



# **AUTOMOTIVE COLLISION REPAIR**

## **Non-Structural and Structural Repair**

A course that prepares individuals to repair automotive, uni-bodies, fenders, and frames of automobiles. Includes instruction in non-structural and structural repairs. 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.

**Utah State Office of Education**  
**7/15/2008**

# NON-STRUCTURAL/STRUCTURAL REPAIR

Levels: Grades 10-12  
Units of Credit: 1.0  
CIP Code: 47.0603  
11 Digit Code: 40-09-00-00-010  
11 Digit CE Code: 40-09-00-13-010  
Test #:  
License: CTE/Secondary  
Endorsement: Automotive Collision Repair  
Prerequisite: None

## CORE STANDARDS, OBJECTIVES AND INDICATORS

**STANDARD**      **Students will be able to understand and demonstrate vehicle preparation.**  
**470603-01**

### **OBJECTIVES**

470603-0101      Understand safety practices related to personal protection, vehicle lifts, and hand and power equipment. (1A1)  
470603-0102      Interpret damage report information and plan a repair sequence for a damaged vehicle. (1A2)  
470603-0103      Remove dirt, grease, wax, and corrosion protection from the repair area. (1A3)  
470603-0104      Protect panels and parts adjacent to the repair area. (1A4)

**STANDARD**      **Students will be able to understand and demonstrate panel replacement and alignment.**  
**470603-02**

### **OBJECTIVES**

470603-0201      Select and understand how to use panel replacement and alignment tools. (1B1)  
470603-0202      Select and understand fastener applications and repair procedures. (1B2)  
470603-0203      Determine the panel alignment method. (1B3)  
470603-0204      Remove and reinstall the bumper, fascia, and header panel. (1B4)  
470603-0205      Remove, install, and align hoods, deck lids, and hatches. (1B5)  
470603-0206      Remove, reinstall, and align fenders, doors, and tailgates. (1B6)  
470603-0207      Understand how to select and use the proper tools. (1B7)

**STANDARD**      **Students will be able to understand and demonstrate working with trim and hardware.**  
**470603-03**

### **OBJECTIVES**

470603-0301      Select and understand how to use trim removal tools. (1C1)

- 470603-0302 Remove and install interior door trim panels. (1C2)
- 470603-0303 Remove and install a door lock and handle assembly. (1C3)
- 470603-0304 Remove and install decklid lock cylinders. (1C4)
- 470603-0305 Remove and install exterior trim and moldings. (1C5)
- 470603-0306 Remove and install pinstripes, decals, and emblems. (1C7)

**STANDARD**  
**470603-04** **Students will be able to understand and demonstrate metal straightening.**

**OBJECTIVES**

- 470603-0401 Identify the necessary tools to straighten damaged sheet metal. (1D1)
- 470603-0402 Straighten a damaged metal panel close to its original contours. (1D2)

**STANDARD**  
**470603-05** **Students will be able to understand and demonstrate the use of body fillers.**

**OBJECTIVES**

- 470603-0501 Select and understand the correct filler and tools needed to perform final finishing. (1E1)
- 470603-0502 Properly clean and prepare the repair area before applying plastic filler. (1E2)
- 470603-0503 Properly mix and apply plastic body filler to a properly prepared area. (1E3)
- 470603-0504 Properly prepare and apply specialty fillers. (1E4)
- 470603-0505 Restore the original contour and shape of a straightened panel using plastic body filler. (1E5)

**STANDARD**  
**470603-06** **Students will be able to understand and demonstrate MIG welding.**

**OBJECTIVES**

- 470603-0601 Describe metal joining methods and identify where each method is suitable in automotive sheet metal repair. (3A1)
- 470603-0602 Explain and demonstrate all applicable personal and shop safety steps, along with vehicle protection measures, to be followed when welding and cutting. (3A2)
- 470603-0603 Properly set up a MIG welder for welding automotive sheet metal. (3A4)
- 470603-0604 Run a test weld, and tune the welder for the welds being made. (3A5)
- 470603-0605 Clean, assemble, and complete a butt joint with backing in various welding positions; visually inspect and destructively test the weld. (3A6)
- 470603-0606 Complete a fillet weld lap joint, visually inspect it, and destructively test the weld. (3A7)
- 470603-0607 Complete a plug weld, visually inspect it, and destructively test the welds. (3A8)

**STANDARD**            **Students will be able to understand and demonstrate the cutting and heating processes.**  
**470603-07**

**OBJECTIVES**

- 470603-0701    Make a weld bead using an oxyacetylene torch. (3B1)  
470603-0702    Describe the different brazing processes, and identify where each can be used. (3B2)  
470603-0703    Set up and use a plasma arc cutter. (3B4)

**STRUCTURAL REPAIR**

**STANDARD**            **Students will be able to understand and demonstrate how to analyze damage.**  
**470603-08**

**OBJECTIVES**

- 470603-0801    Analyze various types of vehicle damage. (2A1)  
470603-0802    Interpret body dimension specification sheets. (2A2)  
470603-0803    Select and set up various types of measuring systems used for damage analysis. (2A3)  
470603-0804    Diagnose vehicle length and width damage with tram gauge. (2A4)  
470603-0805    Diagnose centerline misalignment with centering gauges. (2A5)  
470603-0806    Diagnose vehicle height damage with datum line gauges. (2A6)  
470603-0807    Diagnose damage with universal measuring system. (2A7)  
470603-0808    Diagnose damage with dedicated fixture system. (2A8)  
470603-0809    Diagnose damage with computerized measuring system. (2A9)

