STRANDS AND STANDARDS
COLLISION STRUCTURAL REPAIR

Learning that works for Utah
CTE®

Course Description

This course prepares individuals to perform structural repairs on automobile uni-bodies, fixed glass, and frames. This course is based on the Automotive Service Excellence (ASE) automotive collision task list and the I-CAR training program. Work ethics and productivity are an integral part of the classroom and laboratory activities of this program.

Intended Grade Level	10-12
Units of Credit	0.5-1.0
Core Code	40.09.00.00.013
Concurrent Enrollment Core Code	N/A
Prerequisite	Basic Automotive Collision Repair
Skill Certification Test Number	N/A
Test Weight	N/A
License Area of Concentration	CTE and/or Secondary Education 6-12
Required Endorsement(s)	
Endorsement 1	Automotive Collision Repair
Endorsement 2	N/A
Endorsement 3	N/A

STRAND 1: SAFETY

Students will understand and demonstrate safety and environmental practices.

Standard 1

Successfully complete a safety program before entering a shop space.

Standard 2

Locate and understand basic and hazardous information from a Safety Data Sheet (SDS) for products used in the collision repair industry.

- Proper product labeling

Standard 3

Identify, select, inspect, and properly use appropriate personal protective equipment (PPE).

- Eye protection
- Hand protection
- Body protection
- Respiratory protection
- Hearing protection

Standard 4

Comply with OSHA regulations.

Standard 5

Locate OEM procedures to identify material and composition of the vehicle being repaired (mild steel, high strength steel, ultra-high strength steel, aluminum, etc.).

Standard 6

Differentiate and understand safety precautions between alternative fuel vehicles, supplemental restraint system (SRS) systems, advanced driver assistance systems (ADAS).

Performance Skills

- Pass a safety test with 100% accuracy.
- Locate, name, and demonstrate all safety equipment and procedures.
- Demonstrate correct use of PPE.
- Recognize and report potential safety hazards.
- Identify proper material labeling.
- Develop a logical repair plan and methods.
- Perform vehicle clean-up; complete quality control using a checklist on operations performed.
- Demonstrate safe pulling and clamping processes.

STRAND 2: ESTIMATING

Students will analyze and design damage reports.

Standard 1

Analyze and design damage reports for general business aspects in the collision repair industry.

Standard 2

Perform vehicle prescan/precheck.

- Customer information
- Vehicle information
- OBDII scan
- Frame measurement
- Prior repairs

Standard 3

Prove different types of vehicle damage.

- Accidents
- Theft recovery
- Flood damage
- Hail damage
- Vandalism
- Total loss
- Pre existing damage
- Supplemental

Standard 4

Analyze types of insurance coverages.

- Liability
- Comprehensive
- Collision
- Uninsured/underinsured coverage
- Full coverage
- Bodily injury
- Personal injury
- Property damage
- Umbrella policies

Standard 5

Design a sequence for damage analysis, and apply common industry parts names and repair terms.

Standard 6
Differentiate damage to various mechanical, electrical, and SRS systems of the vehicle.
- HVAC
- Cooling systems
- Suspension
- Latch mechanisms
- Exhaust
- Panel alignment
- Unrelated/related prior damage
- Hybrid/electric vehicle components
- Safety restraints / airbags
- ADAS

Standard 7
Select and price OEM parts, optional OEM parts, aftermarket parts, recyclable/used parts, remanufactured, rebuilt, and reconditioned parts; verify availability, compatibility, and condition.

Standard 8
Determine necessary sublet operations.
- Alignment
- Mechanical repair
- Calibrations of sensors
- Window tint and clear bra
- Tire mounting and balancing

Standard 9
Recognize the cost effectiveness of the repair and determine the approximate vehicle retail, and repair value.

Standard 10
Determine accuracy of damage report and communicate with team members to verify actual repair and replacement operations.

Performance Skills
- Recognize damage areas and components; perform a vehicle prescan/precheck.
- Utilize estimating procedure pages to design handwritten and software estimation.
- Apply math skills to determine labor rates, material charges, overlap deductions, sublet operations.
- Interpret insurance forms to indicate repair costs, estimates, total loss evaluation, and DRP recommendations.
- Apply concepts of customer relations and communications.
- Prove feasibility of repair vs. replacement of parts.

