



# DTNA Chassis Course Descriptions

# Heavy Duty Truck Systems

## Course Code CVG01

### Overview

This course shows service technicians how to get the most out of Daimler Trucks North America service publications as well as how to successfully perform some common service tasks. This Heavy Duty Truck course is the basic introduction to the use of the tools and techniques that are needed to diagnose and repair today's modern vehicles. By learning the correct way to approach vehicle maintenance, the student can avoid the pitfalls that can cost the technician and the dealer time and money. This course covers information on air brake systems, including sub-systems and system components. Students learn how the system and components are designed to operate and how to accurately diagnose them. They also learn how to identify failure modes and how to make proper adjustments and repairs. We also introduce the technician to vibration analysis and driveline angles.

### What Will Be Covered

- Find VINs/SNs
- Finding service information
- Suspension height
- Cab ride height
- Checking clutch adjustment
- Inspecting the driveline
- Testing the batteries
- Testing the alternator
- Checking the steering
- Pre-Delivery Inspection (PDI)
- Introduction to vibration analysis
- Wheel ends
- Air brake fundamentals
- Air supply system
- Air delivery system
- Parking/Emergency system
- Tractor/Trailer systems
- ABS fundamentals

### Length of Course

This 5-day course begins at 8:30 am and ends at 4:30 pm each day.

### Prerequisites (Web-Based Training)

Web Based Training (WBT) Courses & Exams: [Accessfreightliner.com](http://Accessfreightliner.com) > Aftermarket Resource Center (ARC)

- OVQ32** – DTNA Technician Orientation
- OVG17** – Steering Systems
- OVQ16** – Drivetrain
- OVB03** – Gimme a Brake Foundation Parts
- OVB02** – The Pressure's on: Air Brakes
- OVB08** – DTNA Secondary Air
- OVE23** – Basic Troubleshooting Process
- OVE26** – CGM Viewer
- WWQ30** – 3C's: Complaint, Cause and Correction
- OEP28** – Coolant Web Course

**Note:** Technicians who have completed the following ILT combination are automatically grandfathered through and do not have to attend Heavy Duty Truck Systems CVG01. In order to qualify, both ILT courses listed must have a completion date of January 1, 2003 or later.

Service & Maintenance CVM01 + Brakes & ABS CVB01

# Electrical Troubleshooting

## Course Code CVE12

### Overview

This electrical troubleshooting course is designed to guide the students through a step-by-step process to learn to analyze an electrical circuit, draw a schematic diagram of the main components, determine the best test points, estimate the values that a working circuit should exhibit at those test points and determine whether the circuit is good up to the test point. By repeating parts of this procedure, any circuit can be correctly diagnosed. Students in this class practice troubleshooting real circuits on a test board, at first using the voltmeter mode of their DMM and then switching to the ohmmeter mode for circuits made up of electrical harnesses. Once they are comfortable with the techniques and rules of diagnostics, they practice using Daimler Trucks North America software to obtain and use schematics and wiring harness drawings. Using the skills they just learned, the students then find the electrical failures that the instructor has simulated in the Daimler Trucks North America vehicles at the training center.

### What Will Be Covered

- Circuit basics
- Digital multimeter tips
- Digital multimeter modes
- Troubleshooting tips
- Troubleshooting procedures
- Troubleshooting with a DMM
- Predicting voltmeter readings with schematics
- Using a voltmeter to test a circuit without a relay
- Relay information
- Using a voltmeter to test a circuit with a relay
- Wiring schematic comparison
- Using the ohmmeter to test resistors and diodes
- Working with connectors and wire terminals
- Using an ohmmeter to test a circuit for good connections
- Troubleshooting using a harness drawing
- Diagnosing a complex circuit
- Using an ammeter to test a circuit
- Using DTNA resources
- Finding the correct module number for the description
- Using EZ Wiring to find harness drawings and schematics
- Isolating a circuit using a harness drawing
- Identifying PDM wire locations

### Length of Course

This 4-day course begins at 8:30 am and ends at 4:30 pm each day.

