

Course Syllabus

School of _____

Program Name: Transportation Technologies

Course Name: Preventive Maintenance & Service

Course Number:

Credits: 2

Contact Hours: 1 Lecture 3 Lab

Instructor's Name:

Office Hours & Location:

Campus Phone:

Campus E-mail:

Additional Contact Information:

Catalog Description: Provides preventive maintenance procedures and record keeping experience and familiarizes the student with diesel-powered equipment. Additional instruction includes safety, lubrication, service operation and minor adjustments.

Prerequisites/Co-Requisites: None

Lab Fees: \$65.00

Current Textbooks, Materials, Equipment (software/hardware requirements):

General Information

For information on FERPA, Cheating and Plagiarism, Assessment of Student Learning Outcomes and Student Code of Conduct.

Course Objectives:

The student given the vehicle or component and the tools and equipment will, with at least 90% accuracy:

1. The student, with the aid of a service manual, will be able to perform scheduled periodic maintenance (PM) procedures on a given piece of equipment.

2. While performing scheduled periodic maintenance services, the student will look for any other possible problems that may require additional attention.
3. Using all applicable technical publications, the student will be able to research and find any and all pertinent information to perform scheduled PM service procedures, to include instructions and specifications.
4. Properly complete and maintain necessary maintenance records.
5. Demonstrate correct shop safety and proper and safe usage of tools and equipment.

Task List:

1. Perform cooling system tests (pressure, combustion leakage, and temperature); determine needed repairs.
2. Inspect drive belts and pulleys; replace and adjust as needed.
3. Inspect engine cooling and heater system hoses; replace as needed.
4. Inspect and test thermostat, by-pass, and housing; replace as needed.
5. Test and inspect coolant; drain, flush, and refill with recommended coolant; bleed cooling system.
6. Inspect water pump.
7. Inspect and test radiator, pressure cap, and coolant recovery system; replace as needed.
8. Clean, inspect, and test fan(s) (electrical and mechanical), fan clutch, fan shroud, and cooling system related temperature sensors/switches.
9. Inspect and test oil temperature/pressure switches and sensors.
10. Perform oil and filter change.
11. Inspect air cleaner assembly and filter elements; replace as needed.
12. Inspect and test exhaust manifold, exhaust pipes, mufflers, resonators, tail pipes, catalytic converter, and heat shields; reinstall as needed.
13. Check engine coolant level, condition, and consumption; determine needed repairs.
14. Check coolant temperature, gauge, and sending unit.
15. Inspect drive belts and tensioners; reinstall and adjust as needed.
16. Test conditioner and coolant concentration levels; determine needed repairs.
17. Flush and refill cooling system; bleed air from system.
18. Inspect coolant conditioner/filter; check valves, lines, and fittings needed.
19. Inspect water pump, hoses, and idler pulley.
20. Inspect, clean, and pressure test radiator, pressure cap, and tank(s) and recovery systems; determine needed repairs.
21. Inspect fan hub, fan, fan clutch, controls, thermostat, and fan shroud.
22. Inspect air induction piping, air cleaner, and element.
23. Inspect exhaust manifold, piping, mufflers, and mounting hardware.
24. Check fuel level, quality, and consumption; determine needed repairs.
25. Inspect fifth wheel plate and pin (trailer).
26. Perform cooling system tests; determine needed repairs.

