J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: AUT 142 **Credits: 3**

Course Title: Auto Power Trains II

Course Description:

Presents operation, design, construction and repair of power train components, standard and automatic transmission. Includes clutches, propeller shaft, universal joints, rear axle assemblies, fluid couplings, torque converters as well as 2, 3, and 4 speed standard, overdrive and automatic transmissions. Part II of II. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

General Course Purpose:

This course provides instruction on the construction, operation, inspection, maintenance, service, repair and diagnosis of a modern manual transmission-equipped vehicles. Initial instruction will focus on repair and replacement techniques with additional focus on the diagnosis of clutch, four-wheel drive and rear differential systems.

Course Prerequisites and Co-requisites:

Prerequisites: AUT 141

Student Learning Outcomes:
Upon completing the course, the student will be able to

- Diagnose, inspect and repair manual clutch system
- Demonstrate proper manual transmission and/or transaxle removal and reinstallation techniques
- Disassemble, inspect, measure, and reassemble a manual transmission and/or transaxle to industry standards
- Perform diagnostic procedures on part-time, full-time, or all-wheel drive (AWD) drivetrain systems
- Inspect, measure, and repair drive shaft concerns related to noise, vibration, and harshness (NVH)
- Inspect, measure, and overhaul rear axle/differential components

Major Topics to Be Included:

- Manual Clutch Systems
  - Component, operation
  - Diagnosis and overhaul
- Manual Transmissions
  - Components, operation
  - Diagnosis and overhaul
- Manual Transaxle
  - Components, operation
  - Diagnosis and overhaul
- Four Wheel Drive (4WD) systems

    - Part-time
    - Full-time
    - All wheel drive
    - Transfer case overhaul
    - Electronic shift diagnosis
- Drive Shaft
    - Angle measurement and vibration diagnosis
    - Universal-joint service
    - NVH diagnosis
- Rear Axle and Differential
    - Rear axle, bearing and seal service
    - Differential overhaul and setup

Effective Date/Updated: January 19, 2023