### Prerequisites (Instructor Led Training)

Heavy Duty Truck Systems CVG01 or (Service & Maintenance CVM01 + Brakes & ABS CVB01)

### Prerequisites (Web-Based Training)

Web Based Training (WBT) Courses & Exams: [Accessfreightliner.com](http://Accessfreightliner.com) > Aftermarket Resource Center (ARC)

**OVE08** – Basic Electricity: Symbols & Diagrams

**OVE07** – Basic Electricity: Magnetism

**OVE22** – Seven Steps to Circuit Mapping

**OVD08** – Starter Circuit Quick Test

**OVE21** – New A06 Harness Drawing Standards

**OEE31** – Basic Electricity

**FSW259** – EZ Wiring Assessment

**OVV39** – Powernet-System Overview

**OVV29** – Powernet-Battery Testing

**OVV33** – Powernet-Cable Voltage Drop Testing

**OVV34** – Powernet-System Loads

**OVV35** – Powernet-Charging Systems

**OVV36** – Powernet-Starting System

# **Electronic Systems**

## **Course Code CVE05**

### **Overview**

The Electronic Systems course covers state-of-the-art electronic systems and data buses used on Daimler Trucks North America brand vehicles. Students will gain an in-depth understanding of each system including: where the system and components are located, how the system and components communicate, essential troubleshooting skills, electrical diagnostics and the use of MIDs, SIDs, PIDs and FMIs for system diagnostics.

### **What Will Be Covered**

- Course exercises
- Inputs, Outputs and Controls
- J1708/1587, J1939 and Multiplexing
- Reading fault codes
- Servicelink operation and interpretation
- Vendor and OEM Circuits
- Vendor and OEM resources
- 7 Step troubleshooting process to diagnose electronic problems

### **Length of Course**

This 3-day course begins at 8:30 am and ends at 4:30 pm each day.

### **Prerequisites (Instructor Led Training)**

Heavy Duty Truck Systems CVG01 (or Service & Maintenance CVM01 + Brakes & ABS CVB01)  
Electrical Troubleshooting CVE12 (or Electrical Problem Solving CVE01)

### **Prerequisites (Web-Based Training)**

Web Based Training (WBT) Courses & Exams: [Accessfreightliner.com](http://Accessfreightliner.com) > Aftermarket Resource Center (ARC)

**OVE28** – eComponents Tutorial

**OVE29** – Service Wiring Tutorial

**OVT10** – Datalink and Communications

**OVE34** – Wiring Harness Repair vs. Replace

**OVV40** – PNDB LED Troubleshooting

## **HVAC Diagnostics / Parked HVAC**

### **Course Code CVH02 / CVH05**

#### **Overview**

With this course, students learn where to find service and maintenance information as well as how to service the A/C system. They learn refrigerant recovery and recycling procedures, safety precautions, purging, flushing, evacuation, recharging and testing. They will also practice the servicing procedures in the class. This course also covers diagnostics of HVAC systems. Students will learn how to diagnose heater and A/C problems, perform heater and A/C tests as well as performing service checks. They will also learn to test A/C performance, use gauges and check for system leaks. In addition, they will learn to apply system service safety precautions. The last day of class covers operation and diagnostics of the integrated Parksmart parked HVAC system, the NITE stand alone parked HVAC system and ESPAR heater diagnostics.

#### **What Will Be Covered**

- Heating system operation and fundamentals
- A/C system operation and fundamentals
- Auxiliary systems
- System service routines
- System diagnostics
- System electrical principles
- Air conditioning protection and diagnostic system
- Blend air operation and diagnostics
- Performance testing
- NITE parked HVAC operation and diagnostics
- Parksmart HVAC operation and diagnostics
- ESPAR heater operation and diagnostics

#### **Length of Course**

This 5-day course begins at 8:30 am and ends at 4:30 pm each day.

