

CT.ABR Auto Body

Essential Discipline Goals

- Develop and apply the technical competency and related academic skills that allow for economic independence and career satisfaction.
- Acquire the essential learnings and values that foster continued education throughout life.
- Demonstrate the ability to communicate, solve problems, work individually and in teams and apply information effectively.
- Develop technological literacy and the ability to adapt to future change.

Standards

Indicators

CT.ABR.02 Identify and work with common auto body hand and power tools.

CT.ABR.02.01 Identify, use and maintain hand-held, open and closed end wrenches

CT.ABR.02.02 Identify, use and maintain straight, phillips and torx ended screwdrivers

CT.ABR.02.03 Identify, use and maintain socket wrench sets of ¼, 3/8 and ½ inch drive, standard and metric, shallow and deep, 12 and 6-point sockets

CT.ABR.02.04 Identify, use and maintain common auto body shrinking, roughing and bumping hammers

CT.ABR.02.05 Identify, use and maintain common auto body utility, toe, heel and coma dollies

CT.ABR.02.06 Identify, use and maintain other common auto body hand tools

CT.ABR.02.07 List and explain fluid air and electric as different power sources of power tools

CT.ABR.02.08 Identify and explain the function of the major components of air power system

CT.ABR.02.09 Identify, use and maintain the common air powered auto tools

CT.ABR.02.10 Identify and explain the function of the major components of the hydraulic power system

CT.ABR.02.11 Identify, use and maintain the common hydraulic powered auto body tools

CT.ABR.04 Demonstrate personal and work-site safety habits and follow all safety rules.

CT.ABR.04.01 Identify and explain unsafe working conditions

CT.ABR.04.02 Evaluate safety risk

CT.ARC.06 Given all the major components of the oxy/acy welding outfit, properly set up the equipment for use; pressurize the system; light, adjust and extinguish the flame and depressurize the system.

CT.ABR.06.01 Identify and explain the function of the major components of the oxy/acy welder

CT.ABR.06.02 List and demonstrate the steps to follow when checking an oxy/acy welding system for leaks

CT.ABR.06.03 Demonstrate the steps to follow when shutting down the oxy/acy welding system

CT.ABR.06.04 Given a properly setup and oxy/acy welder, perform a cold quenching heat shrink on moderately stretched metal

CT.ABR.06.05 Identify and explain the difference between a fusion joint and a solder joint

CT.ABR.06.06 Given a properly set up oxy/acy welder, perform and dress a continuous solder lap weld using bronze rod

CT.ABR.06.07 Identify and explain the difference the difference between a fusion joint and a solder joint

CT.ABR.06.08 Given a properly set up oxy/acy welder, perform and dress 5/16 plug weld using bronze rod

CT.ABR.06.09 Given a properly set up oxy/acy welder, perform an effective hammered heat shrink on severely stretched metal

CT.ABR.08 Given all the major components of the MIG welding system, properly set up, tune, use and shut down the equipment.

CT.ABR.08.01 Identify and explain the function of all major components of the MIG welding equipment

CT.ABR.08.02 List, explain and demonstrate the steps to follow when setting up the MIG welding equipment
CT.ABR.08.03 Identify and explain the characteristics between a fusion joint and solder joint
CT.ABR.08.04 List, explain and demonstrate the steps to follow when tuning the MIG welder for welding
CT.ABR.08.05 List, explain and demonstrate the steps to follow when shutting down the MIG welding equipment
CT.ABR.08.06 Identify and explain the characteristics and uses of a continuous lap weld
CT.ABR.08.07 Complete and dress a continuous fusion lap weld using the MIG welder
CT.ABR.08.08 List and demonstrate the steps to follow when performing a 5/16 plug weld using the MIG welder

CT.ABR.10 List, explain and demonstrate the metal straightening operations including damage analysis, roughing, bumping and finishing.

