

Course Outline
AUTO 156
Repairing Automotive Manual Transmissions
4 Credit Hours
3 Lecture Hours
3 Lab Hours

The Community College of Baltimore County

Description

Repairing Automotive Manual Transmissions

Discusses diagnosis and repair of automotive manual transmissions transaxles and differentials; includes diagnosis, disassembly, repair of manual transmissions, manual transaxles, differentials, and drive axles. \$20.00 fee required. Prerequisite: AUTO 111

Overall Course Objectives

Upon completion of this course the student will be able to:

1. Diagnose transmission noise, hard shifting, jumping out of gear, fluid leakage problems, and determine needed repairs.
2. Remove and replace transaxle final drive.
3. Disassemble and clean transaxle final drive.
4. Inspect, adjust and reinstall transaxle shift cover, forks, levers, grommets, shafts, sleeves, detent mechanism, interlocks and springs.
5. Inspect and reinstall output shaft, gears, thrust washers, bearings, and retainers.
6. Measures endplay or preload (shim or spacer selection procedure) on transaxle shafts and adjust as needed.
7. Inspect and reinstall synchronizer hub, sleeve, keys (inserts), springs, and blocking rings.
8. Inspect and reinstall reverse idler gear, shaft, bearing, thrust washers, and retainers.
9. Inspect, service, and replace shafts, yokes, boots, and universal/CV joints.
10. Remove and inspect drive pinions gear, spacers, sleeves, and bearings.
11. Measure and adjust drive pinion depth.
12. Measure and adjust pinion bearing preload.
13. Measure and adjust side bearing preload and ring and pinion gear total backlash and backlash variation on a differential carrier assembly (threaded cup and shim types).
14. Check ring and pinion tooth contact patterns and adjust as needed.

Major Topics

1. Repair of manual transmission and transaxle
2. Repair of transfer case
3. Repair of Differentials
4. Measurement and set up of Differential Gears

Course Requirements

One Term Paper

1. Topic of the paper will be selected by the student and should relate to the subject material of the course.
2. The paper should be 6 to 8 pages in length, typewritten, and double-spaced. It should include in addition to the 6 to 8 pages of text, an author and title page and bibliography utilizing a minimum of three reference resources excluding classroom materials.
3. All papers are due when 80% of the class sessions are completed. Papers submitted late will be deducted one letter grade.

Grading/Exams:

Grading procedures will be determined by the individual faculty member and will be provided on the first day of class. A student can expect a minimum of eight grades from the following categories:

1. Quizzes
2. Lab projects
3. Written paper
4. Homework assignments
5. Midterm exam
6. Class participation
7. Comprehensive final (required)

Other Course Information

This course is an Automotive Technology elective.