

**AUTOMOTIVE TECHNOLOGY 43  
COURSE SYLLABUS  
EL CAMINO COLLEGE**

Course Description

Recommended: AT1 or pass the Auto Tech 1 Placement Test.  
Principles of engine repair, includes diagnosis, and repair, removing, replacing components as necessary, disassembly, cleaning, inspection, machining, assembly, installing, and breaking-in period. Machining consists of honing, valve and valve seat grinding, valve guide and valve seat replacement, and milling of cylinder heads.

Instructor: Harry Stockwell

School phone: 310 – 660-3593 X5303 any time night or day leave a message on recorder.

Text: Automotive Engines: Theory and Servicing by James Halderman  
Publisher: Prentice Hall 7<sup>TH</sup> Edition

Student Materials:

**Safety glasses required**

Coveralls or old clothes

Shop safe shoes or boots no sandals or slippers

Six inch steel ruler

Hand tools Recommended

Note book, notebook paper, pen or pencils

Student Conduct:

No parking in the work shop unless work is to be performed on the particular vehicle that day, pertaining to class project. points will be deducted from daily grade points for using the work shop for a parking lot!!!!

**TURN OFF ALL CELL PHONES, I-PODS, GAME BOYS, AND OTHER ELECTRONIC DEVICES IN THE CLASSROOM AND LAB.**

Radios off Please. No smoking inside of the building.

**PLEASE CLEAN UP YOUR AREA TO HELP TO KEEP THE SHOP CLEAN.**

Methods of Instruction:

Lecture

Audio-visual

Demonstrations

Hands on application in the work shop

Method of Evaluation

Shop work: Lab Sheets 30%

Written work: 25% homework, assignments.

Tests: 25% weekly exams.

Comprehensive Final Exam: 20%

Note: **Three Days absence or excessive tardies Will be reason for dropping a student from class.** Phone the Instructor if ill or you will be tardy.

A = 90% - 100%, B = 80% - 89%, C = 70% - 79%, D = 60% - 69%, F = 0% - 59%.

## COURSE OUTLINE:

- Week 1&2. Orientation and Safety - Class requirements: Conduct, safety test, working in teams, responsibilities of each team member: Engine rebuild costs, deadlines to follow, what can be accomplished in the course, number of engines to be brought in,
- Week 3. Cleaning Methods - Hot Tank operation, cold tank, jet washer, and safety.
- Week 4. Measuring and Inspection Procedures - Inside and outside micrometers, telescopic gauges, hole gauges, dial indicators, feeler gauges; used to determine straightness, out of round, taper, housing bore checks, crack detection magnaflux and black-light testing, looking for signs of overheating or lack of lubrication.
- Week 5. Preliminary diagnosis before repairs. Engine diagnosis, causes of oil burning in the engine, noises, loose timing chain, importance of compression test and leak down test, leak test the cooling system, check for worn camshaft.
- Week 6. Engine Disassembly - Diagnosis by reading the gaskets and components, being organized, measuring wear inside the engine.
- Week 7. Cylinder Head Parts and Service -, cylinder head milling. Crack inspection, crack repair, valve guide inspection and guide repair.
- Week 8. Cylinder Head: Springs, Valves, and Valve Seats - Valve and valve seat grinding, valve guide and valve seat replacement,
- Week 9. Engine breathing and power Camshaft, valve lash, lifters, cam drives manifolds, turbochargers, superchargers, and putting it all together.
- Week 10-11 Engine Block Preparation – Cleaning, honing, piston ring installation, piston, pin installation.
- Week 12 Crankshaft and bearings, and Engine Balancing.
- Week 13 Pistons, Rings and Connecting Rods.
- Week 14. Engine hardware, fasteners, thread repair and gaskets.
- Week 15 and  
Week 16 Installation and Break-in - Safety points during hoisting and when running engine: how to break- in a camshaft and lifter assembly, how to seat piston rings. Assembly - installation of cam bearings, core plugs, oil gallery plugs, crank assembly procedures, torqueing techniques, sealants, cylinder head installation.  
Clean up and Final Exam.

**SLO#1:** Safety Exam - The students will be given an in class exam, based on readings, classroom discussions and demonstrations, the student will be able to work in the Automotive Shop safely and pass the Automotive Technology Safety Exam and demonstrate the proper use of safety precautions.

**SLO #2:** Engine Analysis- The student will perform an analysis of an engine to manufacturer specifications and complete Automotive Compression/Cylinder Leakage Test, Vacuum Test, and Oil Pressure test lab worksheets.

**SLO #3:** Engine Cooling System Analysis- The student will test and analyze an automotive engine cooling system using manufacturer procedures and specifications, then complete a lab sheet.

Disability: El Camino College adheres to all applicable federal, state and local laws, regulations and guidelines with respect to providing reasonable accommodations for students with temporary and permanent disabilities. If you have a disability that may adversely affect your work in this class, I encourage you to register with the Special Resource Center (SRC) and talk to me about how I can best help you. All disclosures of disabilities will be kept strictly confidential.

NOTE: For more information about the

#### IMPORTANT DATES:

September 1 - Labor Day holiday Monday.

September 5 – Last day to drop and be eligible for a refund.

September 5 - Last day to drop without notation on record.

October 10 Last day to apply for Graduation or certificate of completion.

November 11- Veterans Day Holiday, Tuesday

November 14 - Last day to drop with a "W" grade Friday.

November 27 – November 30 Thanksgiving Break Thursday - Sunday

December 11 – Clean up and Final Exam

December 12 - Last Day of Semester Friday