**STANDARD**            **Students will be able to understand and demonstrate straightening of structural parts.**  
**47068-02**

**OBJECTIVES**

- 470603-0901    Mount and anchor vehicle to pulling system. (2A1)  
470603-0902    Select and understand how to use various types of pulling equipment. (2A2)  
470603-0903    Apply knowledge of working with high-strength steel (HSS). (2A3)  
470603-0904    Apply cold and hot stress method. (2A4)  
470603-0905    Pull and straighten front end damage. (2A5)  
470603-0906    Pull and straighten rear end damage. (2A6)  
470603-0907    Pull and straighten side damage. (2A7)  
470603-0908    Pull and straighten roof damage. (2A8)

**STANDARD**            **Students will be able to understand and demonstrate full or partial panel replacement.**  
**470603-10**

**OBJECTIVES**

- 470603-1001    Understand the principles of full or partial panel replacement.

- 470603-1002 Select and understand the use of various types of joints used in sectioning.
- 470603-1003 Repair and replace a rail assembly.
- 470603-1004 Repair and replace rail sections.
- 470603-1005 Repair and replace rocker panel.
- 470603-1006 Repair and replace A-pillar.
- 470603-1007 Repair and replace B-pillar.
- 470603-1008 Repair and replace floor pan and trunk floor.
- 470603-1008 Complete full body section repair.

**STANDARD**  
**470603-11**      **Students will be able to understand and demonstrate stationary glass replacement.**

**OBJECTIVES**

- 470603-1101 Identify and select different types of automotive glass.
- 470603-1102 Select and understand how to use stationary glass removal tools.
- 470603-1103 Remove stationary glass using full or partial cutout methods.
- 470603-1104 Select and understand how to use stationary glass adhesives.
- 470603-1105 Install stationary glass.
- 470603-1106 repair stationary glass.

**STANDARD**  
**470603-12**      **Students will be able to understand and demonstrate how to restore corrosion protection.**

**OBJECTIVES**

- 470603-1201 Understanding corrosion principles and factory corrosion protection.
- 470603-1202 Repair methods and materials for corrosion.
- 470603-1203 Protecting enclosed interior surfaces.
- 470603-1204 Protecting weld areas and exposed seams.
- 470603-1205 Protecting exposed interior surfaces.
- 470603-1206 Protecting exposed exterior surfaces, trim, and accessories.

**PROFESSIONAL DEVELOPMENT**

**STANDARD**  
**470603-14**      **The student will understand the need for professional development.**

**OBJECTIVES**

- 470603-1401 Complete a personal inventory.
- 470603-1402 Set and meet goals.
- 470603-1403 Be self-motivated.
- 470603-1404 Know how to make decisions.
- 470603-1405 Know how to manage time.
- 470603-1406 Organize personal belongings and lab equipment.
- 470603-1407 Learn to communicate verbally.
- 470603-1408 Write effective communications.

- 470603-1409 Establish a personal reading program.  
470603-1410 Develop effective work skills and attitudes.  
470603-1411\* Master a working knowledge of SkillsUSA.
- Learn the acronym SkillsUSA.
  - State the SkillsUSA motto.
  - State the SkillsUSA creed.
  - Learn the SkillsUSA colors.
  - Describe the official SkillsUSA dress.
  - Describe the procedure for becoming a SkillsUSA officer.

**STANDARD  
470603-15**

**The student will understand the need for leadership skills.**

**OBJECTIVES**

- 470603-1501 Serve on a committee.  
470603-1502 Prepare an agenda.  
470603-1503 Assist in planning a meeting.  
470603-1504 Review basic parliamentary procedure.
- Make a main motion.
- 470603-1505 Participate in a school project.  
470603-1506 Attend a community meeting.  
470603-1507 Practice effective speaking.  
470603-1508 Present a three- to five-minute talk.  
470603-1509 Implement a leadership project.  
470603-1510\* Master a working knowledge of SkillsUSA.
- Describe the meaning of the SkillsUSA emblem.
  - State the SkillsUSA pledge.
  - Describe the duties of a SkillsUSA officer.

**STANDARD  
470603-16**

**The student will understand the need for career planning.**

**OBJECTIVES**

- 470603-1601 Define your future occupation.  
470603-1602 Survey employment opportunities.  
470603-1603 Report on a trade journal article.  
470603-1604 Explore opportunities for advanced training.  
470603-1605 Conduct a worker interview.  
470603-1606 Contact a professional association.  
470603-1607 Explore entrepreneurship opportunities.  
470603-1608 Give a talk about your career.  
470603-1609 Review career goals.

**STANDARD  
470603-17**

**The student will understand the importance of employability and work habits.**

**OBJECTIVES**

- 470603-1701 Develop a list of work standards to follow at school and on the job.  
470603-1702 Evaluate your personal ethics.  
▪ Evaluate your personal ethics against acceptable workplace ethics.  
470603-1703 Build a job search network.  
470603-1704 Find job leads.  
470603-1705 Write a resume.  
470603-1706 Create a job portfolio.  
470603-1707 Complete a job application.  
470603-1708 Write a business letter and memo.  
470603-1709 Participate in an actual or simulated job interview.

\* SkillsUSA PDP requirements - optional but recommended