SAN JUAN COLLEGE
Success Matters

DISL 210-DIESEL ENGINE OVERHAUL 6 CREDITS

SYLLABUS

CATALOG DESCRIPTION

Study of the diesel fueled internal combustion engine and how mechanical power is generated. Students will perform a complete disassembly and reassembly of a diesel engine as well as perform tune-up, failure diagnosis and analysis, and maintenance. Safety will be strictly enforces. A grade of "C" or better must be earned to receive credit for this course.

Prerequisites: DISL 110 and DISL 115

Semester Offered: Fall

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

1. To provide the student with the physics of operation, techniques, and procedures to correctly diagnose and overhaul a diesel engine.

Specific Learning Objectives

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

1. Define common physics terms used to describe the operating characteristics of a diesel engine.
2. Understand the diesel engine cycle in both four stroke and two stroke applications.
3. Define engine geometry and how it effects power and torque production in an engine.
4. Identify engine as to manufacturer model, and serial number.
5. Locate and follow the appropriate service literature for various manufacturers.
6. Check engine oil, coolant levels to determine needed repairs.
7. Identify the causes of low and high oil pressure.
8. Perform engine oil pressure test to determine needed repairs.
9. Perform cooling system pressure test to determine needed repairs.
10. Diagnose no crank, no start, hard start problems to determine needed repairs.
11. Perform manifold pressure (boost) tests; determine needed repairs.
12. Perform air intake system restriction and pressure tests; determine needed repairs.
13. Locate a misfiring cylinder; determine needed repairs.
14. Diagnose rough running, low power, slow acceleration, and shut down problems; determine needed repairs.
15. Adjust valve clearance as needed.
16. Inspect push rods, rocker arms, shafts, for wear, straightness, cracks, fit, and oil blockage; repair or replace as needed.
17. Inspect cylinder head and mating surfaces for warpage, thickness, and cracks; determine repairs as needed.
18. Clean and inspect threaded holes, studs, and bolts for serviceability; service or replace as needed.
19. Replace cylinder liners and seals; Inspect and adjust liner protrusion as needed.
20. Inspect, install, and time gear train.
21. Assemble pistons and connecting rods; install in block; install rod bearings and check clearances.
22. Inspect turbocharger lubrication system; determine needed repairs.
23. Perform oil and filter change.
24. Test coolant for freeze protection and additive package; adjust as needed.
25. Identify root causes of common engine failures and describe or perform the correct repairs.
26. Describe the difference between the term corrosion and erosion and identify both types of ware in a diesel engine.
27. Define correct root cause failures of blue, white, black, and yellow diesel engine exhaust smoke complaints.
28. Identify the root cause of excessive engine blow by and outline possible failed components.
29. Define the concepts of “making oil” and “using oil” in terms of possible engine root cause failure.