Course Information Form (CIF)

Course Code: AFD 112

Course Title: Introduction to Power Trains

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

Introduction to component parts and principles employed in the transference of power from engine to drive axles, clutches, manual transmissions, trans-axles, transfer cases, final drives, and differentials.

General Course Objectives

Students will learn the technology to be able to rebuild major power train components.

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 111 or AFD 298

Methods of Evaluation

The minimum number of evaluation methods will include: 2 exams, 6 quizzes, and 2 practical exams.

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
Power Train Components	1. Identify and describe the functions of: a) flywheel, b) clutch, c) transmission, d) drive line, e) drive shaft, f) universal joint, g) final drive, h) differential, i) slip yoke, j) trans-axle, and k) power train.	3	1	0
3-Speed Transmissions	1. Identify four functions of manual-shift transmissions. 2. Describe how torque speed and direction are varied in a set of gears. 3. Determine gear ratios; work problems finding gear torque and speed transfer. 4. Disassemble, inspect, and reassemble two 3-speed fully-synchronized constant mesh transmissions.	6	6	0
4- and 5-Speed Transmissions	1. Describe gear combinations in 4- and 5-speed transmissions. 2. Describe how reverse is obtained. 3. Describe power flow in all forward speeds. 4. Demonstrate how a range box works. 5. Examine a partially disassembled Fuller 13-speed truck transmission.	6	5	0
Flywheel Clutches	1. Define and describe components and operation of a flywheel clutch. 2. Overhaul and adjust a flywheel clutch.	4	9	0
Rear Axles and Final Drives	1. Describe components and function of drive axles. 2. Describe the operation of a differential assembly. 3. Describe power flow in 2- and 3-speed drive axles.	4	3	0
Drive Axle Service	1. Disassemble, inspect, and reassemble an integral rear axle assembly. 2. Disassemble, inspect, and reassemble a non-integral (removable carrier) rear axle assembly. 3. Service drive axle bearings and seals.	4	5	0
4-Wheel Drive	1. Describe 2 types of 4-wheel drive systems. 2. Examine and describe power flow in a typical transfer case. 3. Describe operation of lockout hubs.	3	1	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
30	30	0