

# MTRK 101: INTRODUCTION TO MEDIUM AND HEAVY TRUCK MAINTENANCE AND INSPECTION

## Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2022
Credits:	6
Total Contact Hours:	150
Lecture Hours :	90
Lab Hours:	60
Hours Arranged:	0
Outside of Class Hours:	180
Total Student Learning Hours:	330
Strongly Recommended:	ENGL 101.
Transferable to CSU:	Yes
Transferable to UC:	No
Grading Method:	Standard Letter, Pass/No Pass

## Catalog Course Description

Intended for students seeking a career in the medium and heavy duty truck service and repair industry, this course covers essential maintenance theory, along with inspection procedures of the following systems: Engine cooling and lubrication systems, power-train systems, brakes, steering and suspension systems. This course prepares students for entry into the medium and heavy duty truck technology program. 90 lecture hours, 60 lab hours.

## Course Objectives

- Retrieve service information from a computer-based repair manual
- Identify vehicle fluids and their proper service intervals
- Identify basic vehicle components
- Perform basic level maintenance and servicing associated with heavy truck preventative maintenance inspections (PMI)
- Identify basic measurement units
- Perform basic measuring techniques
- Identify typical fasteners used in industry
- Lift light duty vehicles on automotive lifts
- Lift heavy-duty vehicles on large vehicle independent-post lift
- Demonstrate proper use of floor-jacks and jack stands
- Identify basic hand and power tools
- Identify and perform maintenance on diesel exhaust aftertreatment systems
- Determine diesel exhaust fluid condition
- Demonstrate knowledge of shop safety protocol including personal protective equipment (PPE), equipment lockout/tag out procedures and proper use of tooling and equipment.
- Prepare for the California Department of Motor Vehicles (DMV) commercial vehicle permit exam.

- Demonstrate knowledge in proper start-up and operation of heavy duty trucks and machines.

## Major Course Content

1. Safety specific to truck maintenance and inspection procedures
  - a. Tire safety
  - b. Air brake system safety
  - c. Cooling system safety
  - d. Vehicle lifting safety
  - e. Environmental issues
2. Fasteners, gaskets and seals specific to truck maintenance.
3. Engine lubrication system theory and service
  - a. Engine lubrication system
  - b. Lubricant tribology and applications
4. Engine cooling system theory and service
  - a. Engine cooling system
  - b. Coolant or antifreeze applications
5. Diesel aftertreatment system maintenance
  - a. DEF fluid condition
  - b. Aftertreatment equipment condition
  - c. Particulate filter regeneration
  - d. Causes of engine derating
6. Fan belt theory
  - a. Belt construction and type
7. Basic theory, inspection and service of the following powertrain subsystems:
  - a. Clutch
  - b. Standard or Manual transmission
  - c. Automatic transmission
  - d. Differentials
  - e. Driveshaft
  - f. Axles
8. Basic theory, inspection and service of the following chassis systems:
  - a. Tires
  - b. Hydraulic brakes
  - c. Air brakes
  - d. Suspension system
  - e. Steering system
9. Maintenance inspection report procedure
10. Repair order documentation specific to truck maintenance and inspection
11. Service information related to truck maintenance and inspection

## Lab Content

1. Fastener identification and application
2. Tool identification and application
3. Engine components inspection
4. Lube, engine oil and filter service
5. Cooling system inspection and service
6. Cooling system pressure test and thermostat replacement
7. Fan belt inspection and replacement
8. Clutch adjustment inspection
9. Standard transmission service

10. Automatic transmission service
11. Differential service
12. Universal joints inspection
13. Driveshaft removal and replacement procedure
14. Axle removal and replacement procedure
15. Tire removal and replacement procedure
16. Hydraulic brakes inspection and adjustment procedures
17. Air brakes inspection and adjustment procedures
18. Steering component identification and inspection procedures
19. Suspension component identification and inspection procedures
20. Electrical, HVAC and safety component inspection
21. Fuel system and aftertreatment system inspection
22. Fifth wheel component inspection

## **Suggested Reading Other Than Required Textbook**

1. Medium and Heavy Duty Truck/Equipment periodicals
2. Other professional journals
3. Write it Right - A Guide for Automotive Repair Dealers. State of California, Department of Consumer Affairs, Bureau of Automotive Repair

## **Examples of Required Writing Assignments**

1. Class project documentation
2. Write short summaries of trade journal articles
3. Complete repair order and documentation

## **Examples of Outside Assignments**

1. Complete weekly ASE preparation exam homework questions at the end of each textbook chapter
2. Complete post lab critical thinking questions

## **Instruction Type(s)**

Lab, Lecture, Online Education Lecture