



Course Syllabus

Course #: AAD 1120 Course Name: Auto Engines

Division: Engineering and Industrial Technologies

Class Days: Class Time:
Location: Classroom: Laboratory:
Credit Hours: Contact Hours: Lab Hours: Lecture Hours:

Instructor: Office Location:
Phone: Email Address:

Office Hours: TBD

Division Office/Location: Engineering Building Division Fax: 419-334-2300

Full-time Contact Person: Jayne Bowersox Phone(s): (419) 559-2410

Course Description:

Study of various types of gasoline internal combustion engines emphasizing operating principles, theory, design, and construction. Lab work consists of disassembly and assembly of various types of gasoline engines.

Prerequisite(s): None

Corequisite(s): None

Entry Level Skills and Knowledge:

- 1. To develop a basic understanding of engine operations.
2. To develop a basic understanding of the major components of engines.
3. To develop a basic understanding of the nomenclature of parts involved.
4. To develop a basic understanding of the engine conditions by the use of diagnosis.

Required Texts, Supplies and Equipment:

Text: Automotive Engines 5th ed. By: James Halderman
Lab book
Safety Glasses
Felt tip pen
Roll of masking tape

Grading:

10% = Attendance <Note, more than 10 minutes late (unless excused) or leaving early,(unless excused) will lower **that day attendance** grade by 50%>

15% = Test and Quizzes

20% = Lab Work <Lab work grade are made up of the following:

1. Safety as you work
2. Neatness of work & clean-up of work area
3. Usage of tools
4. Proper procedure
5. Understanding of task or work performed. **Your grade for this part also drives the grade you receive for the final lab test.**
Note: If you need to use the school safety glasses more than four times in this class, your lab grade will be lowered by 35%

15% = Lab task, The number of tasks that was the average for the class, all paper work must be turned in.

20% = Final Lab test <"Hand on test", without this test you maybe unable to take written test. This test will also be used to calculate the lab work grade>

20% = FINAL WRITTEN EXAM

Quizzes must be made up within one week from time the quiz is given unless other arrangements are made. All lab papers and worksheets must be turned in by a date set by the instructor.

= A

= B

= C

= D

Below = F

Learning Outcomes:

General Education

1. **Communicate effectively**
2. **Evaluate arguments in a logical fashion**—Competence in analysis and logical argument are explicit learning goals for most general education programs, although these skills go by a variety of names (e.g., critical thinking, analysis, logical thinking, etc.). **Students will be able to demonstrate competence in problem solving in communication, mathematics, and in team settings.**
3. **Employ the methods of inquiry characteristic of natural sciences, social sciences, mathematics, and the arts and humanities;** general education introduces students to methods of inquiry in several fields of study and thereby prepares students to integrate information from different disciplines.

General Education

I. Engine Operation

- A. Compression Ratios
- B. Compression Pressures
- C. Cycles

- D. Displacement Figuring
- E. Why and How an Engine Works

II. Major Components

- A. Pistons and Connecting Rods
- B. Cylinder Block and Head
- C. Valves and Valve Train
- D. Crankshaft
- E. Bearings
- F. Exhaust Systems
- G. Camshaft

III. Nomenclature

- A. Various Major Parts and Systems Involved

IV. Engine Diagnostics

- A. Identify abnormal engine noises
- B. Identify abnormal exhaust color, odor and sound
- C. Conduct and interpret the results of a compression test
- D. Conduct and interpret the results of a leakage test
- E. Conduct and interpret the results of an engine vacuum
- F. Conduct and interpret the results of an oil pressure test

Assessment of Student Learning:

Assessment Project and Measurement in course (if any):

Plan of Work:

Worksheet

Ch. 1	W/S	2	Shop Safety
Ch. 2	W/S	1	VIN
Ch. 2	W/S	2	Measuring Tools
Ch. 4	W/S	2	Piston Removal
Ch. 4	W/S	3	Removing the Cylinder Head
Ch. 4	W/S	4	Removing the Cylinder Ridge
Ch. 6	W/S	1	Cylinder Head Tools
Ch. 6	W/S	2	Valve Wear
Ch. 6	W/S	3	Valve Guide Clearance
Ch. 6	W/S	4	Valve Seat Inspection
Ch. 7	W/S	1	Valve Train Components
Ch. 7	W/S	2	Cam Operation
Ch. 7	W/S	3	* Valve Lash
Ch. 7	W/S	4	Timing Belt & Chain
Ch. 8	W/S	1	Engine Block Preparation
Ch. 8	W/S	2	Cylinder Reconditioning
Ch. 8	W/S	3	* Piston Pins
Ch. 8	W/S	4	Main Bearing Bore Alignment
Ch. 9	W/S	1	Gasket
Ch. 9	W/S	3	Installing the Crankshaft

Ch. 9 W/S 4 Installing the Piston
Ch. 10 W/S 2 * Engine Performance
Ch. 10 W/S 3 * CC-ing

* May not be able to do.
See page 1X in shop manual

Jobs 1,4,5,6,7,15(1),18,20(2),21(2),22(2),23(2),
24(3),25(3),26,27,28,29,30,31,32,33,34

1. **Main job sheet**
2. **May be done with other heads**
3. **Do only with Engine that you are working on**

Course Requirements:

Complete all assignments as required

Lab papers as many as our class time allows. Attendance at all class times from beginning to end unless other arrangements are made before hand. Classes may consist of all lecture, all lab, or a combination of both. Most of the worksheet activities included are considered to be priority one (PI) tasks by ASE.

Lab project from classroom, shop manuals and lab book.

Others may be added as needed.

Short outline of each Preparation Material by due date listed in Course Outline.

Policies

Course Withdrawing: If for any reason you need to withdraw from this course, be certain that you do so according to College procedure. It is your responsibility to know and follow this procedure. If you simply stop coming to class, without officially withdrawing from the course, your grade is an automatic "F." Please follow official College procedure for withdrawing from this or any course.

College Academic Policies are located in the College Catalog. A copy of the current catalog may be picked up in any of the division offices or admissions. The list of college policies is also available online at <https://www.terra.edu/register/Collegecat/policies.asp>.

Support Services: The College offers a number of support services to assist in your success in this course and all courses. Among these services are the Writing & Math Center in B105, the Office of Learning Support Services, which coordinates the campus disability services and tutoring programs, the computer labs, and the computers in the atriums.

Any student who feels he/she may need an accommodation based on the documentation of a disability should contact the Office of Learning Support Services privately to discuss his/her specific issues. Please contact the OLSS at (419) 334-8400 X 208 or visit 100 Roy Klay Hall (Building A) to coordinate reasonable accommodations.

If you have a documented disability and are receiving academic accommodations through the Office of Learning Support Services, please schedule a meeting with your instructor in a timely manner so that we may discuss how these services will be arranged.

Tutoring services are available to students beginning the second week of every quarter. Students requesting tutoring services should obtain a tutor request form from the OLSS in 100 Roy Klay Hall (Building A) or online at the Terra website. Please note that instructor verification and acceptance of the Student Learner Agreement is necessary for all tutoring requests. All requests should be submitted to 100 Roy Klay Hall (Building A).