

MERCER COUNTY COMMUNITY COLLEGE

Division of Business and Technology

AUT 224

Manual Transmissions and Drive Lines

COURSE DESCRIPTION

Automotive systems for torque multiplication and speed reduction. The relationship of engine speed and vehicle speed and its effect on fuel economy will be discussed. Other topics include clutch service, front and rear wheel drive applications, component replacement, diagnosis, removal and reinstallation procedures, and transmission overhaul. Extensive use of special tools and test equipment for servicing and repair will be emphasized in class and lab activities

Text (s): **Reference Division Booklist**

Prerequisites: **AUT111**

Co-requisites:

Credits: 3
Hours: 3

Lecture Hours: 2

Studio/Lab

Food and drink are strictly prohibited in classrooms as per health and safety laws. Students may not bring in chemicals or cleaning fluids without the appropriate MSD sheets.

Course Coordinator: Fred Bassini

Latest Review: Spring 2004

I. Driveline Components: Inspection and Service

Performance Tasks

A. Clutch Assembly

1. Types of Clutch Release Mechanisms
 - a. Linkage
 - b. Cable
 - c. Hydraulic
2. Inspection
 - a. Linkage
 - b. Inspection Cover
 - c. Fluid Leaks
3. Pedal Adjustment
 - a. Pedal Travel
 - b. Methods of Adjustment
 1. Linkage
 2. Cable
 3. Hydraulic

MT01, MT02, MT03
MT41, MT42, MT43
MT44

B. Manual Transmission/Transaxle

1. Fluid Leaks
2. Shift Linkage Adjustment

C. Driveshaft Diagnosis

1. CV Joint
 - a. Boot Condition
 - b. Free Play Check

D. Rear Differential

1. Rear Axle Bearings
 - a. Checking for Bearing Wear
2. Gear Wear and Backlash
3. Housing
 - a. Seal & Fluid Leaks
 - b. Overall Condition
 - c. Bushing Condition

II. Clutch Assembly Theory

A. Principles of Operation

1. Function of the Clutch
2. Basic Clutch Operation
 - a. Friction Pressure
 - b. Types of Clutches
 - c. Engaged/Disengaged
3. Clutch Assembly Components
 - a. Fly Wheel
 - b. Disc or Plate
 - c. Pressure Plate
 - d. Release Bearing
 - e. Release Fork/Ball Pivot

MT01, MT02, MT03
MT04, MT05, MT06
MT07, MT08, MT09
MT10

f. Pilot Bushing

- 4. Friction Disc
 - a. Construction
 - b. Material
 - c. Driven Component

Performance Tasks

- 5. Driving Components
 - a. Fly Wheel
 - 1. Materials
 - b. Pressure Plate
 - 1. Purpose
 - 2. Operation
 - 3. Design Types

B. Transmission Removal/Installation Procedures

- 1. Rear Wheel Drive
 - a. Removal
 - 1. Components
 - 2. Support Fixtures
 - b. Installation
 - 1. Lubrication Usage
 - 2. Fastener Torque
 - 3. Shift Linkage Installation and Adjustments
 - 4. Transmission Fluid Usage
- 2. Transaxle (FWD)
 - a. Removal: Engine Installed
 - 1. Components Removed
 - 2. Installation of Engine Support Fixture
 - b. Installation
 - 1. Lubrication Usage
 - 2. Fastener Torque
 - 3. Locating Pins
 - 4. Fluid Usage
 - 5. Adjustments