



## CRT 1230

**Division:** Career and Technical Education

**Department:** Collision Repair and Refinishing Technology

**Course:** CRT 1230

**Title:** Welding and Cutting

**Catalog Description:**

This course introduces gas welding, followed by intense study of metal inert gas (MIG) welding and spot welding of steel and aluminum. Students study the most common joints as they apply to current vehicles. The course includes lecture, demonstrations, and lab and uses Inter-Industry Conference on Auto Collision Repair (I-CAR) curriculum.

**General Education Requirements:** N/A

**Semesters Offered:** TBA

**Credit/Time Requirement:** Credit: 4; Lecture: 1; Lab: 7

**Clock/Hour Requirements:** 128

**Offered for Non-Credit:** No

**Prerequisites:** CRT 1110

**Corequisites:** None

**Justification:**

The I-CAR curriculum is recognized as the leader in collision repair training. It also provides the necessary information to pass the Automotive Service Excellence (ASE) task lists and tests required for certification. This course was approved by the advisory committee and similar courses are taught at Utah Valley State College (CRT 1230) and Salt Lake Community College (ACR 1100).

**Student Learning Outcomes:**

Upon successful completion, students will be able to:

- perform the three most common welds to required standards
- use a MIG welder to join 20-26 gauge metals in all positions with structurally sound welds
- properly prepare two, one-inch pieces of 20-26 gauge mild steel
- weld separate pieces together with a butt or lap weld in all positions
- demonstrate safety techniques by using proper head gear and gloves
- properly shut down the MIG welder station
- maintain MIG welder by repairing all non-electronic malfunctions
- fine tune MIG welder.

Course objectives will be achieved by providing students with instructional and hands-on experiences in the following areas:

- risk and hazard management
- tool safety introduction
- understanding gas welding
- fusion welding sheet metal
- plasma arc torch and its function
- types of joints found on current vehicles and repair methods
- restoring vehicle to structural integrity by control welding
- spot welding, adjustments, set up
- MIG welder, adjustments, set up
- welding with MIG on 20-26 gauge metals
- identify type of steel which should and should not be welded
- testing weld quality
- welding spot weld joints
- butt weld and lap weld appearance on vehicles
- protecting welds
- maintain welding equipment.

### **General Education Outcomes:**

6) Apply computational skills to a variety of contexts.

Students will be required to measure body components before and after repair work is completed to ensure that proper tolerances and allowances are achieved. These measurements are taken often and repeatedly throughout the repair process to ensure progress toward the repair. These measurements are provided by laser, tram, and steel tape in metric and U.S. standard measurements.

### **Key Performance Indicators:**

#### **In class:**

- Student progress will be evaluated on skill levels demonstrated in lab (70%), quiz scores (10%), and a final comprehensive exam (20%).

#### **Following class:**

- Upon completion of the course, safety and competency will be demonstrated in subsequent courses and on custom projects.
- Students will apply the techniques acquired on the job and pass national ASE certification tests.

### **Representative Text and/or Supplies:**

- James E. Duffy, *I-CAR student textbooks and modules*, current editions, Delmar Publishers.

**Optimum Class Size: 10**  
**Maximum Class Size: 20**

**Signatures:**

I hereby submit this course syllabus:

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Andy Morgan, ,

I hereby find this course consistent with the goals and resources of the Collision Repair and Refinishing Technology Department:

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Andy Morgan, , , Chair

I hereby find this course consistent with the goals and resources of the Career and Technical Education Division:

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Michael P. Medley, MBA, Assistant Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

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Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

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Michelle Olsen, MLS, Campus Librarian (Richfield Campus)