# Course Information Form (CIF)

**Course Code:** ACR 275

**Course Title:** Collision Repair Welding

**Department:** Applied Sciences and Technologies
**PCS Code:** 1.2 - Occupational/Technical Instruction
**CIP Code:** 47.0603
**Repeatability:** 0

**Effective Date:** Summer 2026

## Credit Hours

**Catalog Notation:** 2-2-3
**Credit Hour Distribution:**

| Lecture: 2 | Lab: 2 | Clinical: 0 | **Total: 3** |
|---|---|---|---|

## General Course Information

### Catalog Description

Theory and practice in collision repair-specific welding operations and techniques. Includes oxyacetylene torch safety and use. MIG welding and cutting steel parts. Industry certification process.

### General Course Objectives

Demonstrate safe welding practices. Provide understanding of fundamentals of MIG and oxyacetylene welding. Demonstrate practical applications of the MIG and oxyacetylene processes. Produce student welds that meet collision repair industry standards.

### Minimum Placement Levels

| English | Reading | Math |
|---|---|---|
| Placement into ENG 098 | Placement into CCS 098 | Placement into MAT 059 |

### Prerequisites

Credit in ACR 110

### Methods of Evaluation

Students will be graded 60% on skill proficiency (a minimum of 12 lab practicals and 2 safety quizzes) and 40% on exams (1 midterm and 1 final exam).

### Instructional Materials and Additional Supplies

None.

## Course Content

### General Learning Outcomes (GLOs)

- Technology: Students will demonstrate the ability to evaluate, select, and appropriately use current and emerging tools.

### Course Segments and Student Learning Outcomes

| Course Segment | Learning Outcomes | Lecture Hours | Lab Hours | Clinical Hours |
|---|---|---|---|---|
| Course Overview and Safety | 1. Identify basic joints and types of welds.<br>2. Identify the safety procedures and precautions for torch use and welding in the collision repair environment.<br>3. Name parts of the weld.<br>4. Recall the standards of visual inspection of welds. | 1 | 2 | 0 |
| Oxyacetylene | 1. Describe safe handling and storage of acetylene and oxygen cylinders.<br>2. Explain the fusion and adhesion processes.<br>3. Describe the principles of oxygen fuel cutting.<br>4. Fuse mild steel without the addition of fill material (flat position).<br>5. Explain setup of an oxyacetylene station.<br>6. Describe the proper procedure for lighting the oxyacetylene torch, adjusting the flame, and shutting down the torch.<br>7. Recognize carburizing, neutral, and oxidizing flames.<br>8. Describe the practical uses of the oxyacetylene fusion and adhesion processes.<br>9. Describe the metals weldable with the oxyacetylene process.<br>10. List the criteria for selection of the proper welding tip.<br>11. List the common fuel gases and know their advantages.<br>12. Describe proper setup of oxygen fuel cutting equipment.<br>13. Describe and demonstrate safe and effective manual cutting practices.<br>14. Fuse mild steel with the addition of fill material (flat position). (Brazing) | 7 | 8 | 0 |
| Plasma ARC Cutting | 1. Demonstrate the fundamentals of arc cutting.<br>2. Describe proper procedures for plasma arc cutting.<br>3. Demonstrate straight and circular cuts. | 4 | 4 | 0 |

| Course Segment | Learning Outcomes | Lecture Hours | Lab Hours | Clinical Hours |
|---|---|---|---|---|
| GMAW (MIG) Gas Metal Arc Welding | 1. Summarize and explain the theory of GMAW welding.<br>2. Set up GMAW welding.<br>3. Observe proper safety procedures at all times and score minimum of 100% on safety exams.<br>4. List the hazards created by inert gas welding.<br>5. Demonstrate the safety practices of inert gas welding.<br>6. List the personal welding equipment required to protect the welder.<br>7. Explain the function of and list the types of shielding gases used, the characteristics of each type gas, and the type of metal and welding conditions each shield gas is used with.<br>8. List the three methods of metal transfer in the GMAW welding process and describe each method relevant to the welding current, quantity of molten metal transfer, quality of penetration, spatter, arc stability, and applications of each type of transfer to metal size and type.<br>9. List the advantages of GMAW welding over conventional stick-arc welding.<br>10. Name and explain the main components of a GMAW welding outfit.<br>11. List the factors that affect the setup of GMAW welding equipment.<br>12. List the parts and functions that comprise the GMAW work station and describe the process of the gas delivery system.<br>13. Determine correct gas flow rates upon particular welding applications.<br>14. List the conditions and factors on which each type of metal transfer depends.<br>15. Simulate each type of metal transfer setup on the GMAW welding equipment. | 14 | 14 | 0 |
| Troubleshooting Setup and Operational Problems on the MIG Equipment | 1. List the probable areas of GMAW welding problems.<br>2. List common GMAW welding problems, their causes, and possible ways to correct them.<br>3. Discuss and apply efficient cleaning methods.<br>4. List the negative results of spatter buildup. | 4 | 2 | 0 |

**Total Contact Hours**

| Lecture Hours | Lab Hours | Clinical Hours |
|---|---|---|
| 30 | 30 | 0 |