Objective03 I can describe the detailing process.

Objective04 I can explain the pre-delivery inspection and customer delivery process.
Introduction to Industry Repair Terms

Standard 34

Non-Structural: (Introduction to Industry Repair Terms)

Objective01 I can identify the two sides of a vehicle.
Objective02 I can identify sheet metal straightening terms.
Objective03 I can identify panel alignment terms.
Objective04 I can identify plastic repair terms

Standard 35

Structural (Introduction to Industry Repair Terms)

Objective01 I can identify three-dimensional measuring terms.
Objective02 I can identify structural straightening terms.
Objective03 I can identify other structural damage terms.

Standard 36

Structural Part Replacement (Introduction to Industry Repair Terms)

Objective01 I can identify complete and partial part replacement.
Objective02 I can identify sectioning and types of sectioning joints.

Standard 37

Glass (Introduction to Industry Repair Terms)
Objective 01 I can identify stationary glass cut out and installation terms.

Objective 02 I can identify glass repair terms.

Objective 03 I can identify movable glass repair terms.

Standard 38

**Damage Report Writing** *(Introduction to Industry Repair Terms)*

Objective 01 I can define common industry terms used during the damage report writing process.

Objective 02 I can identify common abbreviations used during the damage report writing process.

**Introduction to Safety Systems**

Standard 39

**Airbags** *(Introduction to Safety Systems)*

Objective 01 I can explain how an airbag functions.

Objective 02 I can identify the parts of the front airbag system.

Objective 03 I can explain the operation of the front airbag system.

Objective 04 I can identify the parts of the side airbag system.

Objective 05 I can explain the operation of the side airbag system.

Standard 40

**Seat Belts and Child Safety Seats** *(Introduction to Safety Systems)*

Objective 01 I can identify the parts of a seatbelt assembly.

Objective 02 I can identify the requirement for a child safety seat.
Standard 41

**Occupant Classification** *(Introduction to Safety Systems)*

Objective01 I can identify the parts of the OCS.

Objective02 I can explain how the OCS works.

Standard 42

**Additional Systems** *(Introduction to Safety Systems)*

Objective01 I can identify the parts for collision avoidance and mitigation systems.

Objective02 I can explain the function of collision avoidance and mitigation systems.

Objective03 I can identify the parts for blind spot warning and lane departure warning systems.

Objective04 I can explain the function of blind spot warning and lane departure warning systems.

Objective05 I can identify the parts for backup safety and parking-assist systems.

Objective06 I can explain the function of backup safety and parking-assist systems

**Introduction to Tools, Equipment, and Attachment Methods.**

Standard 43

**Basic Tools-Part1** *(Introduction to Tools, Equipment, and Attachment Methods)*
Objective01 I can identify the uses for a hammer and dolly.

Objective02 I can explain the purpose of paint less dent repair tools.

Objective03 I can explain the different types of dent pulling equipment and what files are used for.

Objective04 I can explain the differences between a grinding wheel and a cut-off wheel.

Objective05 I can describe the two common saws used in a collision repair facility.

**Standard 44**

**Basic Tools-Part 2** (Introduction to Tools, Equipment, and Attachment Methods)

Objective01 I can identify the uses of a mixing board and spreader.

Objective02 I can explain the different uses for sanding tools and scrapers.

Objective03 I can describe the different types of pliers and their uses.

Objective04 I can describe the use of different types of wrenches.

Objective05 I can explain the various types of sockets and screwdriver.

**Standard 45**

**Mechanical Fastening** (Introduction to Tools, Equipment, and Attachment Methods)

Objective01 I can identify some of the bolts, screws, rivets, clips, clinches, and hem flanges used for automotive attachment applications.

Objective02 I can explain characteristics of some of these mechanical fastener sand installation methods.

Objective03 I can explain one-time use considerations for some of these mechanical fasteners.

**Standard 46**

**Glass and Trim** (Introduction to Tools, Equipment, and Attachment Methods)

Objective01 I can identify the different types of cutting knives.

Objective02 I can explain why suction cups are used for installing glass.
Objective 03 I can explain the different types of adhesive applicator guns.

---

**Standard 47**

**Estimating Tools and Processes** *(Introduction to Tools, Equipment, and Attachment Methods)*

Objective 01 I can explain why damage reports are written.

Objective 02 I can identify when, where, and by whom damage reports are written.

