Course Information Form (CIF)

Course Code: AFD 232

Course Title: Multi-Cylinder Engine Overhaul

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: 2-6-5
Credit Hour Distribution:

Lecture: 2	Lab: 6	Clinical: 0	**Total: 5**

General Course Information

Catalog Description

Multi-cylinder engine analysis, disassembly, repair, part replacement, and reassembly; development of skills required to make repairs and overhaul multi-cylinder engines.

General Course Objectives

The students will learn the techniques for live engine overhaul; emphasis will be on restoring engine to original equipment manufacturer (OEM) standards.

Minimum Placement Levels

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

Prerequisites

Credit in AFD 111 and AFD 115, or AFD 298

Methods of Evaluation

The minimum number of evaluation methods will include: 2 exams and 8 quizzes.

Instructional Materials and Additional Supplies

My Automotive Lab, with Pearson E-Text access card for Automotive Technology (5). Halderman, Pearson 2016. 0133995542

Course Content

General Learning Outcomes (GLOs)

- Critical Thinking and Information Literacy: Students will demonstrate the ability to evaluate perspectives, evidence, and implications, and to locate, assess, and use information effectively.
- 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
Design and Function of Multi-Engine Components	1. Describe the individual components of a multi-cylinder engine. 2. Describe the functions of the individual components of a multi-cylinder engine. 3. Remove an engine from a vehicle, disassemble and reassemble the engine, and reinstall in vehicle.	4	20	0
Cylinder Heads	1. Recondition a cylinder head, valve guides, springs, and seats including repair of parting surfaces valves, valve guides, and valve seats. 2. Clean a cylinder head; inspect visually and with magnetic crack detectors. 3. Grind valves, grind seats, replace valve seats, true parting surfaces, inspect valve spring, repair rocker arms, and reassemble the head.	5	20	0
Recondition Cylinder Bore Coverings	1. Use a rigid hone to recondition cylinder bore. 2. Apply cleaning inspection methods, methods of measuring, removing ridge, deglazing, honing, boring, and sleeving.	5	4	0
Service and Recondition Pistons and Connecting Rods	1. Explain processes to clean, inspect, and measure pistons and connecting rods. 2. Describe wrist pin service, ring groove service, piston shirt service, pin bushing service, bearing hone reconditioning, and ring replacement. 3. Clean, inspect, and measure a piston; cut ring grooves; install rings; inspect connecting rod bearing holes; and install piston in an engine.	4	9	0
Service and Recondition Crankshafts	1. Clean, inspect, measure, polish, grind, and fit main and connecting rod bearings to a reconditioned crankshaft.	5	4	0
Oil Pumps	1. Inspect and service or replace oil pumps.	1	3	0
Multi-Cylinder Engine Parts	1. Inspect and determine serviceability and repair or replace all multi-cylinder engine parts including crankshaft, camshaft, cam bearings, timing chains, valve lifters, timing gears, push rods, manifolds, seals, distributors, fuel pumps, carburetors, oil pumps, windage trays, sending units, harmonic balances, flywheels, and starter rings.	5	20	0
Engine Overhaul Adjustments	1. Determine and apply final ignition timing, valve, belt, and other adjustments as necessary after an engine overhaul.	1	10	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
30	90	0