



Maintenance & Reliability Management

## Vehicle Predictive Maintenance

## Course Introduction

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Through maintenance, vehicles are inspected, repaired, and maintained in such a way that defects are prevented from surfacing in the first place, before a violation or accident can occur. This training course is designed to provide participants the relevant knowledge necessary to maintain, inspect, analyze, and repair vehicles. The course covers topics such as basic diesel engine operations, computerized truck management systems, routine maintenance, and engine mechanical, cooling and exhaust systems.

## Target Audience

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The training course is designed to be interactive and participatory, and includes various learning tools to enable the participants to operate effectively and efficiently in a multifunctional environment. The course will use lectures and presentations, exercises, experiential and exposure to real world problems and policy choices confronting delegates.

## Learning Objectives

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- Gain a comprehensive understanding of the operation and features of a diesel-engine
- Effectively carry out maintenance of vehicles - pneumatic brakes and power assisted steering
- Maintain engine cooling and lubrication system
- Trace and rectify basic fuel system faults
- Carry out basic transmission system adjustment
- Maintain battery and charging systems

# Course Outline

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## • 01 DAY ONE

### **Introduction to Predictive Maintenance & Diesel Engine Operations**

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- Planning Maintenance Techniques
  - Periodic maintenance systems and schedules
  - Predictive maintenance: principles and advantages
  - Programmed maintenance for engines and vehicles
  - Overhaul maintenance and when it's necessary
  - Managing spare parts and inventory control
- Diesel Engine Operation
  - Key starting devices in diesel engines
  - Overview of lubrication and cooling system maintenance
  - Techniques for valve adjustments in diesel engines
  - Regular checks for engine wear and tear
  - Troubleshooting engine faults

## • 02 DAY TWO

### **Fuel and Brake Systems Maintenance**

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- Diesel Fuel System Maintenance
    - Understanding fuel injection systems
    - Regular maintenance of fuel filters and injectors
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- Troubleshooting fuel system leaks and pressure issues
  - Checking fuel quality and contaminants
  - Practical exercises on fuel system inspection
  - Analyzing the performance of fuel pumps
- Pneumatic Brakes and Power-Assisted Steering Maintenance
- Principles of pneumatic brake systems
  - Common brake system issues and troubleshooting techniques
  - Power-assisted steering system overview
  - Maintenance of brake components and seals
  - Adjusting brake and steering mechanisms
  - Practical application: Brake system inspections
  - Case Study: Identifying faulty brake system components

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## • 03 DAY THREE

### **Advanced Vehicle Maintenance and Troubleshooting**

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- Classification of Heavy-Duty Equipment
- Overview of heavy-duty vehicle systems and their classification
  - Key performance factors affecting vehicle operations
  - Understanding equipment deterioration and failure risks
  - Troubleshooting common issues in heavy-duty vehicles
  - Maintenance and repair priorities based on equipment usage
  - Diagnostic tools for heavy-duty equipment systems

- Transmission and Clutch Systems Maintenance

- Understanding the transmission system and its components
- Regular maintenance and inspection of clutch systems
- Troubleshooting common transmission and clutch failures
- Performance checks for gear and shift mechanisms
- Replacing worn-out transmission parts
- Practical session on clutch and transmission inspections

- **04 DAY FOUR**

### **Electrical and Charging System Maintenance**

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- Battery & Charging System Maintenance

- Importance of maintaining vehicle battery systems
- Testing and monitoring battery voltage and performance
- Cleaning and replacing battery terminals and cables
- Troubleshooting charging system faults
- Understanding alternator functionality
- Preventive maintenance for electrical circuits

- Vehicle Electrical Components and Diagnostics

- Basic diagnostics for vehicle electrical systems
- How to use multimeters and other tools for electrical troubleshooting
- Identifying wiring faults and electrical shorts
- Checking and replacing fuses and relays
- Techniques for inspecting vehicle lights and sensors

- **05 DAY FIVE**

## Predictive Maintenance Implementation and Best Practices

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### ◦ Implementing Predictive Maintenance in Vehicles

- Overview of predictive maintenance software and tools
- Techniques for tracking vehicle health using sensors and telemetry
- Setting up predictive maintenance schedules based on data trends
- Integrating diagnostic tools with fleet management systems
- Data analysis for improving maintenance accuracy
- Cost-saving benefits of predictive maintenance systems

### ◦ Best Practices for Ongoing Vehicle Maintenance

- Developing a comprehensive fleet management strategy
- Employee training and awareness for effective maintenance practices
- Routine vehicle checks to minimize downtime
- Managing spare parts and replacement schedules
- Regular performance evaluations of fleet maintenance systems
- Best practices for vehicle safety inspections

# Confirmed Sessions

| FROM           | TO             | DURATION | FEES       | LOCATION        |
|----------------|----------------|----------|------------|-----------------|
| April 13, 2025 | April 17, 2025 | 5 days   | 4250.00 \$ | KSA - Jeddah    |
| Aug. 25, 2025  | Aug. 29, 2025  | 5 days   | 4250.00 \$ | UAE - Dubai     |
| Dec. 29, 2025  | Jan. 2, 2026   | 5 days   | 4250.00 \$ | UAE - Abu Dhabi |