# Course Information Form (CIF)

**Course Code:** ACR 116

**Course Title:** Collision Repair Electrical Analysis

**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 repair of electrical and electronic systems related to the collision repair industry. Includes electrical theory, DVOM use, wire and circuit repairs, electronic diagnosis, and schematic usage.

### General Course Objectives

Students will learn to make the most common electrical and electronic repairs involved in collision repairs.

### Minimum Placement Levels

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

### Prerequisites

None

### Methods of Evaluation

The minimum to be given will be: 4 written exams, 8 graded assignments, 12 lab worksheets, and 3 practical exams.

### Instructional Materials and Additional Supplies

Auto Collision Repair and Refinishing, Michael Crandell

## 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 |
|---|---|---|---|---|
| Electrical Theory and Safety | 1. Apply knowledge of electrical theory.<br>2. Derive meaning from wiring diagrams and diagnostic flow charts.<br>3. Identify system precautions related to electrical vehicle service. | 3 | 1 | 0 |
| Digital Volt/Ohm and Ammeter Usage | 1. Check voltage values in wiring circuits with a DVOM (digital volt/ohmmeter).<br>2. Check continuity and resistance values in circuits and components with a DVOM. | 3 | 3 | 0 |
| Circuit Theory/Repair | 1. Inspect and repair wiring and connectors.<br>2. Inspect, test, and replace fusible links, circuit breakers, and fuses.<br>3. Inspect and service batteries and battery cables.<br>4. Inspect, adjust, and replace alternators, drive belts, pulleys, and fans.<br>5. Inspect, remove, and replace switches, relays, bulbs, and sockets of all lighting equipment.<br>6. Inspect, remove, and replace motors, switches, and relays of retractable headlights.<br>7. Identify programmable electrical systems, record data, and reprogram after disconnecting power.<br>8. Remove, replace, and repair horn systems.<br>9. Remove, replace, and repair windshield wiper/washer systems.<br>10. Remove, replace, and repair power window systems.<br>11. Remove, replace, and repair power seat systems.<br>12. Remove, replace, and repair remote trunk lid and hood release systems.<br>13. Remove, replace, and repair power antenna systems.<br>14. Apply precautions to protect electrical and electronic parts when welding. | 8 | 8 | 0 |
| Electronic Diagnosis | 1. Inspect, remove, and replace seat belt parts and assemblies.<br>2. Inspect and repair damage to restraint system mounting points.<br>3. Diagnose and service motorized seat belt systems.<br>4. Diagnose and service seat belt tensioners.<br>5. Use fault codes and test equipment to diagnose air bag systems.<br>6. Remove and replace air bag system parts. | 10 | 10 | 0 |
| Hybrid and EV Vehicle Systems | 1. Identify hybrid and electric vehicles.<br>2. Identify safety precautions related to hybrid and electric vehicles after collision.<br>3. Demonstrate how to disengage high voltage battery and high voltage storage systems. | 3 | 3 | 0 |

| Course Segment | Learning Outcomes | Lecture Hours | Lab Hours | Clinical Hours |
|---|---|---|---|---|
| Scan Tool Selection and Vehicle Diagnostics Pre/Post Scan | 1. Select scan tool to complete pre- and post- vehicle diagnostic system scans. | 3 | 5 | 0 |

**Total Contact Hours**

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