GREAT PLAINS TECHNOLOGY CENTER
COURSE OF STUDY

Career Cluster: Transportation, Distribution and Logistics (TR)

Career Pathway: Automotive Collision Repair

State Program: Automotive Collision Repair and Refinishing (TR0156003)

Local Program: Combination Collision Repair Technician (TR0090008)

Program Hours: Secondary Students: 960 Hours
Adult Students: 960 Hours

Instructor: Name: Anthony Josey
Office Number: (580) 250-5627
E-Mail Address: ajosey@greatplains.edu

Academic Credit: Secondary Students: 3 high school credits per year
Adult Students: Transcript

Prerequisites: None

Program Description:
Students in this program will learn how to complete non-structural collision repair and automotive refinishing. The courses that will be covered include non-structural damage analysis and minor dent repair, plastics repair, all aspects painting and refinishing. Students will also learn how to use various tools in repairing damage and to remove and install handles, moldings, trim, and bolted body parts. In addition, the student will learn to MIG weld industry standard joints following I-CAR standards. This career program also includes painting preparation, sanding processes, color matching and adjusting color, removing and installing glass, and the process of written estimates. Students will learn about handling, storage and disposal of hazardous materials and selecting proper personal protective equipment and maintenance. The hours completed in this program are aligned with ASE/NATEF standards, and ASE certification is recommended and industry recognized.

Program Goals:
Students enrolled in this program will be given the opportunity to develop the skills and attitudes needed to successfully enter the Auto Body Services field according to their personal choice, ability, and resourcefulness.

Upon achieving the goals of this program, students will:

- Become competent in the fundamental skills of the occupation.
- Become qualified for further related education and/or entry into the job market.
- Work as a team member.
- Pass at least one Occupational State of Oklahoma certification test.
- Become qualified for further related education and/or enter the job market.
- Demonstrate independence in using problem solving and critical thinking techniques in completing all work assignments.
- Develop the ability to work with limited or no supervision.
- Accept and abide by the rules and regulations established by the school and/or place of employment.

Related Career Opportunities:

- Refinishing Technician
- Non Structural Repair Technician
- Glass Replacement Specialist
- Detailing Specialist

Program Objectives:

After successful completion of this program, the student will be able to:

- Use basic measurement and mathematic techniques.
- Repair conventional and unibody frames.
- Perform body panel and structural alignments.
- Repair sheet metal and fiberglass body panels
- Utilize thermoplastic and thermosetting plastic techniques.
- Perform a variety of welding processes.
- Complete a variety of refinishing techniques.
- Replace glass.
- Prepare estimates.
- Complete a job application.

Program Course Sequence:

- HS Student and Part-time Adult (Year One): Course Sequence I
- HS Student and Part-time Adult (Year Two): Course Sequence II
- Full-time Adult (Year One): Course Sequence I and II

DESCRIPTION OF COURSES

Course #	Course Name	HST	HSL	ADT	ADL
TI02625	**Auto Collision Non-Structural Repair**	**110**	**220**	**110**	**220**

In this course, students will gain foundational skills in collision repair, focusing on safety, tools, and industry standards. Students will learn to identify hazardous materials, understand warning labels, and follow safety regulations, including the Right-To-Know Act. The course covers vehicle preparation for repair, metal straightening techniques using dollies and hammers, and methods for restoring contours and bodylines. Students will be introduced to body fillers, mixing and application techniques, and proper sanding procedures to achieve a seamless repair. Instruction will also include plastic identification, repair, and replacement decisions, incorporating adhesive repairs and plastic welding. Additionally, students will learn to remove, install, and align bolted body parts such as fenders, hoods, doors, and bumpers while addressing wind noise and water leak detection. Through hands-on training, students will develop essential skills for vehicle repair and restoration in the collision repair industry.

TI02137	**Auto Collision Damage Analysis, Estimating, and Customer Service**	**25**	**50**	**25**	**50**

In this course, students will develop essential skills in vehicle damage analysis, repair estimation, and customer communication. Students will learn to inspect and assess vehicle damage, from minor dents to structural misalignment, while understanding how collision energy travels through different types of vehicle construction, including uni-body, full body-over-frame, and hybrid frame/semi-unibody structures. Measuring equipment such as centerline gauges, tram bars, universal measuring systems, and computer measuring systems will be covered to ensure accurate structural assessment. Students will also gain

proficiency in creating detailed written and computerized estimates, learning how to collect vehicle and customer information, import digital documentation, determine repair versus replacement decisions, and accurately calculate parts pricing and labor costs. Additionally, students will develop professional communication skills, including customer interactions via phone and in person, vehicle check-ins, invoice presentation, and repair follow-ups. Topics such as warranties, service contracts, service bulletins, recalls, and promotional strategies will also be explored to prepare students for customer service excellence in the collision repair industry.

