



# Auto Body Painting and Refinishing

Career Cluster	Transportation, Distribution & Logistics
Course Code	20116
Prerequisite(s)	Intro to Auto body and Estimating
Credit	1
Program of Study and Sequence	Auto Body Structural Analysis – <b>Auto Body Painting and Refinishing</b> – Senior Capstone
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Youth Internships, Industry Guest Speakers and Industry Tours
Industry Certifications	Automotive Service Excellence-ASE
Dual Credit or Dual Enrollment	NA
Teacher Certification	Transportation, Distribution & Logistics Cluster Endorsement; Autobody Technology Pathway Endorsement; *Autobody Technology
Resources	

**Course Description:** Students will perform basic paint applications and final inspections. Students will comply with personal and environmental safety practices associated with clothing and the use of gloves; respiratory protection; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemical/material in accordance with local, state, and federal safety and environmental regulations.

## Program of Study Application

Auto Body Painting and Refinishing is an advanced pathway course in the transportation, distribution and logistics career cluster, automotive body collision and refinishing pathway.

**Course Standards**

**PFR 1 Auto body students understand painting and refinishing safety precautions.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	<p>PFR 1.1 Demonstrate auto body painting and refinishing safety practices</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• Select and use proper personal safety equipment; take necessary precautions with hazardous operations and materials according to federal, state, and local regulations. HP-I</li> <li>• Identify safety and personal health hazards according to Occupational Safety and Health Administration (OSHA) guidelines and the “Right to Know Law.” HP-I</li> <li>• Inspect spray environment and equipment to ensure compliance with federal, state and local regulations, and for safety and cleanliness hazards. HP-I</li> <li>• Select and use a National Institute of Occupational Safety and Health (NIOSH) approved air purifying respirator. Inspect condition and ensure fit and operation. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation. HP-I</li> <li>• Select and use the proper personal safety equipment for surface preparation, spray gun and related equipment operation, paint mixing, matching and application paint defects, and detailing (gloves, suits, hoods, eye and ear protection, etc.). HP-I</li> </ul>	<ul style="list-style-type: none"> <li>• NATEF tasks that pertain to safety.</li> <li>• OSHA 10</li> <li>• “Right to Know” Federal Law</li> <li>• OSHA 1910.134 addresses respiratory safety and maintenance</li> </ul>

**Notes:** HP-I – High Priority Individual and HP-G – High Priority Group

**PFR 2 Students will understand surface preparation procedures.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	<p>PFR 2.1 Analyze areas for surface preparation</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• Inspect and identify type of finish, surface condition and film thickness; develop and document a plan for refinishing using a total product system. HP-G</li> <li>• Identify a complimentary color or shade of undercoat to improve coverage. HP-G</li> <li>• Identify types of rigid, semi-rigid or flexible plastic parts to be refinished; determine the materials needed, preparation and refinishing procedures. HP-I</li> <li>• Identify metal parts to be refinished; determine material needed, preparation, and refinishing procedures. HP-I</li> </ul>	<ul style="list-style-type: none"> <li>• NATEF tasks that apply to sub-indicator.</li> </ul>
Level 2: Skill/Concept	<p>PFR 2.2 Prepare automotive surface to be refinished</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• Soap and water wash entire vehicle; use appropriate cleaner to remove contaminants. HP-I</li> <li>• Inspect and identify type of finish, surface condition, and film thickness; develop and document a plan for refinishing using a total product system. HP-G</li> <li>• Remove paint finish as needed. HP-I</li> <li>• Dry- or wet-sand areas to be refinished. HP-I</li> <li>• Featheredge areas to be refinished. HP-I</li> <li>• Apply suitable metal treatment or primer in accordance with total paint product systems. HP-I</li> <li>• Mask and protect areas that will not be refinished. HP-I</li> <li>• Demonstrate different masking techniques (recess/back masking, foam door type, etc.). HP-G</li> <li>• Mix primer, primer-surfacer and primer-sealer. HP-I</li> <li>• Identify a complimentary color or shade of undercoat to improve coverage. HP-G</li> <li>• Apply primer onto surface of repaired area. HP-I</li> <li>• Apply two-component finishing filler to minor surface imperfections.</li> </ul>	<ul style="list-style-type: none"> <li>• NATEF tasks that apply to sub-indicator</li> </ul>

