

## **AUTO 156**

### **Automotive Driveline Systems**

4 Credits: 2 Lecture, 6 Lab hours

Community College of Baltimore County  
Common Course Outline

#### **Description**

**AUTO 156 – Automotive Driveline Systems:** introduces diagnosis and repair of automotive drivetrain components. Topics include diagnosis, inspection, disassembly and repair of manual transmissions, manual transaxles, differentials, drive axles, transfer cases and electric drive units.

**Pre-requisites:** AUTO 136

**Co-requisites:** ACLT 053 or (ESOL 052 and ESOL 054) and MATH 082

#### **Overall Course Objectives**

Upon completion of this course, students will be able to:

1. diagnose transmission noise, hard shifting, jumping out of gear, and fluid leakage problems and determine needed repairs;
2. remove and replace transaxle final drive, disassemble and clean transaxle final drive, inspect, adjust and reinstall transaxle shift cover, forks, levers, grommets, shafts, sleeves, detent mechanism, interlocks, springs, inspect and reinstall output shaft, gears, thrust washers, bearings, and retainers, measure endplay or preload on transaxle shafts and adjust as needed;
3. inspect and reinstall synchronizer hub, sleeve, keys, inserts, springs, and blocking rings, inspect and reinstall reverse idler gear, shaft, bearing, thrust washers, and retainers;
4. inspect, service, and replace shafts, yokes, boots, and universal/CV joints;
5. remove and inspect drive pinions gear, spacers, sleeves, and bearings, measure and adjust drive pinion depth, measure and adjust pinion bearing preload, measure and adjust side bearing preload, ring and pinion gear total backlash and backlash variation on a differential carrier assembly, inspect ring and pinion tooth contact patterns and adjust as needed;
6. inspect and repair 4WD and AWD components;
7. inspect and repair prop shafts and driveshafts;
8. inspect and determine proper repair procedure for electric drive units;
9. perform NVH diagnosis and repair; and
10. perform all other up-to-date ASE Education Foundation tasks from the master course list.

#### **Major Topics**

- I. Repair of manual transmission and transaxle
- II. Repair of transfer case and electronic four-wheel drive (4WD) actuators
- III. Repair of differentials

The Common Course Outline (CCO) determines the essential nature of each course.

For more information, see your professor's syllabus.

#### IV. Measurement and set up of differential gears

##### **Course Requirements**

Grading will be determined by the individual faculty member, but shall include the following, at minimum:

- three quizzes
- weekly lab projects
- research paper (6-8 pages typed) or obtain the ASE Professional Certification
- three homework assignments
- active engagement in class activities
- one midterm exam
- one comprehensive final exam with a written component and a hands-on individual assessment

Written assignments and research projects: Students are required to use appropriate academic resources in their research and cite sources according to the style selected by their professor.

##### **Other Course Information**

This class combines lab with lecture and students apply knowledge learned in a hands-on environment.

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