TI00342 Auto Collision Mig (GMAW) Welding 25 50 25 50

In this course, the student will learn about the specific personal safety equipment used when MIG welding, and how to protect the vehicle when welding. The student will cover the MIG welding equipment and how to tune and trouble shoot the welder. Students will learn to join two pieces of metal using the appropriate process and joint selection. The welding joints covered will be: lap/fillet, butt, butt w/backing and plug. Students will learn techniques for welding in the vertical and overhead position using I-Car specific specifications.

TI02316 ~~Overview of~~ Painting and Refinishing 160 320 160 320

In this course, students will develop essential skills in painting, refinishing, and vehicle surface preparation. They will begin with safety protocols, hazardous material handling, and compliance with the Right-To-Know Act. Students will learn to prepare vehicles for repair, remove and install trim, fasteners, and glass components, and troubleshoot movable glass mechanisms. Surface preparation techniques include sanding, masking, and proper substrate cleaning before refinishing. Students will gain hands-on experience with spray gun operation, corrosion protection products, sealers, and topcoats like basecoat/clear coat systems. They will also learn to identify and correct finish failures. Color matching techniques, including spray-out panels and adjustments for high metallic, mica, and tri-coat colors, will be covered. Blending techniques will ensure seamless refinishing, and students will learn to identify and correct defects. The course concludes with detailing, where students will sand and polish cured refinished surfaces and prepare the vehicle for delivery by washing and cleaning both the interior and exterior. This comprehensive training equips students with the technical skills necessary for professional painting and refinishing in the collision repair industry.

Program Total:	**Theory**	**Lab**	**Total**
High School Student:*	320	640	960
Adult Student:	320	640	960

* High school students may complete this program in an adult enrollment status if necessary. Please see your instructor or counselor for details.

NATEF Hours

NATEF Area	NATEF Required Hours	Combination Collision Repair Hours
Nonstructural Repair	300	330
Painting & Refinishing	300	480
Welding	75	75
DAECS	45	75
Total NATEF Hours	720	960

Evaluation Policy:

Employability Grades (100 points per week; 30% of final grade)
The employability skills grade is based on 20 points per day (which may include: attitude, attendance, safety, punctuality, cooperation, participation, clean-up, class preparation, school/classroom rules, and time management). Points will be deducted if these responsibilities are not met at the instructor's discretion. Students will be allowed to make up unearned employability points for **excused** absences only. Full credit will be given for assignments/tests that have been made up due to excused absences only (see Student Handbook).

Performance Grades (40% of final grade)
- Live projects
- Performance or skill tests
- Homework
- Written Assignments

Test Grades (30% of final grade)
Test grades will be based on a 100-point scale.
- Test grades include written and/or skills tests.
- A test will be given for each unit of instruction.
- Tests are to be taken as a unit is completed.
- Tests must be completed within allotted time.

Final Grade
Semester grade will be calculated by averaging grades in each category and summing each category according to their assigned weight. Progress reports will be sent to home schools at six and twelve-week intervals each semester as required or requested. Grades are accessible on-line at http://sonisweb.greatplains.edu/studsect.cfm

Grading Scale:
The grading scale as adopted by the Board of Education is as follows:

A = 90 – 100
B = 80 – 89
C = 70 – 79
D = 60 – 69
F = Below 60
S = Satisfactory
W = Withdrawn
I = Incomplete
N = No Grade (Refer to Student Handbook)

Make-Up Work Policy:
All Make-Up Work Is The Responsibility Of The Student. Make-up work will be handled as specified in the Student Handbook. Please be sure to read and understand all student policies, especially make-up of assignments, tests and employability due to absences. Students should always arrange for any make-up work with the instructor as per the Student Handbook. Students should keep track of his or her progress and grades.

Attendance Policy:
For specific information related to attendance and tardiness refer to the Student Handbook. Students

should keep a written record of their absences and tardiness.

Course Requirements and Expectations:
The general course requirements and expectations include:

- Teaching methods consist of lecture and "hands on" projects.
- The student must demonstrate the ability to apply safety to all aspects of the auto collision field.

Student Behavior Includes:

- Safety glasses **must** be worn at all times when in the shop area
- Coveralls must be worn at all times in the shop area.
- Name badges must be worn at all times.
- Follow all rules and regulations of Great Plains Technology Center.