CT.ABR.10.01 Identify the common properties of steel and explain their characteristics
CT.ABR.10.02 List, explain and demonstrate the ability to properly determine if the panel should be repaired or replaced in accordance with collision repair standards
CT.ABR.10.03 Demonstrate and explain the procedures of correcting slightly stretched metal using cold shrinking techniques
CT.ABR.10.04 Identify, demonstrate and explain the damage analysis, roughing, bumping and finishing steps of metal repair on mild steel
CT.ABR.10.05 Identify, demonstrate and explain the damage analysis, roughing, bumping and finishing steps of metal repair on super high strength steel

CT.ABR.12 Remove, overhaul, reinstall and align bolted-on, welded-on cosmetic structural parts of assemblies.

CT.ABR.12.01 List, explain and demonstrate the ability to determine the type of body construction of a given vehicle of full framed construction, 1st generation unitized construction, 2nd generation unitized construction or 3rd generation unitized construction
CT.ABR.12.02 List, explain and demonstrate the ability to identify by its technical name, all the common crash parts of a vehicle
CT.ABR.12.03 List, explain and demonstrate the ability to determine if a given crash part is cosmetic or structural, and properly identify the material it is made of
CT.ABR.12.04 List, explain and demonstrate the ability to determine the fastening method of a given part of assembly
CT.ABR.12.06 List, explain and demonstrate the ability to remove structural and cosmetic bolted-on or welded-on parts or assemblies from vehicles
CT.ABR.12.07 List, explain and demonstrate the ability to disassemble and inspect the parts of an assembly for damage
CT.ABR.12.08 List, explain and demonstrate the ability to properly repair or replace damaged parts of the assembly
CT.ABR.12.09 List, explain and demonstrate the ability to reassemble the parts of the assembly
CT.ABR.12.10 List, explain and demonstrate the ability to reattach the assembly to the vehicle
CT.ABR.12.11 List, explain and demonstrate the ability to properly realign the assembly to the vehicle's body lines

CT.ABR.14 Given the major components of a universal measuring system, measure a lower body in all three zero planes for length, width, square and height.

CT.ABR.14.01 Identify, maintain and effectively work with the metric distance measurement system
CT.ABR.14.02 Add, subtract and divide whole and decimal numbers
CT.ABR.14.03 List, explain and demonstrate the datum plane concept
CT.ABR.14.04 List, explain and demonstrate the center line concept
CT.ABR.14.05 List, explain and demonstrate the three zero planes and their concepts
CT.ABR.14.06 List, explain and demonstrate the concept of symmetrical lower body control point locations

CT.ABR.14.07 List, explain and demonstrate the concept of asymmetrical lower body control point locations

CT.ABR.14.08 List, explain and demonstrate the steps to follow when using the tram gauge to take point-to-point measurements of length, width and square

CT.ABR.14.09 List, explain and demonstrate the steps to follow when using the tram gauge to take bar length measurements of length, width and square

CT.ABR.14.10 List, explain and demonstrate the steps to follow when using the center line gauges to locate and measure for misalignment in the lower body

CT.ABR.14.11 List, explain and demonstrate the steps to follow when using the strut tower center line gauge to locate and measure for misalignment of strut towers

CT.ABR.14.12 Given a vehicle specification chart, measure the lower body using a tram, centerline and strut tower gauges for deviation, determine the areas of misalignment and the amount of deviation

CT.ABR.14.13 List, explain and demonstrate the steps to follow when plotting the actual vehicle dimensions on a vehicle dimension chart

CT.ABR.16 Given the areas of misalignment and the amount of deviation, plan an effective repair sequence for a collision-damaged vehicle.

CT.ABR.16.01 List, explain and demonstrate the ability to understand vehicle damage in all three planes as they relate to each other and envision the directions of corrective force needed to restore the vehicle to its pre-crash condition

CT.ABR.16.02 List, explain and demonstrate the ability to sequence in a logical order the corrective pulls needed to restore a vehicle to its pre-crash condition, causing the least possible damage and stress to the vehicle

CT.ABR.18 Anchor and support a collision-damaged vehicle for corrective pulls.

