SAN JUAN COLLEGE
Success Matters

MCAP-150-ENGINES & RELATED SYSTEMS   4 CREDITS

SYLLABUS

CATALOG DESCRIPTION

This course covers the principles and operation of the Chrysler FCA internal combustion engine. Gasoline and diesel engines will be properly disassembled with nomenclature identification. All parts will be inspected, measured, and reassembled. The operation and repair of the oiling and cooling system will also be covered as well as variable valve timing, turbo chargers and superchargers. The theory, operation and diagnosis of each of these systems will be covered and the manufacturers diagnostic and repair procedures will be stressed. Personal and vehicle safety will be emphasized.

Prerequisites: MCAP-120

Corequisites: MCAP-160

Semester Offered: Summer

COMMON STUDENT LEARNING OUTCOMES

Upon successful completion of San Juan College programs and degrees, the student will demonstrate competency in…

BROAD AND SPECIALIZED LEARNING

Students will actively and independently acquire, apply, and adapt skills and knowledge with an awareness of global contexts.

CRITICAL THINKING

Students will think analytically and creatively to explore ideas, make connections, draw conclusions and solve problems.

CULTURAL AND CIVIC ENGAGEMENT

Students will act purposefully, reflectively, and ethically in diverse and complex environments.

EFFECTIVE COMMUNICATION

Students will exchange ideas and information with clarity in multiple contexts.

INFORMATION LITERACY

Students will be able to recognize when information is needed and have the ability to locate, evaluate, and use it effectively.

INTEGRATING TECHNOLOGIES

Students will demonstrate fluency in the application and use of technologies in multiple contexts.

Student work from this class may be randomly selected and used anonymously for assessment of course, program, and/or institutional learning outcomes. For more information, please refer to the Dean of the appropriate School.

A copy of this approved syllabus is on file in the dean's office.
Updated 12/14/18

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COURSE LEARNING OUTCOMES

Upon successful completion of the course, the student will be able to…

1. Completion of 100% of NATEF priority 1 tasks.
2. Completion of 85% of NATEF priority 2 tasks.
3. Completion of 75% of NATEF priority 1 tasks.

SPECIFIC LEARNING OUTCOMES

Upon successful completion of the course, the student will be able to…

1. Demonstrate safe procedures for engine service.
2. Demonstrate knowledge of gasoline engine operating principles.
3. Identify various under-hood lubricants and their usage.
4. Perform an engine oil pressure test.
5. Locate and repair engine oil leaks.
6. Disassemble and assemble V type and in-line engine designs.
7. Identify various engine sealants and their applications.
8. Measure crankshaft rod and main journals for taper and out-of-round.
9. Measure crankshaft end play with a dial indicator.
10. Plasti-gage main and rod bearings.
11. Measure cylinder walls for taper and out of round and fit pistons.
12. Deglaze cylinder walls.
13. Install piston rings and check ring gap clearances.
14. Remove cylinder ridge.
15. Remove and install camshaft bearings.
16. Time camshaft(s) to crankshaft.
17. Inspect timing chains, gears, and belts for wear and stretch.
18. Inspect oil pump & lubrication system.
19. Perform a complete valve job.
20. Inspect valve train and guides per manufacturer procedure.
21. Remove and replace core plugs.
22. Diagnose engine noises such as piston slap, rod knock, carbon build–up and valve noise.
23. Adjust hydraulic and solid lifters.
24. Demonstrate competency in using engine overhaul tools.
25. Remove and install front wheel and rear wheel drive engines.
26. Remove and install valve covers in the vehicle.
27. Remove and install cylinder heads in the vehicle.
28. Remove and install intake manifold in the vehicle.
29. Pressure test the cooling system & diagnoses coolant loss.
30. Remove and replace hoses, radiators, and cooling fan.
31. Remove and replace a water pump.
32. Remove, inspect, and replace a thermostat.

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