NOTE: For additional information or questions regarding the GPTC School policies and procedures, please refer to the Student Handbook and/or the Instructor.

Industry Alignments:

- Automotive Service Excellence (ASE) - two years of training in collision repair will substitute for one year of work experience
- Inter-Industry Conference on Auto Collision Repair (ICAR)
- National Institute for Automotive Service Excellence (NATEF)

Certification Outcomes:

Tier 1 – Certifications Recognized, Administered and/or Endorsed by Industry

- ASE: CRR: STUDENT: Mechanical and Electrical Components (2060)
- ASE: CRR: STUDENT: Non-Structural Analysis and Damage Repair (2059)
- ASE: CRR: STUDENT: Painting and Refinishing (2057)
- ASE: CRR: STUDENT: Structural Analysis and Damage Repair (2058)

Tier 2 – Certifications Endorsed by Industry Organizations

- ODCTE: Non-Structural Analysis & Damage Repair Technician (2002)
- ODCTE: Painting & Refinishing Technician (2005)

CIP Code and SOC Code Crosswalk:

- CIP Code – 47.0603
- SOC Code – 49-3021.00

OCAS program codes:

- 9904 – Automotive Collision Repair and Refinishing (first year)
- 9905 – Automotive Collision Repair and Refinishing (second year)

Instructional Materials:

I-CAR Academy

ASE Tasks - Combination Collision Repair Technician

Highlighted Tasks are not a part of this course.

DAMAGE ANALYSIS, ESTIMATING AND CUSTOMER SERVICE	
For all tasks the following safety requirements must be strictly enforced:	
Comply with personal and environmental safety practices associated with proper Personal Protection Equipment (PPE); hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations. Identify vehicle system precautions and/or inspections to include but not limited to Supplemental Restraint System **(SRS)** Inspection, Advanced Driver **Assistance Systems (ADAS), hybrid/electric/alternative fuel vehicles, locations and recommended procedures before inspecting or replacing components.**	
I. **DAMAGE ANALYSIS, ESTIMATING, AND CUSTOMER SERVICE**	
A. Safety Precautions	
1. 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
2. Locate OEM procedures to identify material and composition of the vehicle being repaired (mild steel, high strength steel, ultra-high strength steel, aluminum, etc.).	HP-I
3. Locate procedures and precautions that may apply to the vehicle being repaired.	HP-I
4. Identify vehicle system precautions and/or inspections to include but not limited to supplemental restraint system (SRS), advanced driver assistance systems (ADAS), hybrid/electric/alternative fuel vehicles, locations and recommended procedures before inspecting or replacing components.	HP-I
5. Perform vehicle clean-up; complete quality control using a checklist on operations performed.	HP-I

I. **DAMAGE ANALYSIS, ESTIMATING, AND CUSTOMER SERVICE**	
B. Damage Analysis	
1. Position the vehicle for inspection under proper lighting; take photos to identify the vehicle and document damage.	HP-I
2. Identify components to be removed to gain access to damaged areas.	HP-G
3. Analyze damage to determine appropriate methods for overall repairs.	HP-G
4. Determine the direction, point(s) of impact, and extent of direct, indirect, and inertia damage.	HP-G
5. Gather details of the incident/accident necessary to determine the full extent of vehicle damage.	HP-G
6. Identify and record pre-existing damage.	HP-G
7. Identify and record prior repairs.	HP-G
8. Perform visual inspection of structural components.	HP-G
9. Identify structural damage using measuring tools and equipment.	HP-I
10. Perform visual inspection of non-structural components.	HP-I
11. Determine parts, components, material type(s) and procedures necessary for a proper repair.	HP-f
12. Identify type and condition of finish; determine refinish labor operations as required.	HP-I
13. Identify suspension, electrical, and mechanical component physical damage.	HP-G
14. Identify safety systems physical damage.	HP-G
15. Identify interior component damage.	HP-G

16. Identify add-on accessories and modifications.	HP-G
17. Identify single (one time) use components.	HP-G
18. Identify and document illuminated dash malfunction indicator lamp(s) **(MIL).**	HP-I
19. Perform a pre-repair inspection of the vehicle with the customer. Record fit and finish concerns (color mismatch, factory gaps, unrelated prior damage and prior repairs).	HP-G
I. **DAMAGE ANALYSIS, ESTIMATING, AND CUSTOMER SERVICE**	
C. Estimating	
1. Determine and record customer/vehicle owner infonnation.	HP-I
2. Identify and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, build data, and assembly plant.	HP-I
3. Identify and record vehicle mileage and options, including trim level, paint code, transmission, accessories, and modifications.	HP-I
4. Identify safety systems; determine precautions, inspections and replacement items as required.	HP-G
5. Apply appropriate estimating and parts nomenclature (terminology).	HP-I
6. Determine and apply appropriate estimating sequence.	HP-I
7. Utilize estimating procedure pages.	HP-I
8. Apply estimating footnotes, headnotes, and line notes as needed.	HP-I
9. Identify operations requiring labor value judgment.	HP-G
10. Select appropriate labor code for each operation (structural, non-structural, mechanical, and refinish).	HP-I

