AUTOMOTIVE COLLISION STRUCTURAL REPAIR
Course Syllabus

Course Number: ACR-0280    OHLAP Credit: No
OCAS Code: None
Course Length: 90 Hours
Career Cluster: Transportation, Distribution, and Logistics
Career Pathway: Automotive Collision Repair
Career Major(s): Collision Repair Technician

Pre-requisite(s):

Course Description: Upon successful completion of this course, the student will be able to: demonstrate proper safety-related practices; select and set-up different types of pulling equipment; properly mount and anchor a vehicle to a pulling system; work with high-strength steel; apply cold and hot stress relief methods; pull and straighten front-end, rear-end, side impacts, and roof structures. Students will learn to bring structures back into tolerance using a comparison to factory specifications. Students will learn techniques for structural pulling, such as developing a pulling plan, utilizing pulling equipment potential, and multiple pulling techniques.


Course Objectives:

A. Frame Inspection and Repair

1. Diagnose and measure structural damage using tram and self-centering gauges according to industry specifications. HP-I
2. Attach frame anchoring devices. HP-I
3. Straighten and align mash (collapse) damage. HP-G
4. Straighten and align sag damage. HP-G
5. Straighten and align sidesway damage. HP-G
6. Straighten and align twist damage. HP-G
7. Straighten and align diamond frame damage. HP-G
8. Remove and replace damaged frame horns, side rails, and cross members according to manufacturer's specifications/procedures. HP-G
9. Restore corrosion protection to repaired or replaced frame areas. HP-G
10. Repair or replace weakened or cracked frame members in accordance with vehicle manufacturer's specifications/procedures. HP-G
11. Identify misaligned or damaged steering, suspension, and powertrain components that can cause vibration, steering, and wheel alignment problems; align or replace in accordance with vehicle manufacturer's specifications/procedures. HP-G
12. Identify heat limitations in frame repair. HP-G

B. Unibody Inspection, Measurement, and Repair

1. Identify misaligned or damaged steering, suspension, and powertrain components that can cause vibration, steering, and 4-wheel alignment problems; realign or replace in accordance with vehicle manufacturer's specifications/procedures. HP-G
2. Diagnose and analyze unibody vehicle dimensions using a tram gauge. HP-I
3. Determine and inspect the locations of all suspension, steering, and powertrain component attaching points on the body. HP-G
4. Diagnose and measure unibody vehicles using a dedicated (fixture) measuring system. HP-G
6. Determine the extent of the direct and indirect damage and the direction of impact; plan the methods and sequence of repair. HP-I
7. Attach body anchoring devices; remove or reposition components as necessary. HP-I
8. Straighten and align cowl assembly. HP-G
9. Straighten and align roof rails(headers and roof panels. HP-G
10. Straighten and align hinge and lock pillars. HP-G
11. Straighten and align body openings, floor pans, and rocker panels. HP-G
12. Straighten and align quarter panels, wheelhouse assemblies, and rear body sections (including rails and suspension/powertrain mounting points). HP-G
13. Straighten and align front-end sections (aprons, strut towers, upper and lower rails, steering, and suspension/power train mounting points, etc.). HP-G
14. Use proper heat stress relief methods in high strength steel in accordance with manufacturer’s specifications/procedures. HP-G
15. Use proper cold stress relief methods. HP-G
16. Remove creases and dents using power tools and hand tools to restore damaged areas to proper contours and dimensions. HP-I
17. Determine the extent of damage to structural steel body panels; repair or replace. HP-I
18. Remove and replace damaged sections of structural steel body panels in accordance with manufacturer’s specifications/procedures. HP-G
19. Restore corrosion protection to repaired or replaced unibody structural areas. HP-G

All ASE objectives

Teaching Methods: The class will primarily be taught by the lecture and demonstration method and supported by various media materials to address various learning styles. There will be question and answer sessions over material covered in lecture and media presentations. Supervised lab time is provided for students to complete required projects.

Grading Procedures: 1. Students are graded on theory and shop practice and performance.
2. Each course must be passed with seventy (70%) percent or better.
3. Grading scale: A=90-100%, B=80-89%, C=70-79%, D=60-69%, F=50-59%.

Description of Classroom, Laboratories, and Equipment: Tulsa Technology Center campuses are owned and operated by Tulsa Technology Center School District No. 18. All programs provide students the opportunity to work with professionally certified instructors in modern, well-equipped facilities.

Available Certifications/College Credit: The student may be eligible to take state, national or industry exam after completion of the program. College credit may be issued from Oklahoma State University-Okmulgee or Tulsa Community College. See program counselor for additional information.
College Credit
Eligibility: The student must maintain a grade point average of 2.0 or better.