CT.ABR.18.01 List, explain and demonstrate the ability to determine the vehicle construction type and to choose the best anchoring points for the vehicle

CT.ABR.18.02 List, explain and demonstrate the anchoring of the vehicle using chain tie downs on a floor or rack anchoring system

CT.ABR.18.03 List, explain and demonstrate the anchoring of the vehicle using a pinch weld clamping system on a floor or rack anchoring system

CT.ABR.18.04 List, explain and demonstrate the anchoring of the vehicle using a pinch weld clamping system on a bench type anchoring system

CT.ABR.20 Plan and set up corrective pulls on a collision damaged vehicle.

CT.ABR.20.01 List, explain and demonstrate the steps to follow in setting up the corrective pulls for a collision damaged vehicle using single line pulls

CT.ABR.20.02 List, explain and demonstrate the steps to follow in setting up the corrective pulls for a collision damaged vehicle using conjunctive straightening techniques with multi line pulls

CT.ABR.22 Monitor and adjust the corrective pulling process to restore the body alignment to the manufacturer's specifications.

CT.ABR.22.01 List, explain and demonstrate the steps to follow in monitoring and adjusting corrective pulls after pressure has been relieved

CT.ABR.22.02 List, explain and demonstrate the steps to follow in monitoring and adjusting corrective pulls under pressure

CT.ABR.22 Clean and remove contaminates from the existing finish.

CT.ABR.22.01 List, explain and demonstrate the steps to follow when removing surface contaminates from existing finishes using soap and water

CT.ABR.22.02 List, explain and demonstrate the steps to follow when removing surface contaminates from existing finishes using chemical cleaners and polishes

- CT.ABR.24** Evaluate an existing finish for refinishing.
- CT.ABR.24.01** List, explain and demonstrate the steps to follow when determining the chemical makeup of an existing finish
 - CT.ABR.24.02** List, explain and demonstrate the steps to follow when checking the adhesion of an existing finish
 - CT.ABR.24.03** List, explain and demonstrate the steps to follow when determining the total paint system thickness of an existing finish
 - CT.ABR.24.04** List, explain and demonstrate the steps to follow in determining the condition of an existing finish
- CT.ABR.24** Remove an existing finish from a substrate.
- CT.ABR.24.01** List, explain and demonstrate the steps to follow when removing an existing finish by mechanical sanding
 - CT.ABR.24.02** List, explain and demonstrate the steps to follow when removing an existing finish by sandblasting
 - CT.ABR.24.03** List, explain and demonstrate the steps to follow when removing an existing finish by use of chemical stripper
- CT.ABR.26** Treat areas of bare steel for corrosion protection.
- CT.ABR.26.01** List, explain and demonstrate the steps to follow when cleaning areas of bare steel with an acid-based metal cleaner
 - CT.ABR.26.02** List, explain and demonstrate the steps to follow when treating areas of bare steel with conversion coatings
- CT.ABR.28** Featheredge broken areas of an existing finish.
- CT.ABR.28.01** List, explain and demonstrate the steps to follow when featheredging an existing finish using dry hand sanding techniques
 - CT.ABR.28.02** List, explain and demonstrate the steps to follow when featheredging an existing finish using wet hand sanding techniques
 - CT.ABR.28.03** List, explain and demonstrate the steps to follow when featheredging an existing finish using dry power sanding techniques
 - CT.ABR.28.04** List, explain and demonstrate the steps to follow when featheredging an existing finish using wet power sanding techniques
- CT.ABR.30** Prepare an existing finish for refinishing.
- CT.ABR.30.01** List, explain and demonstrate the steps to follow when preparing an existing finish for refinishing by dry sanding by hand
 - CT.ABR.30.02** List, explain and demonstrate the steps to follow when preparing an existing finish for refinishing by dry sanding with power equipment
 - CT.ABR.30.03** List, explain and demonstrate the steps to follow when preparing an existing finish for refinishing by wet sanding by hand
 - CT.ABR.30.04** List, explain and demonstrate the steps to follow when preparing an existing finish for refinishing by wet sanding with power equipment
- CT.ABR.32** Mask off areas of the car not to be refinished.
- CT.ABR.32.01** List, explain and demonstrate the steps to follow when masking off areas not to be refinished, using tape and green paper
 - CT.ABR.32.02** List, explain and demonstrate the steps to follow when masking off areas not to be refinished using liquid/chemical products
 - CT.ABR.32.03** List, explain and demonstrate the steps to follow when masking off areas not to be refinished by bagging the auto with plastic
- CT.ABR.34** List, explain and demonstrate the proper selection, reduction and application of undercoats.
- CT.ABR.34.01** List, explain and demonstrate the steps to follow when selecting, reducing and applying 2-pack primers