11. Select and price OEM parts, optional OEM parts, aftermarket parts, recycleable/used parts, remanufactured, rebuilt, and reconditioned parts; verify availability, compatibility, and condition.	HP-G
12. Determine necessary sublet operations.	HP-G
13. Determine included and non-included operations and miscellaneous items.	HP-G
14. Recognize and apply overlap deductions.	HP-I
15. Determine additional material and charges.	HP-G
16. Determine refinishing material and charges.	HP-I
17. Apply math skills to est blish charges and totals.	HP-I
18. Identify differences between computer generated and manually written estimates.	HP-G
19. Identify procedures to restore corrosion protection· establish labor values, and material charges.	HP-G
20. Recognize the cost effectiveness of the repair and determine the approximate vehicle retail, and repair value.	HP-G
21. Recognize the differences in estimating platforms when using different information provider systems.	HP-G
22. Verify accuracy of estimate compared to the actual repair and replacement operations.	HP-G
23. Determine telematic/connectivity of the vehicle and place vehicle in service mode.	HP-G
24. Identify vehicle safety recalls using the vehicle identification number **(VIN).**	HP-I
25. Review damage report and analyze damage to determine appropriate methods for overall repair; communicate with team members to verify accuracy and resolve discrepancies.	HP-G

I. **DAMAGE ANALYSIS, ESTIMATING, AND CUSTOMER SERVICE**	
D. Vehicle Construction and Parts Identification	
1. Identify type of vehicle construction {unibody, body-over-frame).	HP-G
2. Recognize the different collision damage between unibody and body-over-frame vehicles.	HP-G
3. Identify impact energy absorbing components.	HP-G
4. Identify different types of substrates (steel types, aluminum, magnesium, plastic, composites, etc.); determine repairability.	HP-G
5. Identify vehicle glass components and repair/replacement procedures.	HP-G
6...l,_.d_entify add-on **access s.**	HP-G
I. **DAMAGE ANALYSIS, ESTIMATING, AND CUSTOMER SERVICE**	
E. Customer Relations and Sales Skills	
1. Introduce yourself, acknowledge and greet customer/client/visitor; offer assistance.	HP-I
2. Listen to customer/client; collect information and identify customers/client's concerns, needs and expectations.	HP-I
3. Establish cooperative attitude with customer/client.	HP-I
4. Deal with dissatisfied customer/client, seek resolution.	HP-I
5. Identify customer/client preferred communication method; follow up to keep customer/client informed about parts and the repair process.	HP-G
6. Recognize basic claims handling procedures; explain to customer/client.	HP-G
7. Project positive attitude and professional appearance.	HP-I
8. Provide and review warranty information.	HP-G

9. Provide and review technical and consumer protection information.	HP-G
10. Estimate and explain duration of out-of-service time.	HP-G
t11. Demorl_filrat oegotiation skills to obtain a mutual agreement.	HP-G
12. Interpret and explain estimate to customer/client.	HP-I

PAINTING AND REFINISHING	
For every task in **Painting and Refinishing, the following safety requirements must be strictly enforced:**	
Comply with personal and environmental safety practices associated with clothing proper Personal Protection Equipment (PPE); hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations. Identify vehicle system precautions and/or inspections to include but not limited to Supplemental Restraint System (SRS) Inspection, Advanced Driver Assistance Systems (ADAS), hybrid/electric/alternative fuel vehicles, locations and recommended procedures before inspecting or replacing components.	
II. **PAINTING AND REFINISHING**	
A. Safety Precautions	
1. Select and use proper personal safety equipment for surface preparation, spray gun and related equipment operation, paint mixing, matching and application, paint defects, and detailing (glove, suits, hoods, eye and ear protection, etc.); take necessary precautions with hazardous operations and materials according to federal, state, and local regulations:	HP-I
2. Identify safety and personal health hazards according to OSHA guidelines and the "Rightto Know Law".	HP-I
3. Inspect spray environment and equipment to ensure compliance with federal, state and local regulations, and for safety and cleanliness hazards.	HP-I

