

**AUTOMOTIVE COLLISION REPAIR TECHNOLOGY**  
**Course Codes: 6020, 6021, 6022, and 6023**

**COURSE DESCRIPTION**

The Automotive Collision Repair Technology program is designed to prepare students to repair automobiles and light commercial vehicles under the supervision of an experienced automotive collision repair technician. Automotive Collision Repair Technology students receive instruction in frame alignment, surface finishing, and shop management. Upon successful completion of the program standards, the student will be prepared for postsecondary education and entry-level automotive collision repair-related careers. Program standards are based on NATEF-ASE, Vehicle Manufacturers, and I-CAR industry standards.

**RESOURCES**

[www.mysctextbooks.com](http://www.mysctextbooks.com)

Safety and Pollution Prevention (SPP) [www.sp2.org](http://www.sp2.org)

Today's Class [www.todaysclass.com](http://www.todaysclass.com)

SkillsUSA [www.skillsusa.org](http://www.skillsusa.org)

I-CAR [www.I-CAR.com](http://www.I-CAR.com)

I-CAR Programs

- Unit A (WKR01)
- Unit B (FCR01 and DAM12)
- Unit C (WCS05)
- Unit D (WCS01, WCS02, WCS03 optional, WCA01)
- Unit E (PLA01, PLA02, PLA03)
- STS01 (Unit F)
- EXT01 (Units F and H)
- EXT02 (Units F and H)
- MEA01 (Unit G)
- DAM02 (Unit H)
- DAM04 (Unit H)
- DAM10 (Units G and H)
- DAM12 (Unit G)
- SSS01 (Unit G)
- TRM01 (Unit H)
- GLA01 (Unit H)
- GLA02 (Unit H)
- TLS01 (Unit I)
- REF01 (Unit I)

- REF02 (Unit J)
- REF03 (Unit J)
- REF04 (Unit J)
- REF07 (Unit J)
- CPS01 (Unit J)
- DAM01 (Unit K)

## **OBJECTIVE**

Given the necessary equipment, materials, and instruction, the student, on completion of the prescribed course of study, will be able to successfully accomplish the following core competencies.

## **CREDIT**

1, 2, or 3 Carnegie units per course code

## **UNIT A: PERFORMING WORK SAFETY PRACTICES**

1. Demonstrate the ability to work safely and keep a safe work area.
2. Operate a fire extinguisher.
3. Demonstrate the safe use of hand and power tools.
4. Demonstrate understanding of “right to know” laws including OSHA regulations and EPA Rule 40.

## **UNIT B: DEMONSTRATING UNDERSTANDING OF VEHICLE CONSTRUCTION AND COLLISION ENERGY MANAGEMENT**

1. Describe various types of vehicle construction:
  - a. space frame construction,
  - b. body-over-frame construction,
  - c. unibody construction.
2. Identify structural parts and cosmetic parts.
3. Demonstrate knowledge of collision energy management principles.

## **UNIT C: DEMONSTRATING PLASMA CUTTING SKILLS**

1. Set up plasma cutter for cutting automotive gauge sheet metal.
2. Cut a 6-inch straight line in 18- to 22-gauge sheet metal.
3. Cut a dime-size circular hole in 18- to 22-gauge sheet metal.

## **UNIT D: DEMONSTRATING MIG WELDING SKILLS**

1. Demonstrate knowledge of how to protect computers and other electronic control modules during welding procedures according to manufacturer’s specifications.
2. Set up and adjust MIG welder for welding 18- to 22-gauge sheet metal.

3. Construct the following welds (vertical and overhead positions) using I-CAR gauge to I-CAR specification:
  - a. continuous bead-lap weld;
  - b. continuous bead-butt weld with backing;
  - c. plug weld;
  - d. continuous bead open butt joint weld.
4. Demonstrate knowledge of aluminum welding.

#### **UNIT E: DEMONSTRATING SKILLS IN PLASTICS**

1. Demonstrate knowledge of current automotive plastics.
2. Demonstrate knowledge of plastic identification methods.
3. Perform a one-sided adhesive repair to a bumper cover and other plastic body parts.
4. Perform a two-sided adhesive repair to a bumper cover and other plastic body parts.

