DEM136 Engines I Syllabus

Course Information
Credits 5
Campus Washburn Institute of Technology
Address 5724 SW Huntoon
City/State/Zip Topeka, Kansas 66604
Office Fax 785-273-7080

Description
Course includes: Introduction to characteristics and principles of a diesel fueled internal combustion engine. Contents incorporate complete disassembly and reassembly of diesel engines using appropriate service manuals; measuring for wear, machining and overhaul procedures, parts evaluation, failure analysis, application of theory of operation and construction, and emphasis on returning unit to field service; principles of operation of mechanical fuel systems for diesel engines, distributor pump style, in-line pump style, timing of pumps, hands-on laboratory practice including tune-up procedures, diagnosis, troubleshooting, and adjustment use of diagnostic equipment. Students are expected to observe and comply with all safety rules and regulations at all times.

Textbooks

Student Learning Outcomes:
A. Communicate effectively
B. Integrate technology
C. Learn effectively
D. Demonstrate cooperative teamwork skills
E. Think critically and creatively
F. Demonstrate responsible work ethics

Competencies
1. Complete statements concerning characteristics of the four-stroke cycle
2. Identify companion cylinders
3. Locate and record engine specifications
4. Locate valve and piston position during each stroke
5. Locate TDC compression for #1 piston
6. Determine required tools for various tasks
7. Evaluate worn engine components
8. Determine possible causes of engine components failures
9. Inspect water pump, belts, and hoses
10. Check operation of fan assembly and controls
11. Test operation of thermostat installed in engine
12. Test operation of thermostat on the inch
13. Check operation of temperature indicating system
14. Disassemble and clean a cylinder block
15. Clean and inspect cylinder bores
16. Remove, clean, and inspect a crankshaft
17. Inspect harmonic balancer
18. Inspect flywheel
19. Remove, disassemble, and inspect a piston and connecting rod assembly
20. Assemble and install piston and connecting rod assembly
21. Remove, clean, and inspect a camshaft
22. Install a camshaft and set cam timing
23. Locate and label intake and exhaust valves
24. Clean and inspect a cylinder head
25. Install a cylinder head assembly and adjust valves
26. Inspect and test air induction system
27. Inspect and service turbo/supercharger and related components
28. Clean and inspect intercooler system
29. Inspect and test exhaust system
30. Inspect starting preheater controls
31. Trace fuel flow through basic fuel systems
32. Check fuel level, quality, and consumption
33. Inspect and service basic fuel supply components
34. Inspect, test, adjust and time an in-line injection pump; determine needed repairs
35. Inspect and test power and ground circuits and connections; determine needed repairs
36. Inspect and replace electrical connectors, terminals, seals, and locks
37. Check vehicle for presence and operation of emission control devices
38. Check vehicle for fuel type and appropriate application
39. Test vehicle for excessive exhaust smoke
40. Check vehicle for noise abatement devices

Guidelines for Success

Assessment Plan
Assessment is an integral part of the educational process at Washburn Tech and accurate feedback is an important tool in continuously improving the institution’s technical programs. Students can expect to participate in assessment activities prior to entry into programs, within specific courses and following program completion for specific fields of study.

Grading Criteria


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<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90-100%</td>
<td>A</td>
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<tr>
<td>80 - 89%</td>
<td>B</td>
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<tr>
<td>70 - 79%</td>
<td>C</td>
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<td>Below 70%</td>
<td>F</td>
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Instruction includes 30% lecture and 70% laboratory exercises.
Labs: Pass/Fail
Attendance
Classroom attendance is required. Material missed must be made up with instructor.

Disability
The Special Support Services (SSS) Office is responsible for assisting in arranging accommodations and for identifying resources at Washburn Institute of Technology for persons with disabilities. Qualified students with disabilities MUST register and provide documentation with the office to be eligible for services. New requests for accommodations should be submitted two months or more prior to the date services should begin; however, contact the SSS Office as soon as a need may arise. Depending on the accommodation request, four to eight week lead time may be needed for timely and effective provision of services. SSS coordinates and assist in arranging services it deems appropriate of eligible students on a case-by-case basis.

If you are a student with a disability that may substantially limit your ability to participate in this class and believe you will need accommodations, it is your responsibility to contact:

Special Support Services Coordinator
Phone: 785-228-6356
E-Mail: ssscoordinat@washburn.edu