Objective 03 I can explain some of the processes that are done when writing a damage report.

Objective 04 I can identify information sources that may be required or helpful when writing a damage report.

*Introduction to Tools, Equipment, and Attachment Methods.*

**Standard 48**

**Measuring and straightening** *(Introduction to Tools, Equipment, and Attachment Methods)*

Objective 01 I can describe different types of three-dimensional measuring equipment.

Objective 02 I can describe different types of frame straightening equipment.

Objective 03 I can describe different types of pulling hardware.

**Standard 49**

**Welding** *(Introduction to Tools, Equipment, and Attachment Methods)*

Objective 01 I can identify parts that make up a welding machine.

Objective 02 I can explain the difference between a MIG torch, and a spool gun.

Objective 03 I can explaining the parts of a spot welding machine.
Objective04 I can explaining why dye penetrant is used.

Standard 50

**Welding Methods** *(Introduction to Tools, Equipment, and Attachment Methods)*

Objective01 I can explain the spot welding process.

Objective02 I can identifying considerations when using a spot welder.

Objective03 I can explain the GMA (MIG) welding process.

Objective04 I can identify considerations when using GMA (MIG) welding.

Objective05 I can explaining the MIG brazing process.

Objective06 I can explaining the laser welding process used in vehicle construction.

Standard 51

**Panel Bonding** *(Introduction to Tools, Equipment, and Attachment Methods)*

Objective01 I can explain the adhesive bonding process for attaching vehicle parts.

Objective02 I can identify considerations when adhesive bonding.

Objective03 I can explain the welding bonding process for attaching vehicle parts.

Objective04 I can explain the rivet bonding process for attaching vehicle parts.

Standard 52

**Capital Equipment** *(Introduction to Tools, Equipment, and Attachment Methods)*

Objective01 I can explaining what an air compressor is used for.

Objective02 I can explaining how mobility jacks are used.
Objective03 I can explaining different types of battery chargers.

Introduction to Vehicle Terminology Part 1

Standard 53

Bumpers, Front Body, and Roof Panels (Introduction to Vehicle Terminology Part 1)

Objective01 I can identify parts of bumper assemblies.
Objective02 I can identify parts of the hood.
Objective03 I can identify parts of a fender.
Objective04 I can identify parts the outer roof panel.

Standard 54

Doors (Introduction to Vehicle Terminology Part 1)

Objective01 I can identify parts of the door structure.
Objective02 I can identify mechanical parts of a door assembly.
Objective03 I can identify door accessories.

Standard 55

Rear Closure Panels Box Assemblies and Exterior Trim (Introduction to Vehicle Terminology Part 1)

Objective01 I can identify various types of rear closure panels.
Objective02 I can identify parts of a pickup truck box assembly.
Objective03 I can identify various types of exterior trim and moldings.

Standard 56
**Lighting** *(Introduction to Vehicle Terminology Part 1)*

Objective01 I can identify the different lamps that are on the front section of the vehicle.

Objective02 I can identify the different lamps that are the rear section of the vehicle.

Objective03 I can identify the different lamps that are on the interior of the vehicle.

**Introduction to Vehicle Terminology part 2**

**Standard 57**

**Front Uni-body Structures and Full Frames** *(Introduction to Vehicle Terminology part 2)*

Objective01 I can identify various vehicle designs.

Objective02 I can identify front parts of a unibody structure.

Objective03 I can identify parts of a full-frame assembly.

**Standard 58**

**Side and Rear Unibody Structures** *(Introduction to Vehicle Terminology part 2)*

Objective01 I can identify side parts of a unibody structure.

Objective02 I can identify center parts of a unibody structure.

Objective03 I can identify rear parts of a unibody structure.

**Standard 59**

**Interior** *(Introduction to Vehicle Terminology part 2)*

Objective01 I can identify an instrument panel.

Objective02 I can identify controls and switches on the interior.

Objective03 I can identify a rear view mirror. Identify a center console.

Objective04 I can explain manual and electronic seats.
Objective05 I can identify a headliner.

Objective06 I can identify other interior parts.

**Standard 60**

**Glass (Introduction to Vehicle Terminology part 2)**

Objective01 I can identify the difference between laminated and tempered glass.

Objective02 I can identify various accessories that maybe integrated with stationary glass.

Objective03 I can identify parts of movable glass assemblies.

Objective04 I can explain the operation for various types of glass lifting mechanisms.