CT.ABR.34.02 List, explain and demonstrate the steps to follow when selecting, reducing and applying 2-pack surfacers

CT.ABR.34.03 List, explain and demonstrate the steps to follow when selecting, reducing and applying 2-pack sealers

CT.ABR.36 Determine the manufacturer's paint code of an automobile, locate the paint manufacturer's mixing code and formula, and combine the proper mixing tints to formulate a color.

CT.ABR.36.01 Given a crash manual, determine the paint code location of a vehicle and locate the paint code on the vehicle

CT.ABR.36.02 Given a paint manufacturer's chip book, locate and match the auto manufacturer's paint code to the appropriate paint manufacturer's paint formula number

CT.ABR.36.03 Given a paint manufacturer's formula number, locate the appropriate paint formula on the microfiche and follow the formula in combining basic tints to mix a desired amount of color using a weighted scale.

CT.ABR.36.04 Apply basic tinting procedures to modify a given color to a blending match of a similar color

CT.ABR.38 List, explain and demonstrate the steps to follow when selecting, reducing and applying the proper top coat.

CT.ABR.38.01 Prepare undercoats to accept top coats

CT.ABR.38.02 Perform the final cleaning of the substrate prior to the application of top coats

CT.ABR.38.03 Activate, reduce and apply single stage color coats

CT.ABR.38.04 Activate, reduce and apply 2 stage base color coats

CT.ABR.38.06 Activate, reduce and apply 2 stage clear coats

CT.ABR.38.07 Wet sand and polish fresh clear coats to remove imperfections

CT.ABR.38.08 Apply vinyl tape stripes

CT.ABR.38.09 List, explain and demonstrate the steps to follow when detailing the automobile for delivery

CT.ABR.40 List, explain and demonstrate the steps to follow when replacing tires.

CT.ABR.40.01 List, explain and demonstrate the steps to follow when lifting, supporting and removing and reinstalling a wheel/tire from the auto

CT.ABR.40.02 List, explain and demonstrate the steps to follow when removing and installing a tire on a single piece steel wheel

CT.ABR.40.03 List, explain and demonstrate the steps to follow when given a 2-place spin balancer, balancing a wheel/tire to dynamic forces

CT.ABR.42 List, explain and demonstrate the steps to follow when working on the steering/suspension system and its steering geometry angles.

CT.ABR.42.01 Identify the major types of suspension systems, list and explain the functions of their major components and relate it to the performance characteristics of the vehicle

CT.ABR.42.02 List, explain and demonstrate the steps to follow when checking the caster, camber and toe steering geometry angles of a given vehicle and reset them to the manufacturer's preferred specifications

CT.ABR.42.03 List, explain and demonstrate the steps to follow when inspecting, to determine the condition and wear amount of suspension parts

CT.ABR.42.04 List, explain and demonstrate the steps to follow in the removal and replacement of suspension parts or assemblies