	<p>HP-I</p> <ul style="list-style-type: none"><li>• Block sand area to which primer-surfacer has been applied. HP-I</li><li>• Dry-sand area to which finishing filler has been applied. HP-I</li><li>• Remove dust from area to be refinished, including cracks or moldings on adjacent areas. HP-I</li><li>• Clean area to be refinished using a final cleaning solution. HP-I</li><li>• Remove, with a tack rag, any dust or lint particles from the area to be refinished. HP-I</li><li>• Apply suitable primer sealer to the area being refinished. HP-I</li><li>• Scuff sand to remove nibs or imperfections from a sealer. HP-I</li><li>• Apply stone chip resistant coating. HP-G</li><li>• Restore caulking and seam sealers to repaired areas. HP-G</li><li>• Prepare adjacent panels for blending. HP-I</li></ul>	
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**Notes**

**PFR 3 Students will understand spray gun and related equipment operation.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	<p>PFR 3.1 Inspect, prepare and demonstrate usage of spray gun and related equipment</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• Inspect, clean, and determine condition of spray guns and related equipment (air hoses, regulators, air lines, air source, and spray environment). HP-I</li> <li>• Select spray gun setup (fluid needle, nozzle, and cap) for product being applied. HP-I</li> <li>• Test and adjust spray gun using fluid, air and pattern control valves. HP-I</li> <li>• Demonstrate an understanding of the operation of pressure spray equipment. HP-G</li> </ul>	<ul style="list-style-type: none"> <li>• NATEF tasks that apply to sub-indicator</li> </ul>

**Notes**

**PFR 4 Students will understand and perform paint mixing, matching, and applying automotive refinishing materials.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1: Recall	<p>PFR 4.1 Understand the process for mixing and matching automotive paint</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• Identify color code by manufacturer’s vehicle information label. HP-I</li> <li>• Shake, stir, reduce, catalyze/activate, and strain refinish materials. HP-I</li> <li>• Identify product expiration dates as applicable. HP-G</li> <li>• Identify and mix paint using a formula. HP-I</li> <li>• Identify poor hiding colors; determine necessary action. HP-G</li> <li>• Identify alternative color formula to achieve a blendable match. HP-I</li> <li>• Identify the material’s equipment and preparation differences between solvent and waterborne technologies. HP-G</li> </ul>	<ul style="list-style-type: none"> <li>• NATEF tasks that apply to sub-indicator</li> </ul>
Level 2: Skill/Concept	<p>PFR 4.2 Correctly apply automotive paint to prepared surfaces</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• Apply finish using appropriate spray techniques (gun arc, angle, distance, travel speed, and spray pattern overlap) for the finish being applied. HP-I</li> <li>• Apply selected product on test or let-down panel; check for color match. HP-I</li> <li>• Apply single stage topcoat. HP-G</li> <li>• Apply basecoat/clearcoat for panel blending and panel refinishing. HP-I</li> <li>• Apply basecoat/clearcoat for overall refinishing. HP-G</li> <li>• Remove nibs or imperfections from basecoat. HP-I</li> <li>• Refinish plastic parts. HP-I</li> <li>• Apply multi-stage coats for panel blending and overall refinishing. HP-G</li> <li>• Tint color using formula to achieve a blendable match. HP-I</li> </ul>	<ul style="list-style-type: none"> <li>• NATEF tasks that apply to sub-indicator</li> </ul>

