

## SYLLABUS

<b>DATE OF LAST REVIEW:</b>	4/23/2020
<b>CIP CODE:</b>	47.0613
<b>SEMESTER:</b>	Departmental Syllabus
<b>COURSE TITLE:</b>	Preventive Maintenance
<b>COURSE NUMBER:</b>	DEVT 0203
<b>CREDIT HOURS:</b>	5
<b>INSTRUCTOR:</b>	Departmental Syllabus
<b>OFFICE LOCATION:</b>	Departmental Syllabus
<b>OFFICE HOURS:</b>	Departmental Syllabus
<b>TELEPHONE:</b>	Departmental Syllabus
<b>EMAIL:</b>	Departmental Syllabus <i>KCKCC-issued email accounts are the official means for electronically communicating with our students.</i>

**PREREQUISITE(S):** None.

**REQUIRED TEXT AND MATERIALS:** Please check with the KCKCC Bookstore, <http://www.kckccbookstore.com>, for the required text for your particular class.

**COURSE DESCRIPTION:** This course introduces the student to the world of diesel engine maintenance, diagnostics, and repair. Students will begin to lay the foundation for a career as a technician, manager, or CDL driver by gaining an understanding of the basic systems that make up a class 8 tractor. Upon completion of this course, students will be eligible to test for the ASE T8 Preventative Maintenance certification.

**METHOD OF INSTRUCTION:** A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

### **COURSE OUTLINE:**

- I. Introduction to Trucking Industry
  - A. Statistics

- B. Purpose of Intermodal Logistics parks
- C. CDL Endorsement and Disqualifications
- D. Background checks
- E. Medical Card, Random and Annual Drug Test, Post Accident
- II. Introduction to General Terminology
  - A. Tractor and Trailer names
  - B. Equipment parts
  - C. Industry Lingo
  - D. Hazardous Material
  - E. Road signs
  - F. Securing of Cargo
  - G. Safe work habits
- III. Air Brake System
  - A. Air Brake Components
  - B. Using Air Brakes
  - C. ABS
  - D. Steering System and Components
  - E. Shop and Yard Safety
- IV. Pre-Trip
  - A. Overall Appearance of Vehicle as You Approach
  - B. Under Hood
  - C. Cab Check and Engine Start
  - D. Wheels
  - E. Fuel Tanks, Caps
  - F. Air Tanks
  - G. Air and Electric Lines
  - H. Battery Boxes
  - I. Frames, Chassis
  - J. Catwalk
  - K. Brakes
  - L. Brake Components
  - M. Fifth Wheel
  - N. Landing Gear
  - O. Safety During Your Pre-trip
  - P. Lights
- V. Post Trip
- VI. Daily Equipment Conditions (DECR)
  - A. Start of Day
  - B. End of Day
- VII. ASE Medium, Heavy Truck Class Overview
- VIII. NATEF – National Automotive Technician Educational Foundation
- IX. 5 Safety Habits
- X. Common Issue for Drivers
- XI. Helpful Website Resources
- XII. Preparing for the CDL – A Permit
- XIII. What to Expect When Being Road Tested by an Inspector

- XIV. Do's and Don'ts if Stopped for a Roadside Inspection
- XV. Logging Hours of Service (HOS)
- XVI. Electronic on Board Recorder (EOBR)
- XVII. What a Driver's Day Consists of
- XVIII. Personal Standards and Work Ethics

**EXPECTED LEARNER OUTCOMES:**

- A. The student will be able to review maintenance/repair records.
- B. The student will be able to inspect/check operation of engine components.
- C. The student will be able to identify system leaks (coolant, oil, fuel, axle lube, and air)
- D. The student will be able to complete a preventative maintenance on a diesel engine.
- E. The student will be able to identify/repair fuel, coolant, exhaust, emissions, and heater/ac systems.
- F. The student will be able to describe operation of the engine fan (viscous, air, and electric)
- G. The student will be able to inspect/operate electrical systems (lighting, horns, gauges, PTO's, and accessories)
- H. The student will be able to review all required vehicle permits, insurance and DOT paperwork, and decals.
- I. The student will be able to properly lubricate a chassis.
- J. The student will be able to identify/measure/adjust ride height, brake application, battery charge, and alternator output.
- K. The student will be able to safely inspect the state of the charging system.
- L. The student will be able to complete all needed pre-trip checks/tests for CDL qualification including air psi tests.
- M. The student will be able to inspect/operate/measure brake system performance.
- N. The student will be able to inspect/adjust clutch system operation.
- O. The student will be able to measure clutch release distance.
- P. The student will be able to inspect/replace transmission breather filter.
- Q. The student will be able to take a fluid sample.
- R. The student will be able to inspect/operate the steering system including kingpins, steering shaft, pitman arms, and tie rod ends.
- S. The student will be able to service the power steering system
- T. The student will be able to identify issues with tire condition/inflation and record tread depth.
- U. The student will be able to inspect front and rear suspension systems, fifth wheel operation/mounting, air suspension, and body hardware
- V. The student will be able to perform an operational test on the following components: clutch, gear shift, instruments, transmission shifting, road speed limiter, cruise limiter, service brakes, and backup warning devices.

