Course Information Form (CIF)

Course Code: AFD 119

Course Title: Chassis Electrical/Electronic Systems and Accessories

Department: Applied Sciences and Technologies
PCS Code: 1.2 - Occupational/Technical Instruction
CIP Code: 47.0604
Repeatability: 0

Effective Date: Summer 2026

Credit Hours

Catalog Notation: 3-2-4
Credit Hour Distribution:

Lecture: 3	Lab: 2	Clinical: 0	**Total: 4**

General Course Information

Catalog Description

Advanced study of automotive electrical and electronic circuitry emphasizing ignition, solid state components, and processor-driven systems. Concentration on controlling devices, chassis and body wiring, troubleshooting, diagnostics, and repair procedures.

General Course Objectives

Students will have a basic understanding of various electronic principles and electronic components. Students will be able to operate various kinds of diagnostic scan tools and correctly interpret the displayed data. Students will have a basic understanding of various electronically-controlled systems used on today's vehicles.

Minimum Placement Levels

English	Reading	Math
Placement into ENG 098	Placement into CCS 098	Placement into MAT 060

Prerequisites

Credit or concurrent enrollment in AFD 117

Methods of Evaluation

The minimum number of evaluation methods will include: 5 quizzes, 2 exams, and 1 lab practical.

Instructional Materials and Additional Supplies

Advanced Engine Performance Diagnosis, Edition 7 9780134893495

Course Content

General Learning Outcomes (GLOs)

- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.
- 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
Basic Concepts of Ohm's Law, Circuits, and Systems Review	1. Comprehend basic electricity and its application to modern day automotive vehicles.	3	0	0
Solid State Control Electrical Systems	1. Review previous introduction to solid state vehicle electrical control systems. 2. Expand knowledge of solid state vehicle electrical control systems with regard to voltage control, ignition control, and computer fuel control. 3. Apply knowledge of solid state vehicle electrical control systems to diagnose, troubleshoot, and repair these systems.	9	4	0
Introduction to Ignition Systems	1. Demonstrate the proper repair sequence needed in ignition work: 1) troubleshoot, 2) check components, 3) circuit trace, and 4) harness repair methods. 2. Repair and replace needed components.	5	5	0
Usage of Test Equipment	1. Identify and use all electrical test equipment needed for fault finding, including meters, test lights, and jumper wires.	3	2	0
Circuit Operation	1. Identify and understand proper circuit operation with regard to component location index, tracing, power distribution, and ground distribution. 2. Troubleshoot and repair malfunctioning circuitry.	1	0	0
Troubleshooting Procedure	1. Identify faults in automotive wiring using a structured method or plan that includes body part location, sequence of steps, and shop manuals.	2	0	0
Repair Procedures	1. Assess circuit malfunctions with regard to wires, connections, fusible links, and components. 2. Determine repair versus replacement needs. 3. Take necessary action(s) to fix circuit malfunctions.	2	1	0
Motor Circuitry: Electromagnetic Field Motors and Permanent Magnet (PM) Motors	1. Measure voltage drops to diagnose power circuits.	1	0	0
Computer Controls	1. Describe and locate circuit operation with sensors, processors, and actuators.	5	4	0
On-Board Diagnostics (OBD) II: Scan Tool Diagnosis, Diagnostic Trouble Codes, and Actuator Operation	1. Demonstrate knowledge of computer controls and operation. 2. Demonstrate knowledge of original equipment manufacturer's (OEM) OBD II operating system. 3. Demonstrate knowledge of global OBD II operating system.	10	8	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Supplemental Inflatable Restraint (SIR) Operation	1. Discuss safety restraint systems utilized in modern vehicles. 2. Review technician safety procedures for working on restraint systems. 3. Utilize diagnostic equipment to review restraint modules for faults. 4. Follow service manual procedures to locate and repair faults.	0	2	0
Accessory Circuits	1. Identify various circuits that are now present in modern vehicles.	2	2	0
Hybrid Vehicles	1. Demonstrate safety precautions for working with hybrid vehicles. 2. Demonstrate knowledge of hybrid drive systems.	2	2	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
45	30	0