4. Select and use a NIOSH approved supplied air (Fresh Air Make-up) respirator system. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation	HP-I
5. Preform vehicle clean-up; complete quality control using a checklist on operations performed.	HP-I
II. **PAINTING AND REFINISHING**	
B. Surface Preparation	
1. Inspect, remove, store, protect, and replace exterior trim and components necessary for proper surface preparation.	HP-I
2. Soap and water wash entire vehicle; use appropriate·cleaner to remove contaminants.	HP-I
3. Inspect and identify type of finish, surface condition, and film thickness; develop and document a plan for refinishing using a total product system.	HP-I
4. Remove paint finish as needed.	HP-I
5. Properly sand areas to be refinished.	HP-I
6. Identify and select appropriate sand paper to featheredge areas to be refinished.	HP-I
7. Apply suitable metal treatment or primer in accordance with total product systems.	HP-I
8. Mask and protect other areas that will not be refinished.	HP-I
9. Demonstrate different masking techniques (recess/back masking, foam door type, etc.).	HP-I
1_0. Mix primer,_primer-surfacer and primer sealer following paint manufacturers technical data sheet instructions.	HP-I
11. Identify a complimentary color·or shade *9f* undercoat to improve coverage.	HP-G

12. Apply primer onto surface of repaired area; demonstrating control of primer application by keeping the areas small as possible.	HP-I
.	
13. Apply two-comp_onent finishing filler to minor surface imperfections.	HP-I
14. Guide coat-and block sand area with correct grade/grit sandpaper to which primer-surfacer has been applied.	HP-I
15. _Dry sand area to which two-component finishing filler has been applied.	HP-I.
16. Remove dust from area to be refinished, including cracks or moldings of adjacent areas.	HP-I
17. Clean area to be refinished using a recommended final cleaning solution.	HP-I
18. Remove, with a tack rag, any dost or lint particles from the area to be refinished.	HP-I
19. Apply suitable primer sealer to the area being refinished.	HP-I
20. Scuff sand to re11J1ove nibs or imperfections from a sealer.	HP-I
21. Apply stone chip **resistant** coating. -	i-lP-G
22. Restore caulking and seam sealers to repaired areas and replacement panels as required.	HP-G
23. Prepare adjacent panels for blending using paint manufacturers procedures.	HP-I
24. Identify the types of rigid, semi-rigid or flexible plastic parts to be refinished; determine the materials needed, preparation, and refinishing orocedures.	HP-I
25. Identify metal parts to be refinished; determine the materials needed, preparation, and refinishing procedures.	HP-I ..
26. Identify chip resistant coatings and texture match.	HP-G
27. Identify caulking and seam sealers that may need replacement.	HP-G

28. Identify refinishing guidelines for stationary glass flange areas to be refinished.	HP-I
II. **PAINTING AND REFINISHING**	
C. Spray Gun and Related Equipment Operation	
1. Inspect, clean, and determine condition of spray guns and related equipment (air hoses, regulators, air lines, air source, spray environment, and fillers).	HP-I
2. Select spray gun setup (fluid needle, nozzle, and cap) for product being applied.	HP-I
3. Test and adjust spray gun using fluid, air and pattern control valves.	HP-I
4. Demonstrate an understanding of the operation of pressure spray eciuipment.	HP-G
II. **PAINTING AND REFINISHING**	
D. Paint Mixing, Matching, and Applying	
1. Identify color code by manufacturer's vehicle information label.	HP-I
2. Shake, stir, reduce, catalyze/activate, and strain refinish materials.	HP-I
3. Apply finish using appropriate spray techniques (gun arc, angle, distance, travel speed, and spray pattern overlap) for the.finish being applied.	HP-I
4. Apply selected product on test or let-down panel; check for color match, properly store and maintain a color catalog.	HP-I
5. Understand the application of single stage topcoats.	HP-G
6. Apply basecoat/clearcoat for panel blending, panel refinishing and cit-in's.	HP-I
7. Apply basecoat/clearcoat for overall refinishing.	HP-G
8. Remove nibs or imperfections from basecoat.	HP-I
9. Identify product expiration dates as applicable.	HP-I

