

**AUTE-117-ENGINE PERFORMANCE 8 CREDITS****SYLLABUS**

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**CATALOG DESCRIPTION**

This course will cover the use of engine performance test equipment, fuel system operation, fuel injection, ignition systems, starting and charging systems. A systematic method of troubleshooting will be taught. Safety is emphasized.

Prerequisite: AUTE-113

Corequisites: AUTE 115 & AUTE 116

Semester Offered: Spring

***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.

**COURSE LEARNING OUTCOMES**

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

1. Complete 100% of NATEF priority 1 tasks.
2. Complete 85% of NATEF priority 2 tasks.

3. Complete 75% of NATEF priority 1 tasks.

## SPECIFIC LEARNING OUTCOMES

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

1. Demonstrate the use of an oscilloscope, interpret various patterns, and use the patterns to diagnose engine problems.
2. Demonstrate the use of a smoke machine and use the machine to help diagnose problems in the engine, EVAP, and exhaust systems.
3. Use readings from a 5-gas analyzer to help diagnose an engine performance problem.
4. Diagnose and repair engine management circuits by utilizing voltage drop tests.
5. Demonstrate the use of a scan tool and use the readings to help locate problematic components, circuits and systems.
6. Perform a compression test and interpret the readings.
7. Perform a cylinder leakage tests and interpret the readings.
8. Perform a cylinder power balance tests and interpret the readings.
9. Check and replace a timing belt.
10. Check a timing chain for looseness.
11. Perform a cranking and running vacuum test.
12. Check for and correct vacuum leaks.
13. Test an exhaust system for leaks or restriction.
14. Perform a complete tune up, as defined by accepted industry definition.
15. Determine when a complete tune-up is required
16. Inspect the fuel supply system using manufacturer safety procedures.
17. Identify the various types of fuel delivery systems.
18. Identify the circuits of a carburetor and their proper operation.
19. Diagnose faults in a feedback fuel system using appropriate tools and equipment.
20. Diagnose and replace a fuel pressure regulator.
21. Diagnose and repair an EGR system.
22. Diagnose and repair an evaporative emission control system.
23. Diagnose and repair an A.I.R. system.
24. Test a fuel sample for water, alcohol, and Reid Vapor Pressure.
25. Locate, identify and test ignition system components for distributor and distributor-less ignition systems.
26. Locate and test sensors, controls, actuators, and wiring for an OBD1 computer system and determine needed repairs.
27. Locate and test sensors, controls, actuators, and wiring for an OBD2 computer system and determine needed repairs.
28. Locate and interpret Vehicle Identification Numbers (VIN)
29. Diagnose a no start condition.
30. Diagnose an engine misfire condition.
31. Check and adjust ignition timing.
32. Test fuel injectors for electrical and mechanical faults.
33. Diagnose a vehicle PCV system.
34. Adjust valves on an engine.
35. Identify engine control systems as represented on vehicle electrical schematics.
36. Use Electronic resources to establish labor times for a vehicle repair and prepare a vehicle repair estimate.