

Course Outline
AUTO 111
Servicing Automotive Drive Train and Body Components
4 Credit Hours
3 Lecture Hours
3 Lab Hours

The Community College of Baltimore County

Description

Servicing Automotive Drive Train Components

Introduces the automotive drive train components, operations, and service procedures; includes service, removal, and replacement of manual transmission, drive shaft, differential, and transaxle. \$20.00 fee required

Overall Course Objectives

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

1. Diagnose clutch noise binding, slippage, pulsation and chatter problems, and determine needed repairs.
2. Inspect, adjust or replace clutch pedal linkage, cables, automatic adjuster mechanisms, brackets, bushings, pivots, and springs.
3. Diagnose transmission noise, hard shifting, jumping out of gear, fluid leakage problems, and determine needed repairs.
4. Remove and replace transaxle final drive.
5. Disassemble and clean transaxle final drive.
6. Inspect, adjust, and reinstall transaxle shift cover, forks, levers, grommets, shafts, sleeves, detent mechanism, interlocks, and springs.
7. Inspect and reinstall output shaft, gears, thrust washers, bearings, and retainers.
8. Measure endplays or preload (shim or spacer selection procedure) on transaxle shafts and adjust as needed.
9. Inspect and reinstall synchronizer hub, sleeve, keys (inserts), springs, and blocking rings.
10. Inspect and reinstall reverse idler gear, shaft, bearing, thrust washers, and retainers.
11. Inspect, service, and replace shafts, yokes, boots, and universal/CV joints.
12. Remove and inspect drive pinions gear, spacers, sleeves, and bearings.
13. Measure and adjust drive pinion depth.
14. Measure and adjust pinion bearing preload.
15. 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).
16. Check ring and pinion tooth contact patterns and adjust as needed.

17. All other NATAF Tasks from master course list.

Major Topics

1. Theory of clutch operation
2. Theory of manual transmission and transaxle operation
3. Theory and operation of transfer case
4. Differential measurement and setup

AUTO 111 approaches automotive drive train as a learning process that incorporates practical competency with classroom instruction. To complete the course successfully, practical ability as well as knowledge of theory must be demonstrated.

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 core course.