10. Refinish plastic parts.	HP-I
11. Apply multi-stage coats for panel blending and overall refinishing.	HP-G
12. Identify and mix paint using _a formula.	HP-I
13I.dentify poor hiding colors; determine necessary action.	HP-G
14. Tint color using formula to achieve a blendable match.	HP-G
15. Identify alternative color formula to achieve a blendable match.	HP-I
16. Identify the materials, equipment, and preparation differences between solvent and waterborne technologies.	HP-G
II. **PAINTING AND REFINISHING**	
E. **Paint Defects Causes and Cures**	
1. Identify blistering (raising of the paint surface, air entrapment); correct the cause(s) and the condition.	HP-G
2. Identify a dry spray appearance in the paint surface; correct the cause(s) and the condition.	HP-I
3. Identify the presence of fish-eyes (crater-like openings) in the finish; correct the cause(s) and the condition.	HP-I
4, Identify lifting; correct the cause(s) and the condition.	HP-G
5. Identify clouding (mottling and streaking in metallic finishes); correct the cause(s) and the condition.	HP-I
6. Identify orange peel; correct the cause(s) and the condition.	HP-I
7. Identify overspray; correct the cause(s) and the conditio.n.	HP-I
8. Identify solvent popping in freshly painted surface; correct the cause(s) and the condition.	HP-G

9. Identify sags and runs in paint surface; correct the cause(s) and the condition.	HP-I
10. Identify sanding marks or sandscratch swelling; correct the cause(s) and the condition.	HP-I
11. Identify contour mapping/edge mapping; correct the cause(s) and the condition.	HP-G
12. Identify color difference (off-shade); correct the cause(s) and the condition.	HP-G
13. Identify tape tracking; correct the cause(s) and the condition.	HP-G
14. Identify low gloss condition; correct the cause(s) and the condition.	HP-G
15. Identify poor adhesion; correct the cause(s) and the condition.	HP-G
16. Identify paint cracking (shrinking, splitting, crowsfeet or line-checking, micro-checking, etc.); correct the cause(s) and the condition.	HP-G
17. Identify corrosion; correct the cause(s) and the condition.	HP-G
18. Identify dirt or dust in the paint surface; correct the cause(s) and the condition.	HP-I
19. Identify water spotting; correct the cause(s) and the condition.	HP-G
20. Identify finish damage caused by bird droppings, tree sap, and other natural causes; correct the condition.	HP-G
21. Identify finish damage caused by airborne contaminants (acids, soot, rail dust, and other industrial-related causes); correct the condition.	HP-G
22. Identify die-back conditions (dulling of the paint film showing haziness); correct the cause(s) and the condition.	HP-G
23. Identify chalking (oxidation); correct the cause(s) and the condition.	HP-G
24. Identify bleed-through (staining); correct the cause(s) and the condition.	HP-G

25. Identify pinholing; correct the cause(s) and the condition.	HP-G
26. Identify buffing-related imperfections (swirl marks, wheel burns); correct the condition.	HP-I
27. Identify pigment flotation (color change through film build); correct the cause(s) and the condition.	HP-G
II. **PAINTING AND REFINISHING**	
F. Final Detail	
1. Apply decals, transfers, tapes, stone guards, moldings, and emblems, etc.	HP-G
2. Sand, buff and polish fresh finish to remove defects and texture as required.	HP-I
3. Sand, buff and polish existing finish to recondition defects as required, match existing finish.	HP-I
4. Clean interior, exterior, and glass.	HP-I
5. Clean body openings (door jambs, gaps, and edges, etc.).	HP-I
6. Remove overspray.	HP-I
7. Perform vehicle clean-up; complete quality control using a checklist.	HP-I
8. Measure and record film thickness before and after buffing.	HP-I
9. Perform nib sanding to remove small imperfections as required.	HP-I

NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR	
(BODY COMPONENTS)	
lll. **NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR (BODY COMPONENTS)**	
A. Safety Precautions	
1. 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
2. Locate OEM procedures to identify material and composition of the vehicle being repaired (mild steel, high strength steel, ultra-high strength steel, aluminum, etc.).	HP-I
3. Locate procedures and precautions that may apply to the vehicle being repaired.	HP-I
4. Identify vehicle system precautions and/or inspections to include but not limited to supplemental restraint system (SRS), advanced driver assistance systems (ADAS), hybrid/electric/alternative fuel vehicles, locations and recommended procedures before inspecting or replacing components.	HP-I
5. Perform vehicle clean-up; complete quality control using a checklist on operations performed.	HP-I
lll. **NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR (BODY COMPONENTS)**	
B. Preparation	
1. Review damage report and analyze damage to determine appropriate methods for overall repair; develop and document a repair plan.	HP-I
2. Inspect, remove, protect, label, store, inventory, and reinstall exterior trim and moldings.	HP-I
3. Inspect, remove, protect, label, store, inventory, and reinstall interior trim and components.	HP-I

