Course Information Form (CIF)

Course Code: AFD 117

Course Title: Basic Automotive Electronics and Computer Control Strategies

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: 2-2-3
Credit Hour Distribution:

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

General Course Information

Catalog Description

Basic automotive electronics fundamentals including solid-state components such as sensors, actuators, and microprocessors. Automotive computer components and control strategies. Use of appropriate diagnostic equipment such as digital volt ohm meters (DVOMs), oscilloscopes, and scan tools.

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 115

Methods of Evaluation

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

Instructional Materials and Additional Supplies

Revel For Automotive Technology: Principles, Diagnosis And Service Access Card (6e), 9780135580066

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
Computer Fundamentals, Computer Operation, and Computer Fuel Control	1. Apply basic electricity principles and understand applications to modern day automotive vehicles. 2. Apply knowledge of electronics in present day automobiles so that diagnosis, troubleshooting, and repair can be accomplished.	6	6	0
Automotive Computers	1. Diagnose automotive computer operating systems.	3	3	0
Usage of Scan Tools	1. Use aftermarket scan tool equipment to diagnose faults. 2. Use original equipment (OE) scan tool equipment to diagnose faults.	3	6	0
Computer Application	1. Interpret computer interaction with various interrelated systems.	3	0	0
Troubleshooting Procedures: Computers, Sensors, and Actuators	1. Find faults in automotive computer systems using a structured method or plan. 2. Determine what the technician can and cannot repair, but must replace.	2	1	0
Brake, Steering, and Suspension Electronic Controls	1. Identify and test brakes, steering, suspension inputs, and output controls.	2	2	0
Trouble Code Diagnosis: On-Board Diagnostics (OBD) II	1. Test system using faults identified by the computer.	3	2	0
OBD-II Controls	1. Test the latest computer operating system.	3	4	0
Snapshot Diagnosis and Analysis	1. Diagnose intermittent faults.	5	6	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
30	30	0