

De Anza College Automotive Technology Program
COURSE REQUIREMENTS AND GENERAL INFORMATION
2015-2016
Auto 94D Automotive Machining and Engine Service

Instructor

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Prerequisites and Advisories

Prerequisite: AUTO 94C and Approved Automotive Technology Course
Sequence Contract

Text and Required Materials

- A. Text: W.G. Lewis, Automotive Machining and Engine Repair. Engine Books, 2011.
- B. Three ring binder, dividers, 5 x 7 notebook
- C. General and engine tool sets
- D. Coveralls (2), safety glasses, work shoes

Outcome

Student will equalize the weight of the rotating ends and reciprocating ends of connecting rods within 1 gram of each other.

Participation

Just as on the job, regular, punctual attendance is required. Always call in if you are going to be absent. The following limits and conditions apply per department policy:

1. Students must record attendance on a time card. Punch in prior to 7.30AM (start of class) and out not before 12:10 (end of class).
2. For each tardy, there is a 1-hour penalty. *7:30AM is tardy.*
3. Forgetting to punch in or out will constitute a 1-hour penalty.
4. Punch in only on your own card, never for your buddy. Penalty for this will be the next day off with no chance of make-up time.
5. Up to 5 hours (each 6 weeks) can be made up providing the student calls in. Missed time cannot be made up if the student does not call in prior to class. Hours not made up will be deducted from total class points at the rate of 1% per hour. The instructor will specify terms and conditions for make-up.
6. Hours must be made up prior to finals week.
7. Incomplete grades may be given in instances of long-term illness or injury.
8. To drop without penalty, a drop form must be filed by the date specified in the schedule of classes.

Classroom and Lab Conduct

1. Students will be dismissed from class for disruptive behavior per college policy.
2. Cellular phones must remain off in the classroom and lab at all times. Phones can be used for ordering parts with instructor approval.
3. Wear safety glasses, coveralls, and work shoes the duration of labs.
4. Food and drink containers must be removed from classroom and lab every day, and must never be placed on lab equipment.
5. All required tools must remain available for lab activities; basic hand tools cannot be checked from the tool room after the first 6 weeks. Spot checks of tools will be made at random.
6. Students are to remain in assigned areas through cleanup. Punch-out only after cleanup is complete. Instructor and shop foreman will determine when clean up is complete.
7. There is one 20-minute break between lecture and lab. The instructor will check roll at start of lab. Do not leave campus on break.
8. It is expected that work will be completed with pride and craftsmanship and that students will perform warranty services if necessary. If overtime is required, consider it the equivalent of homework.
9. All lab work must be entered on a repair order, estimated, authorized by the customer and initialed by the instructor.
10. Quizzes may only be made-up if student called in prior to the absence.
11. No homework assignments will be accepted late, no exceptions.

Security

It is understood that the facility and all within is exposed. It is therefore necessary that each and every student assume responsibility for their own security and that of other students and the department. To this end, observe the following guidelines:

2. Lock your own toolboxes and store them in locked areas.
3. Watch out for fellow students' tools and secure them if necessary.
4. Do not allow strangers to roam lab areas. Ask questions and secure unattended lab areas.
5. If you unlock a door or cabinet outside of class time, lock it when done.
6. Stay out the tool room unless accompanied by your instructor.

Parking

Parking permits for use in designated areas are available in the Administration Building. Do not park in any shop space. These are reserved for shop activities. Cars parked improperly are subject to citation or will be moved.

Office hours

As listed above, I will be available in my office for students needing help with course material. This time is for your benefit, so please use it. I am always happy to stay as long as needed.

Smoking

As the result of a November 2004 survey of all students and employees, and the work of a district-wide committee, the Foothill-De Anza Community College District Board of Trustees approved a revised no smoking policy on June 20, 2005. In order to provide a safe learning and working environment for students and employees, smoking is prohibited in all indoor and outdoor campus locations, with the exception of designated smoking areas

Fees

Although periodic adjustments may be necessary, fees and/or deposits are charged as follows:

- A. \$20.00 deposit on tool checks for the academic year \$5.00 lab fee added to each Repair Order to cover miscellaneous materials used repairs.
- B. \$5.00 added to each Repair Order to cover haz-mat related expenses.
- C. Initial \$3.00 charge for shop towels and \$.75 on each exchange of ten towels.

Course Description

Reconditioning valve train assemblies and components including valve guides, valve seats, and valves. Stress relieving and straightening aluminum cylinder heads. Reconditioning engine short block assemblies and components including balancing, assembly and testing.

Course Objectives

Reconditioning engine block components

- 1. Honing cylinders for overhaul
- 2. Knurling pistons and recutting ring grooves
- 3. Reboring and honing cylinders
- 4. Sleeving cylinders
- 5. Line boring and honing
- 6. Fitting piston pins
- 7. Resizing connecting rod housing bores
- 8. Assembling and aligning pistons and connecting rods
- 9. Regrinding camshafts and related operations
- 10. Regrinding and polishing crankshafts
- 11. Overhauling oil pumps
- 12. Resurfacing flywheels and replacing ring gears

Resurfacing cylinder heads and blocks

- 1. Comparing resurfacing machines
- 2. General precautions
- 3. Correcting v-block intake manifold assignment
- 4. Determining v-block ratios

5. Resurfacing overhead cam cylinder heads
6. Resurfacing diesel cylinder heads
7. Resurfacing air cooled cylinder heads

Engine balancing

1. Weighing connecting rods and pistons
2. Balancing connecting rods
3. Balancing pistons and pins
4. Balancing crankshafts
5. Balancing flywheels and clutches
6. Balancing torque converters
7. Balancing with heavy metal
8. Suggestions for minimum balancing

Assignments and Grading

A. Engine repair tasks from NATEF task list -----	1 point each
B. Catalog, parts requisitioning exercises (2) -----	20
C. Reading and chapter quizzes:	
13 Reconditioning Engine Blocks -----	35
14 Surfacing Heads & Blocks -----	35
15 Balancing Engine Assms -----	35
Miscellaneous quizzes & exercises ---	25
D. Midterm -----	50
E. Notebook -----	10

All tests are open notes (not books) so be advised to take notes carefully. Actual points may vary slightly from the above due to test revisions. The sum total of points earned are evaluated as follows:

95-100 A	90-94 A-	
87-89 B+	84-86 B	80-83 B-
77-79 C+	70-76 C	
67-69 D+	64-66 D	60-63 D-
59 & ↓ F		

Per department policy, a minimum of "C" is required in courses applied to certificate or degree programs. Because low grades indicate that success is unlikely, grades less than "C" in two courses are cause for dismissal from the program. Future enrollment for those with low grades is also limited unless deficiencies are made up.