4. Inspect, remove, protect, label, store, inventory, and reinstall body panels and components that may interfere with or be damaged during repair.	HP-I
5. Inspect, remove, protect, label, store, inventory and reinstall vehicle mechanical and electrical components that may interfere with or be damaged during repair.	HP-G
6. Protect panels, glass, interior parts, and other vehicles adjacent to the repair area.	HP-I
7. Soap and water wash entire vehicle; complete pre-repair inspection checklist.	HP-I
8. Prepare damaged area using water-based and solvent-based cleaners.	HP-I
9. Remove corrosion protection, undercoating, sealers, and other protective coatings as necessary to perform repairs.	HP-I
10. Inspect, remove, and reinstall repairable plastics and other components for off-vehicle repair.	HP-I
lll. **NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR (BODY COMPONENTS)**	
C. Outer Body Panel Repairs, Replacements, and Adjustments	
1. Inspect/locate direct, indirect, or hidden damage and direction of impact.	HP-I
2. Inspect, remove and replace welded steel panel or panel assemblies.	HP-G
3. Determine the extent of damage to aluminum body panels; repair or replace.	HP-G
4. Inspect, remove, replace, and align hood, hood hinges, and hood latch.	HP-I
5. Inspect, remove, replace, and align deck lid, lid hinges, and lid latch.	HP-I
6. Inspect, remove, replace, and align doors, latches, hinges, and related hardware.	HP-I
7. Inspect, remove, replace and align tailgates, hatches, liftgates and sliding doors.	HP-G

8. Inspect, remove, replace, overhaul, and align bumpers, covers, reinforcements, guards, impact absorbers, and mounting hardware.	HP-I
9. Inspect, remove, replace and align fenders, and related panels.	HP-I
[LO. Restore corrosion Orotection during ind **after** the reoair.	HP-I
11. Replace door skins.	HP-G
b2. R§!Qre sound ®.ideners and foalJJ._!Mteria.IL	HP-G
13. Perform panel bonding and weld bonding.	HP-G
14. Diagnose and repair water leaks, dust leaks, and wind noise.	HP-G
15. Identify one-time use fasteners.	HP-G
16. Weld damaged or torn steel body panels; repair broken welds.	HP-G
17. Inspect, identify labels/decals and replace as necessary.	HP-G
lll. **NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR (BODY COMPONENTS)**	
D. Metal Finishing and Body Filling	
1. Prepare a panel for body filler by abrading or removing the coatings; featheredge, refine scratches, and clean the surface before the application of body filler.	HP-I
2. Locate and repair surface irregularities and straighten contours on a damaged body panel using power tools, hand tools, and weld-on pulling attachments.	HP-I
3. Demonstrate hammer and dolly techniques.	HP-I
4. Heat shrink stretched panel areas to proper contour.	HP-G
5. Cold shrink stretched panel areas to proper contour.	HP-I

6. Identify body filler defects; correct the cause and condition. (Pinholing, ghosting, staining, over catalyzing, etc.)	HP-I
7. Identify different types of body fillers.	HP-G
8. Shape body filler to contour; finish sand.	HP-I
9. Perform proper metal finishing techniques for aluminum.	HP-G
10. Perform proper application of body filler to aluminum.	HP-G
11. Locate and repair surface irregularities and straighten contours on a damaged panel using Glue-Pulling Dent Repair (GDPR).	HP-G
12. Mix and apply body filler.	HP-I
lll. **NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR (BODY COMPONENTS)**	
E. **Moveable Glass and Hardware**	
1. Inspect, adjust, overhaul, repair or replace window regulators, run channels, glass, power mechanisms, and related controls.	
	HP-I
2. Inspect, adjust, repair, remove, reinstall or replace weather-stripping.	
	HP-G
3. Inspect, remove, repair or replace, and adjust removable **power** operated roof panel and hinges, latches, guides, handles, retainer, and controls of sunroofs.	
	HP-G
4. Inspect, remove, reinstall, and align convertible top and related :mechanisms.	
	HP-G
5. Identify or recalibrate electrical components that may need to be initialized.	
	HP-G
lll. **NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR (BODY COMPONENTS)**	
F. Plastics, Adhesives, and Welding	
1. Identify the types of plastics; determine repairability.	
	HP-I
2. Clean and prepare the surface of plastic parts; identify the types of plastic repair procedures.	