**COURSE COMPETENCIES:**

Upon successful completion of this course:

- The student will be able to review maintenance/repair records.*
1. The student will be able examine maintenance records and document their work.
- The student will be able to inspect/check operation of engine components.*
2. The student will be able to operate a diesel engine and understand basic concepts of operation.
  3. The student will be able to identify visual defects within the engine compartment.
- The student will be able to identify system leaks (coolant, oil, fuel, axle lube, and air)*
4. The student will be able to test/identify fluid leaks within the engine compartment as well as on the chassis.
  5. The student will understand the safety risks involved with the handling of hazardous materials.
- The student will be able to complete a preventative maintenance on a diesel engine*
6. The student will be able to drain and fill the crankcase with the proper lubricant.
  7. The student will be able to complete a follow a checklist and complete a correct PM.
- The student will be able to identify/repair fuel, coolant, exhaust, emissions, and heater/ac systems*
8. The student will be able to identify each of the systems on a chassis
  9. The student will be able to identify the proper method of repair on each system
- The student will be able to describe operation of the engine fan (viscous, air, and electric)*
10. The student will be able to identify which engine fan drive system is present.
  11. The student will be able to describe the operation and principles behind each engine fan drive system.
- The student will be able to inspect/operate electrical systems (lighting, horns, gauges, PTO's, and accessories)*
12. The student will be able to identify and operate all electrical systems on a chassis.
  13. The student will be able to perform start-up checks and identify the all ICU indicators.
- The student will be able to review all required vehicle permits, insurance and DOT paperwork, and decals*
14. The student will be able to inspect all needed permits/documentation.
- The student will be able to properly lubricate a chassis*
15. The student will be able to locate all grease fittings on a chassis.
  16. The student will be able to properly lubricate all chassis components.
- The student will be able to identify/measure/adjust ride height, brake application, battery charge, and alternator output.*
17. The student will be able to safely take measurements on ride height, brake application,

- battery charge, and alternator output.
18. The student will be able to safely make adjustments to ride height and brake application.

*The student will be able to safely inspect the state of the charging system*

19. The student will understand the safety risks involved with working around a 12 Volt electrical system
20. The student will be able to identify the components of the charging system.
21. The student will be able to inspect proper routing of electrical cables.

*The student will be able to complete all needed pre-trip checks/tests for CDL qualification including air psi tests*

22. The student will be able to complete a pre-trip inspection in accordance with the requirements for obtaining a Class B Commercial Driver's License.
23. The student will be able to perform brake application and air loss tests in accordance with the requirements for obtaining a Class B Commercial Driver's License.

*The student will be able to inspect/operate/measure brake system performance*

24. The student will be able to identify the braking system on the chassis (air, hydraulic, electric, etc.)
25. The student will be able to identify all components of the braking system.
26. The student will be able to properly adjust brakes to OEM specifications.

*The student will be able to inspect/adjust clutch system operation*

27. The student will be able to identify the type of transmission and clutch in a chassis.
28. The student will be able to safely perform a clutch adjustment.

*The student will be able to measure clutch release distance*

29. The student will be able to safely take clutch application measurements.

*The student will be able to inspect/replace transmission breather filter*

30. The student will be able to replace the transmission breather filter.

*The student will be able to take a fluid sample*

31. The student will be able to take a fluid sample.
32. The student will be able to complete all needed paperwork/labeling for a fluid sample.

*The student will be able to inspect/operate the steering system including kingpins, steering shaft, pitman arms, and tie rod ends*

33. The student will be able to identify each of the components in a steering/suspension system.
34. The student will be able to safely operate and inspect the steering/suspension system.

*The student will be able to service the power steering system*

35. The student will be able to locate leaks within the power steering system.
36. The student will be able to change the fluid and filter within the power steering system.

*The student will be able to identify issues with tire condition/inflation and record tread depth*

37. The student will be able to measure tire tread depth and inflation.
38. The student will be able to properly document readings from tire measurements.

*The student will be able to inspect front and rear suspension systems, fifth wheel operation/mounting, air suspension, and body hardware*

39. The student will be able to identify/inspect suspension systems on a chassis.
40. The student will be able to identify/operate fifth wheel systems.
41. The student will be able to inspect body hardware for proper mounting and securement.

*The student will be able to perform an operational test on the following components: clutch, gear shift, instruments, transmission shifting, road speed limiter, cruise limiter, service brakes, and backup warning devices*

42. The student will be able to safely operate a commercial vehicle within the limits of their license.
43. The student will be able to perform operational tests of all engine/chassis systems.

**ASSESSMENT OF LEARNER OUTCOMES:** Student progress is evaluated by means that include, but are not limited to, exams, written assignments, and class participation. Students should be able to pass the ASE Preventative Maintenance and Inspection (T8) test at the end of this course.

**SPECIAL NOTES:** This syllabus is subject to change at the discretion of the instructor. Material included is intended to provide an outline of the course and rules that the instructor will adhere to in evaluating the student's progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time.

Kansas City Kansas Community College is committed to an appreciation of diversity with respect for the differences among the diverse groups comprising our students, faculty, and staff that is free of bigotry and discrimination. Kansas City Kansas Community College is committed to providing a multicultural education and environment that reflects and respects diversity and that seeks to increase understanding.

Kansas City Kansas Community College offers equal educational opportunity to all students as well as serving as an equal opportunity employer for all personnel. Various laws, including Title IX of the Educational Amendments of 1972, require the college's policy on non-discrimination be administered without regard to race, color, age, sex, religion, national origin, physical handicap, or veteran status and that such policy be made known.

Kansas City Kansas Community College complies with the Americans with Disabilities Act. If you need accommodations due to a documented disability, please contact the Director of the Academic Resource Center at 913-288-7670.