STRAND 3: FRAME/UNIBODY INSPECTION & REPAIR

Students will perform a frame/unibody inspection and repair.

Standard 1

Determine need for repair utilizing measurements per OEM specifications.

Standard 2

Analyze, straighten, and align damage (note heat limitations and monitoring procedures).

- Mash
- Sag
- Side sway
- Twist
- Diamond
- Roof rails/headers and panels
- Rocker panels and pillars
- Quarter panels, wheelhouse assemblies
- Front/rear-end sections

Standard 3

Remove and replace damaged structural components.

- Kinks
- Crush zones
- Sectioning

Standard 4

Remove and replace protective/structural coatings; restore corrosion protection to repaired or replaced frame areas and anchoring locations.

Standard 5

Analyze, repair/replace misaligned or damaged steering, suspension, and powertrain mounting points and components.

Performance Skills

- Align or replace damaged steering, suspension, and powertrain mounting points.
- Measure and diagnose damage using a tape measure, tram gauge, and digital measuring system.
- Safely attach anchoring devices to vehicles.
- Analyze, straighten, and align damage to a frame or unibody.

STRAND 4: WELDING / CUTTING

Students will perform metal welding, cutting, and joining.

Standard 1

Apply all applicable personal and shop safety steps, along with vehicle protection measures, to be followed when welding and cutting.

Standard 2

Perform metal joining methods and identify where each method is suitable in automotive structural metal repair.

Standard 3

Properly set up a welder for welding automotive structural metal.

Standard 4

Run a test weld and tune the welder for the welds being performed.

Standard 5

Clean, assemble, and complete a structural weld.

- Fillet weld with lap joint
- Butt weld / butt weld with a backing
- Plug weld

Standard 6

Assess welds through various testing methods.

- Bend
- Liquid penetrating
- Destructive

Performance Skills

- Apply all applicable personal and shop safety steps, along with vehicle protection measures, to be followed when welding and cutting.
- Perform a proper set up of a MIG welder for welding automotive sheet metal.
- Perform a test weld and tune the welder for the welds being made.
- Clean, assemble, and complete a butt joint with a backing, a fillet weld lap joint, and a plug weld.
- Properly shut down equipment (cord management, gas valves, storage)

STRAND 5: CUSTOMER RELATIONS & WORKPLACE SKILLS

Students will perform customer relations and workplace skills.

Standard 1

Demonstrate quality communication skills with customers and coworkers.

- Greetings
- Offer assistance
- Preferred communication methods
- Follow-ups
- Informative responses
- Out-of-service (lead time) estimation
- Negotiation

Standard 2

Demonstrate quality listening skills with customers and coworkers.

- Attentive listening
- Concerns
- Needs
- Expectations
- Paraphrase to show understanding

Standard 3

Demonstrate a professional attitude when working with customers and coworkers.

Standard 4

Demonstrate effective conflict management and resolution skills when working with customers and coworkers.

- Calm and collected
- Deescalation
- Transparency
- Adaptability
- Empathy

Standard 5

Demonstrate informative communication for vehicle pickup.

- Completed repairs
- Warranty information
- Vehicle care
- Technical and consumer protection
- Logistics

Performance Skills

- Dress appropriately for the workplace.
- Use language and manners appropriate for the workplace.
- Communicate effectively with customers and peers utilizing industry terminology.
- Effectively address the needs and concerns of customers.

STRAND 6: FIXED GLASS (optional)

Students will perform fixed glass removal, reinstallation, or replacement.

Standard 1

Identify considerations for removal, handling, one time use parts, and installation of advanced glass systems (comfort and safety features).

Standard 2

Remove and reinstall or replace modular glass using recommended materials.

Standard 3

Check for water leaks, dust leaks, and wind noise.

Standard 4

Identify considerations for pre-scan, post-scan, and recalibration procedures.

Performance Skills

- Identify considerations for removal, handling, one time use parts, and installation of advanced glass systems (comfort and safety features).
- Remove and reinstall or replace modular glass using recommended materials.
- Check for water leaks, dust leaks, and wind noise.
- Identify considerations for pre-scan, post-scan, and recalibration procedures.

Skill Certification Test Points by Strand

Test Name	Test #	Number of Test Points by Strand										Total Points	Total Questions
		1	2	3	4	5	6	7	8	9	10		