

**Course Outline**  
**AUTO 231**  
**Repairing Automotive Engines**  
**5 Credit Hours**  
**3 Lecture Hours**  
**6 Lab Hours**

**The Community College of Baltimore County**

**Description**

**Repairing Automotive Engines**

Discusses diagnosis and repair of automotive engines; includes engine evaluation, removal, disassembly, cylinder head reconditioning, crankshaft and bearing reconditioning, cylinder and piston reconditioning, engine reassembly, engine installation, and associated repairs. \$20.00 fee required.

Prerequisite: AUTO 111, AUTO 131, and AUTO 141

**Overall Course Objectives**

Upon completion of this course the student 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.
20. All other NATAF Tasks from the master course list.

### **Major Topics**

1. Diagnosis of engine noises.
2. Engine removal and replacement.
3. Inspection of all engine internal parts.
4. Assembly of all engine internal parts.
5. Reconditioning of engine heads.

AUTO 231 revolves around the practical experience of assembling an engine. The student is expected to perform all tasks related in the successful completion of a running engine.

### **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.