	HP-I
3. Repair rigid, semi-rigid, and flexible plastic panels.	
	HP-I
4. Remove, replace, or repair damaged areas of rigid exterior composite Panels.	
	HP-G
5. Replace bonded rigid exterior composite body panels; straighten or align panel supports.	
	HP-G
6. Repair plastic parts by welding (nitrogen, airless).	
	HP-G
7. Perform a single-sided adhesively bonded cosmetic repair.	
	HP-I
8. Perform a double-sided adhesively bonded repair.	
	HP-I
9. Perform an adhesively bonded or welded tab repair.	
	HP-I
10. Shape or reform damaged plastic.	
	HP-G
WELDING, CUTTING, AND JOINING	
IV. WELDING, CUTTING, AND JOINING	
A. Safety Precautions	
1. 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
2. Locate OEM procedures to identify materials and composition of the vehicle being repaired (mild steel, high strength steel, ultra-high strength steel, aluminum, etc.).	HP-I
3. Locate procedures and precautions that may apply to the vehicle being repaired.	HP-I
4. Identify vehicle system precautions and/or inspections to include but not limited to supplemental restraint system (SRS), advanced driver assistance systems (ADAS), hybrid/electric/alternative fuel vehicles, locations and recommended procedures before inspecting or replacing components.	HP-I

5. Perform vehicle clean-up; complete quality control using a checklist on operations performed.	HP-I
IV. WELDING, CUTTING, **AND JOINING**	
B. Metal Welding, Cutting, and Joining	
1. Identify the considerations for cutting, removing, and welding various types of steel, aluminum, and other metals.	HP-G
2. Determine the correct GMAW welder type, electrode/wire type, diameter, and gas to be used in a specific welding situation.	HP-I
3. Set up, attach work clamp (ground), and adjust the GMAW welder to "tune" for proper electrode stickout, voltage, polarity, flow rate, and wire-feed speed required for the substrate being welded.	HP-I
4. Store, handle, and install high-pressure gas cylinders; test for leaks.	HP-I
5. Determine the proper angle of the gun to the joint and direction of gun travel for the type of weld being made.	HP-I
6. Protect adjacent panels, glass, vehicle interior, etc. from welding and cutting operations.	HP-G
7. Identify hazards; foam coatings and flammable materials prior to welding/cutting procedures.	HP-G
8. Protect computers and other electronics/wires prior to welding procedures.	HP-G
9. Clean and prepare the metal to be welded, assure good metal fit-up, apply weld-through primer if necessary, clamp or tack as required.	HP-I
10. Determine the joint type (butt weld with backing, lap, etc.) for weld being made.	HP-I
11. Determine the type of weld (continuous, stitch weld, plug, etc.) for each specific welding operation.	HP-I
12. Perform the following welds: plug, butt weld with and without backing, and fillet etc., in the flat, horizontal, vertical, and overhead positions.	HP-I

13. Perform visual evaluation and destructive test on each weld type.	HP-I
14. Identify the causes of various welding defects; make necessary adjustments.	HP-I
15. Identify cause of contact tip burn-back and failure of wire to feed; make necessary adjustments.	HP-I
16. Identify cutting process for different substrates and locations; perform cutting operation.	HP-I
17. Identify different methods of attaching structural components (squeeze type resistance spot welding (STRSW), riveting, structural adhesive, MIG bronze, rivet bonding, weld bonding, etc.).	HP-G

Total Tasks	
HP-I	132/133 (99%)
HP-G	104/112 (92%)
Total	**236/245**

Supplemental Tasks
Personal Standards (see Standard 7.9)
1. Reports to work daily on time; able to take directions and motivated to accomplish the task at hand.
2. Dresses appropriately and uses language and manners suitable for the workplace.
3. Maintains personal hygiene appropriate to the workplace.
4. Meets and maintains employment eligibility criteria, such as drug/alcohol-free status, clean driving record, etc.;
5. Demonstrates honesty, integrity arid reliability.
Work Habits/ Ethic (see Standard 7.10)
1. Complies with workplace policies/laws.
2. Contributes to the success of the team, assists others and requests help when needed.
3. Works well with all customers and coworkers.
4. Negotiates solutions to interpersonal and workplace conflicts.
5. Contributes ideas and initiatives.
6. Follows directions.
7. Communicates (written and verbal) effectively with customers and coworkers.
8. Reads and interprets workplace documents; writes learly and concisely.
9. Analyzes and resolves problems that arise in completing assigned tasks.
10. Organizes and implements a productive plan of work.
11. Uses scientific, technical; engineering and mathematics (STEM) principles and reasoning to accompl\sh assigned tasks.
12. Identifies and addresses the needs of all customers, providing helpful, courteous and knowledgeable service and advice as needed.
13. Respectful of tools arid property used in school and the workplace environment.