

AUTO 231

Repairing Automotive Engines

5 Credits: 3 Lecture, 6 Lab

Community College of Baltimore County
Common Course Outline

Description

AUTO 231 Repairing Automotive Engines: is a course in which students explore the diagnosis and repair of automotive engines. Topics covered include engine evaluation, removal, disassembly, cylinder head reconditioning, crankshaft and bearing reconditioning, cylinder and piston reconditioning, engine reassembly, engine installation, and associated repairs.

Pre-requisites: AUTO 131, AUTO 141

Overall Course Objectives

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

1. listen to engine noises and determine needed repairs;
2. diagnose the cause of excessive oil consumption, unusual engine exhaust color, odor, sound, and determine needed repairs;
3. remove engine (front-wheel drive) and prepare for disassembly;
4. reinstall engine (front-wheel drive);
5. replace valve stem seals;
6. inspect valves, resurface, or replace;
7. inspect valve seats, resurface, or replace;
8. check valve face-to-seat contact and valve seat concentricity (run out) and service seats and valves as needed;
9. check valve spring assembled height and valve stem height and service valve and spring assemblies as needed;
10. adjust valves (mechanical or hydraulic lifters);
11. inspect and replace pans, covers, gaskets, and seals;
12. deglaze and clean cylinder walls;
13. inspect crankshaft for surface cracks and journal damage, check oil passage condition, measure journal wear, and determine needed repairs;
14. inspect and measure main and connecting rod bearing for damage, clearance; endplay, and determine needed repairs (includes the proper selections of bearing);
15. inspect, measure, service, or replace pistons;
16. inspect, measure, and install piston rings;
17. inspect, repair or replace crankshaft vibration damper (harmonic balancer);
18. inspect flywheel or flex plate and ring gear for cracks and wear, measure run out, and determine needed repairs;
19. reassemble engine components using correct gaskets and sealant; and
20. perform all other up-to-date ASE Education Foundation tasks from the master course list.

The Common Course Outline (CCO) determines the essential nature of each course.
For more information, see your professor's syllabus.

Major Topics

- I. Diagnosis of engine noises
- II. Engine removal and replacement
- III. Inspection of all engine internal parts
- IV. Assembly of all engine internal parts
- V. Reconditioning of engine heads

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.

Date Revised: 12/5/2023