**Notes:**

**PFR 5 Students will identify causes and correction procedures for paint defects.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
<p>Level 2: Skill/Concept</p>	<p>PFR 5.1 Identify paint defects, understand the causes, and correct paint defects Examples:</p> <ul style="list-style-type: none"> <li>• Identify blistering (raising of the paint surface, air entrapment); correct the cause(s) and the condition. HP-G</li> <li>• Identify a dry spray appearance in the paint surface; correct the cause(s) and the condition. HP-I</li> <li>• Identify the presence of fish-eyes (crater-like openings) in the finish; correct the cause(s) and the condition. HP-I</li> <li>• Identify lifting; correct the cause(s) and the condition. HP-G</li> <li>• Identify clouding (mottling and streaking in metallic finishes); correct the cause(s) and the condition. HP-I</li> <li>• Identify orange peel; correct the cause(s) and the condition. HP-I</li> <li>• Identify overspray; correct the cause(s) and the condition. HP-I</li> <li>• Identify solvent popping in freshly painted surface; correct the cause(s) and the condition. HP-G</li> <li>• Identify sags and runs in paint surface; correct the cause(s) and the condition. HP-I</li> <li>• Identify sanding marks or sand scratch swelling; correct the cause(s) and the condition. HP-I</li> <li>• Identify contour mapping/edge mapping; correct the cause(s) and the condition. HP-G</li> <li>• Identify color difference (off-shade); correct the cause(s) and the condition. HP-G</li> <li>• Identify tape tracking; correct the cause(s) and the condition. HP-G</li> <li>• Identify low gloss condition; correct the cause(s) and the condition. HP-G</li> <li>• Identify poor adhesion; correct the cause(s) and the condition. HP-G</li> <li>• Identify paint cracking (shrinking, splitting, crowsfeet or line-checking, micro-checking, etc.); correct the cause(s) and the condition. HP-G</li> <li>• Identify corrosion; correct the cause(s) and the condition. HP-G</li> <li>• Identify dirt or dust in the paint surface; correct the cause(s) and the</li> </ul>	<ul style="list-style-type: none"> <li>• NATEF tasks that apply to sub-indicator</li> </ul>

	<p>condition. HP-I</p> <ul style="list-style-type: none"><li>• Identify water spotting; correct the cause(s) and the condition. HP-G</li><li>• Identify finish damage caused by bird droppings, tree sap, and other natural causes; correct the condition. HP-G</li><li>• Identify finish damage caused by airborne contaminants (acids, soot, rail dust, and other industrial-related causes); correct the condition. HP-G</li><li>• Identify die-back conditions (dulling of the paint film showing haziness); correct the cause(s) and the condition. HP-G</li><li>• Identify chalking (oxidation); correct the cause(s) and the condition. HP-G</li><li>• Identify bleed-through (staining); correct the cause(s) and the condition. HP-G</li><li>• Identify pin-holing; correct the cause(s) and the condition. HP-G</li><li>• Identify buffing-related imperfections (swirl marks, wheel burns); correct the condition. HP-I</li><li>• Identify pigment flotation (color change through film build); correct the cause(s) and the condition. HP-G</li></ul>	
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**Notes**



**PRF6-Students will understand and perform detailing of paint refinishing.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	PRF 6.1 Perform final vehicle inspection Examples: <ul style="list-style-type: none"> <li>• Perform vehicle clean-up; complete quality control using a checklist. HP-I</li> <li>• Apply decals, transfers, tapes, woodgrains, pinstripes (painted and taped), etc. HP-G</li> <li>• Sand, buff and polish fresh or existing finish to remove defects as required. HP-I</li> <li>• Clean interior, exterior, and glass. HP-I</li> <li>• Clean body openings (door jambs and edges, etc.). HP-I</li> <li>• Remove overspray. HP-I</li> </ul>	<ul style="list-style-type: none"> <li>• NATEF tasks that apply to sub-indicator</li> </ul>

**Notes**