Cummins L9/L9N Engine Management for Transit – Online Course

Course Description

This self-paced online course introduces students to the foundational concepts of Cummins engine management systems, with a focus on the L9 and L9N engine platforms. Designed as a prerequisite to the Diagnostics & Troubleshooting 2-Day Instructor-Led Training (ILT), this course builds student understanding of basic engine operation, key components, and emission-reduction strategies. Emphasis is placed on air-fuel management, ECM operation, and the relationship of subsystems that support performance and diagnostics.

Course Benefits

Students will develop a working knowledge of Cummins L9/L9N engine architecture and emissions strategies. This course covers how core systems interact with electronic controls and sensor inputs. By completing this course, mechanics will be prepared to identify components, understand system interactions, and transition confidently into hands-on diagnostic training.

Who Should Attend

This course is intended for maintenance technicians preparing to complete the Diagnostics & Troubleshooting 2-Day ILT. It is also useful for apprentices, shop supervisors, and other maintenance professionals new to Cummins engine systems.

Course Topics

Module 1: Introduction to Cummins Engine Platforms

- Overview of the L9 diesel engine and L9N natural gas engine
- Key differences between previous engines
- Emission goals

Module 2: ECM Fundamentals and Engine Control

- How the ECM interprets sensor inputs and controls actuators
- Introduction to system feedback and control logic

Module 3: Open and Closed-Loop Operations

- Explanation of system operation modes, including how the engine transitions between open and closed loop.

Module 4: Air and Fuel Management

- Discussion of MAF, fuel control valve operation, and how proper A/F ratios are achieved.

Module 5: Emissions Reduction Systems

- Overview of the Three-Way Catalyst, EGR operation, and crankcase ventilation updates.

Module 6: Ignition System

- Components of the ignition system, spark timing, and role of the Ignition Control Module (ICM).

Module 7: Intake and Exhaust Systems

- Air path overview
- Turbocharging
- Pressure sensors
- Catalyst protection strategies

Module 8: Cooling and Lubrication Systems

- How engine temperature and oil pressure are managed
- Key sensors and failure points

Module 9: Fuel Delivery System

- Details of fuel inlet and outlet paths, sensor roles, and regulator interactions.

Module 10: Sensor Location Overview

- High-level map of sensor locations and diagnostic access points. Linked to job aid for practical reference.

Module 11: Crankcase Ventilation

- Purpose and monitoring of crankcase pressure. Impact on overall system performance.

Materials Provided

- Interactive course modules
- Quick reference guides and job aids
- Knowledge Checks for each module
- Post-assessment

Duration

Approximately 4 hours (self-paced)

Assessment

Post-course exam (20 questions, 80% required to pass)