#### **UNIT F: DEMONSTRATING BASIC SHEET METAL REPAIR SKILLS**

1. Rough out and align cosmetic panels using hammer and dolly techniques.
2. Finish to final contour by using the following techniques:
  - a. hammer and dolly,
  - b. picking and filing, and
  - c. shrinking.
3. Demonstrate stud gun techniques in cosmetic panel alignment.
4. Prepare the straightened area for filling by grinding and featheredging.
5. Fill and finish panel irregularities using plastic fillers.
6. Demonstrate knowledge of repairing various levels of corrosion damage.

#### **UNIT G: DEMONSTRATING STRUCTURAL ALIGNMENT SKILLS**

1. Demonstrate how to interpret a structural dimension sheet.
2. Determine structural alignment using three-dimensioning and point-to-point measuring.
3. Analyze and diagram structural damage.
4. Develop a structural repair plan.
5. Demonstrate knowledge and operation of MacPherson strut and SLA suspension systems.
6. Demonstrate knowledge and operation of rack and pinion and parallelogram steering systems.
7. Demonstrate knowledge of wheel alignment and wheel alignment angles.
8. Demonstrate knowledge and use of self-centering gauges and tram gauges.

#### **UNIT H: DEMONSTRATING SKILLS REQUIRED TO REMOVE AND REPLACE TRIM, ACCESSORIES, AND HARDWARE**

1. Remove and replace various bumper systems.
2. Replace and/or align bumper reinforcements.

3. Replace and/or align energy absorbers.
4. Remove and replace grille.
5. Demonstrate knowledge of various types of restraint systems and how to disable them.
6. Demonstrate knowledge of how to access OEM guidelines for restraint systems service.
7. Remove and replace trim panels.
8. Remove and replace molding.
9. Demonstrate knowledge of how to install weather stripping.
10. Demonstrate knowledge of how to remove, replace, and align door locks and mating parts.
11. Demonstrate knowledge of how to remove, replace, and align trunk locks and mating parts.
12. Demonstrate knowledge of how to remove, replace, and adjust window regulators.
13. Demonstrate knowledge of how to remove and replace front and rear seats.
14. Remove, replace, and align hood locks and mating parts.
15. Install new nonstructural body sheet metal.

#### **UNIT I: DEMONSTRATING AUTOMOBILE GLASS REPLACEMENT SKILLS**

1. Demonstrate understanding of removing and replacing fixed glass (heated and non-heated) using manufacturer's specifications/procedures and recommended materials.
2. Demonstrate understanding of removing and replacing movable glass.

#### **UNIT J: DEMONSTRATING PAINTING AND REFINISHING SKILLS**

1. Demonstrate knowledge of painting booth operations.
2. Clean and condition bare metal for corrosion resistant primers.
3. Demonstrate knowledge of restoring corrosion protection to repaired or replaced unibody structural areas.
4. Prepare panel surfaces for refinishing:
  - a. sanding,
  - b. scuffing,
  - c. feather-edging,
  - d. blocking,
  - e. cleaning.
5. Mask sections and parts.
6. Apply various primers and sealers.
7. Apply single stage paint.
8. Apply basecoat/clearcoat paint.
9. Blend a panel using a basecoat/clearcoat finish.
10. Demonstrate knowledge of the color tinting process.
11. Demonstrate knowledge of applying multi-stage paints.
12. Demonstrate knowledge of waterborne finishes.
13. Demonstrate knowledge of paint defects, causes, and cures.
14. Prepare and refinish plastic parts.
15. Demonstrate knowledge of removal and application of decals and stripes.

16. Perform final detail and cleanup for delivery.

**UNIT K: DEMONSTRATING AUTOMOBILE BODY REPAIR ESTIMATING SKILLS**

1. Compute the cost of parts and labor for a collision-damaged vehicle using a crash estimating guide.
2. Determine paint and materials costs for an estimate.
3. Complete and total the estimate form.

**UNIT L: DEMONSTRATING EMPLOYABILITY SKILLS**

1. Complete a resume.
2. Complete a job application.
3. Create a portfolio.
4. Demonstrate interviewing skills.
5. Demonstrate workplace/soft skills.