27. Inspect and replace heater system hoses; assure correct routing.
28. Inspect and test thermostat, by-pass, and housing.
29. Inspect and test heater coolant control valve (manual, vacuum, air, or electrical types).
30. Inspect and flush heater core.
31. Inspect gauges and indicators for proper operation.
32. Check DOT safety equipment for availability and condition.
33. Check accessories for proper operation.
34. Check condition of interior components including seats and upholstery. Check operation.
35. Make visual inspection of cab exterior and body for damage or missing components.
36. Check air pressure drop.
37. Compare air pressure build-up time with original equipment specifications.
38. Check steering wheel free-play.
39. Check clutch/brake pedal and accelerator operation.
40. Inspect tires for wear patterns, condition, and air pressure; record thread depth.
41. Check rim/wheel condition (bends, cracks).
42. Check spacers, clamps, rings, studs, and nuts for cracks, damage, and indications of looseness.
43. Inspect wheel lug nuts for rust, elongation, or wear indicators that would indicate improper torque.
44. Inspect outer hubs for oil leaks.
45. Check wheel bearings for free-play.
46. Inspect fluid reservoirs for correct levels and condition.
47. Check cab and storage compartment/s for leaks (fuel, air, coolant, and exhaust).
48. Check alternator, air-conditioning compressor, starter, engine, and air compressor mounts for tightness and wear.
49. Check hoses and lines (air, water, fuel, power steering, and air-conditioning) for wear and tightness.
50. Check belts for tightness and wear.
51. Check electrical wiring, routing, and hold-down clamps.
52. Inspect air intake system (mounts, hoses, clamps, restriction indicators, turbo) for leaks, damage and restrictions.
53. Listen and note unusual noises.
54. Check optional equipment for proper operation.
55. Check air-conditioning condenser, radiator, and after-coolers for airflow restriction.
56. Inspect condition of batteries, battery boxes, mountings, and hold-downs.
57. Inspect condition of battery cables, ends, looms, relays, solenoids, starter wiring, and ground connections.
58. Check starter and solenoid for proper operation and mounting.
59. Check condition and operation of charging system including alternator, mounting brackets, wiring, and belt condition, tension, and alignment.
60. Check truck and trailer lighting systems for operation, mounting, and condition.

61. Check operation of dash gauges, dash lights, cab interior lights, wipers, blower fans, turn signals, flashers, air-conditioning, horn, radio, and optional equipment.
62. Check diagnostic displays for proper operation.
63. Check manual/power steering system and linkage for noises, looseness, binding, hard steering, and fluid leakage.
64. Inspect front and rear axles and suspension components for wear and damage.
65. Check clutch adjustment.
66. Inspect clutch linkage for looseness or binding.
67. Inspect leaf springs, U-bolts, nuts, bushing, shackles, and mounts for looseness and damage.
68. Inspect air springs, mounts, hoses, and fittings for leaks and damage.
69. Check mounts; check transmission for leaks and correct fluid levels.
70. Inspect transmission shift components for leaks and damage.
71. Inspect driveshaft and yokes for alignment (phasing), wear, and damage.
72. Inspect brake system air tanks, lines, fittings, valves, brake chambers, and slack adjusters for leaks, damage, and looseness; check mounts.
73. Inspect fifth wheel assembly for condition, mounting, and proper operation.
74. Check brake adjustment.
75. Check brake lining condition, wheel seals, drums, and rotors for wear and damage.
76. Inspect trailer body; frame, interior, decking, bulkheads, tie downs, doors and hardware.

Grading Procedure:

GRADE COMPILATION:

Lab	60%
Quiz	30%
Final Exam	10%
Total	100%

GRADE SCALE:

94-100	A
87-93	B
78-86	C
70-77	D
0-69	F

Specific Course Rules & Classroom Procedures

1. The student is responsible for all material discussed in class, handed out, seen or heard in visual/audio, or written on the board.
2. The student is responsible for all work assigned whether discussed in class or not.

3. Any missed classes, tests, or assignments must be made up by the end of the semester through agreement with the instructor.
4. The instructor, with permission of the chairman, whenever appropriate and necessary, reserves the right to amend, adjust, or deviate from the course outline and lecture topic areas to assure the students of the best possible education from the course.

Safety Glasses

Students will not be permitted to attend lab classes without the required safety glasses.

Safety

Since personal safety is a major concern of both this College and the employers, students will be expected to conduct themselves in a safe manner at all times. Students will be required to follow safety requirements pertaining to: safety glasses, clothing, labs, and work procedures. (Remember SAFETY is everyone's job!)

ABSOLUTELY NO DOWNLOADING IN COMPUTER LAB

Specific Course Rules: (This can include but is not limited to: policies on attendance, make-up/late work, class participation, tape recording, cell phone use, and electronic device use.)

Miscellaneous Information:

Disclaimer: “The instructor reserves the right to amend this syllabus as deemed necessary and will communicate such amendment to the students in the course.”

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