



Nonstructural Analysis and Damage Repair

Career Cluster	Transportation, Distribution & Logistics
Course Code	20115
Prerequisite(s)	Introduction to Auto Body and Estimating 20120
Credit	1
Program of Study and Sequence	Intro to Auto Body & Estimating – Nonstructural Analysis and Damage Repair –Structural Analysis and Damage Repair
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Youth Internships and industry field trips.
Industry Certifications	ASE (Automotive Service Excellence) OSHA 10 (Occupational Safety and Health Administration)
Dual Credit or Dual Enrollment	NA
Teacher Certification	Transportation, Distribution & Logistics Cluster Endorsement; Autobody Technology Pathway Endorsement; *Autobody Technology
Resources	

Course Description:

Non-Structural Analysis and Damage Repair is for students who wish to obtain in-depth knowledge and skills in procedures for non-structural repairs in preparation for postsecondary training and careers as collision repair technicians. Upon completion of this course, proficient students will be able to analyze non-structural collision damage and write and revise repair plans. Students will read and interpret technical texts to determine, understand, and safely perform appropriate repair techniques and procedures. Standards in this course include preparing vehicles for repair, removing and replacing panels and body components, metal finishing, body filling, removing and replacing moveable glass and hardware, metal welding and cutting, and repair of plastics.

Program of Study Application

Non-Structural Analysis and Damage Repair is an advanced pathway course in the Transportation, Distribution and Logistics career cluster, Automotive Body Collision and Refinishing pathway.

Course Standards

NA 1 Students will demonstrate understanding of auto body safety precautions.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	<p>NA 1.1 Demonstrate auto body technology safety practices</p> <p>Examples:</p> <ul style="list-style-type: none"> • Select and use proper personal safety equipment; take necessary precautions with hazardous operations and materials in accordance with federal, state, and local regulations. HP-I • Locate procedures and precautions that may apply to the vehicle being repaired. HP-I • Identify vehicle system hazard types (supplemental restraint system (SRS), hybrid/electric/alternative fuel vehicles), locations and recommended procedures before inspecting or replacing components. HP-I • Select and use a National Institute of Occupational Safety and Health (NIOSH) approved air purifying respirator, inspect condition and hazardous operations and materials in accordance with federal, state, and local regulation (e.g. OSHA Standard 1910.134) and applicable state and local regulation. HP-I 	<ul style="list-style-type: none"> • National Automotive Technicians Education Foundation (NATEF) tasks that pertain to this sub-indicator. • Occupational Safety and Health Administration – OSHA 10

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

NA 2 Students will learn and demonstrate preparation for nonstructural repair.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
<p>Level 2: Skill/Concept</p>	<p>NA 2.1 Analyze and demonstrate processes involved in preparation for nonstructural inspection and repair</p> <p>Examples:</p> <ul style="list-style-type: none"> • Review damage report and analyze damage to determine appropriate methods for overall repair; develop and document a repair plan. HP-I • Inspect, remove, label, store, and reinstall exterior trim and moldings. HP-I • Inspect, remove, label, store, and reinstall interior trim and components. HP-I • Inspect, remove, label, store, and reinstall body panels and components that may interfere with, or be damaged during, repair. HP-I • Inspect, remove, protect label, store, and reinstall vehicle mechanical and electrical components that may interfere with, or be damaged during, repair. HP-G • Protect panels, glass, interior parts, and other vehicles adjacent to the repair area. HP-I • Soap and water wash entire vehicle; complete pre-repair inspection checklist. HP-I • Prepare damaged area using water-based and solvent-based cleaners. HP-I • Remove corrosion protection, undercoatings, sealers, and other protective coatings as necessary to perform repairs. HP-I • Inspect, remove, and reinstall repairable plastics and other components for off-vehicle repair. HP-I 	<ul style="list-style-type: none"> • NATEF tasks that pertain to this sub-indicator.

Notes

NA 3 Students will learn and demonstrate procedures for outer body panel repairs, replacements and adjustments.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	<p>NA 3.1 Demonstrate the processes involved in outer body panel repairs, replacements, and adjustments</p> <p>Examples:</p> <ul style="list-style-type: none"> • Inspect/locate direct, indirect, or hidden damage and direction of impact. HP-I • Inspect, remove, replace, and align hood, hood hinges, and hood latch. HP-I • Inspect, remove, replace, and align deck lid, lid hinges, and lid latch. HP-I • Inspect, remove, replace, and align doors, latches, hinges, and related hardware. HP-I • Inspect, remove, replace and align tailgates, hatches, liftgates and sliding doors. HP-G • Inspect, remove, replace, and align bumpers, covers, reinforcements, guards, impact absorbers, and mounting hardware. HP-I • Inspect, remove, replace and align fenders, and related panels. HP-I • Restore corrosion protection during and after the repair. HP-I • Restore sound deadeners and foam materials. HP-G • Diagnose and repair water leaks, dust leaks, and wind noise. HP-G 	<ul style="list-style-type: none"> • NATEF tasks that pertain to this sub-indicator.

Notes

NA 4 Students will perform metal finishing and body filling.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	<p>NA 4.1 Understand and demonstrate the processes involved in metal finishing and body filling</p> <p>Examples:</p> <ul style="list-style-type: none"> • Prepare a panel for body filler by abrading or removing the coatings; featheredge and refine scratches before the application of body filler. HP-I • Locate and repair surface irregularities on a damaged body panel using power tools, hand tools, and weld-on pulling attachments. HP-I • Demonstrate hammer and dolly techniques. HP-I • Heat shrink stretched panel areas to proper contour. HP-G • Cold shrink stretched panel areas to proper contour. HP-I • Identify body filler defects; correct the cause and condition (pinholing, ghosting, staining, over catalyzing, etc.). HP-I • Identify different types of body fillers. HP-G • Shape body filler to contour; finish sand. HP-I • Straighten contours of damaged panels to a suitable condition for body fillings or metal finishing using power tools, hand tools, and weld-on pulling attachments. HP-I 	<ul style="list-style-type: none"> • NATEF tasks that pertain to this sub-indicator.

Notes

NA 5 Students will demonstrate service procedures for moveable glass and hardware.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	<p>NA 5.1 Understand and demonstrate proper repair procedures for moveable glass and hardware</p> <p>Examples:</p> <ul style="list-style-type: none"> • Inspect, adjust, repair or replace window regulators, run channels, glass, power mechanisms, and related controls. HP-I • Inspect, adjust, repair, remove, reinstall or replace weather-stripping. HP-G • Inspect, repair or replace, and adjust removable power operated roof panel and hinges, latches, guides, handles, retainer, and controls of sunroofs. HP-G • Initialize electrical components as needed. HP-G 	<ul style="list-style-type: none"> • NATEF tasks that pertain to this sub-indicator.

Notes

NA 6 Students will demonstrate plastic repair.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2: Skill/Concept	<p>NA 6.1 Understand and demonstrate repair processes and use of adhesives involved in plastic repair</p> <p>Examples:</p> <ul style="list-style-type: none"> • Identify the types of plastic; determine reparability. HP-I • Clean and prepare the surface of plastic parts; identify the types of plastic repair procedures. HP-I • Repair rigid, semi-rigid, and flexible plastic panels. HP-I • Remove or repair damaged areas from rigid exterior composite panels. HP-G • Replace bonded rigid exterior composite body panels; straighten or align panel supports. HP-G 	<ul style="list-style-type: none"> • NATEF tasks that pertain to this sub-indicator.

Notes