#### **Prerequisites (Instructor Led Training)**

Heavy Duty Truck Systems CVG01 (or Service & Maintenance CVM01 + Brakes & ABS CVB01)  
Electrical Troubleshooting CVE12 (or Electrical Problem Solving CVE01)  
Electronic Systems CVE05

#### **Prerequisites (Web-Based Training)**

Web Based Training (WBT) Courses & Exams: [Accessfreightliner.com](http://Accessfreightliner.com) > Aftermarket Resource Center (ARC)

**OVH12** – HVAC Fundamentals

**OVH03** – Seven Steps to Refrigerant Leak Detection

**OVQ26** – Introduction to the Park Smart Auxiliary HVAC Training

**OVH13** – A/C Question and Learn

## **Cascadia**

### **Course Code CVL03**

This course covers familiarization with the Cascadia line of vehicles. Students will learn the functions, operation and troubleshooting basics for the new electronically-controlled modules and the multiplexed electrical system. They will become familiar with power distribution introduced with this vehicle. We also cover Service link templates and usage along with troubleshooting methods. Students will learn about full multiplexed component integration and parameterization.

#### **What Will Be Covered**

- Product overview
- Component familiarization
- Service manuals and online resources
- HVAC overview, operation and diagnostics
- Principles of power distribution
- Principles of multiplexing
- Service Link software
- Parts Pro and EZ Wiring
- Troubleshooting / Diagnostics / Parameters

#### **Length of Course**

This 4 day course begins at 8:30 am and ends at 4:30 pm each day.

#### **Prerequisites (Instructor Led Training)**

Heavy Duty Truck Systems CVG01 (or Service & Maintenance CVM01 + Brakes & ABS CVB01)

Electrical Troubleshooting CVE12 (or Electrical Problem Solving CVE01)

Electronic Systems CVE05

HVAC Diagnostics CVH02 (or HVAC CVH01)

#### **Prerequisites (Web-Based Training)**

Web Based Training (WBT) Courses & Exams: [Accessfreightliner.com](http://Accessfreightliner.com) > Aftermarket Resource Center (ARC)

**OVM03** – New System and Serviceability

**OVE10** – New Electronics System

**OVD05** – Service Link Diagnostics

**OVD16** – DiagnosticLink 8.0 for Vehicles

**OVG30** – Detroit Assurance Overview

**OVG31** – Detroit Assurance Troubleshooting

## **Business Class M2**

### **Course Code CVL02**

#### **Overview**

This course covers familiarization with the Business Class M2 line of vehicles. Students will learn the functions, operation and troubleshooting basics for the electronically-controlled air conditioning system, the air management system and the multiplexed electrical system. Maintenance procedures for these vehicles as well as the special servicing needs will also be covered in this course. The students will gain a working knowledge of how to add features and wire accessories to the multiplexed component systems on this vehicle.

#### **What Will Be Covered**

- Product overview
- Component familiarization
- Service manuals and online resources
- AMU overview, operation and diagnostics
- HVAC overview, operation and diagnostics
- Principles of power distribution
- Principles of multiplexing
- Service Link software
- Parts Pro and EZ Wiring
- Troubleshooting / Diagnostics / Parameters

#### **Length of Course**

This 4-day course begins at 8:30 am and ends at 4:30 pm each day.

#### **Prerequisites (Instructor Led Training)**

Heavy Duty Truck Systems CVG01 (or Service & Maintenance CVM01 + Brakes & ABS CVB01)

Electrical Troubleshooting CVE12 (or Electrical Problem Solving CVE01)

Electronic Systems CVE05

HVAC Diagnostics CVH02 (or HVAC CVH01)

#### **Prerequisites (Web-Based Training)**

Web Based Training (WBT) Courses & Exams: [Accessfreightliner.com](http://Accessfreightliner.com) > Aftermarket Resource Center (ARC)

**OVE31** – M2 Multiplexed Electronics

**OVB05** – Hydraulic Brake Simulator

**OVQ02** – Introduction to the FTL AMT3 Automated Transmission

**OVQ23** – Introduction to the Air Management Unit

**OVM09** – Servicing Pin Slide Calipers

**OVT11** – M2 Troubleshooting

**SMRTPLXVID1** – Smartplex Video Part 1 - Programming

**SMRTPLXVID2** – Smartplex Video Part 2 - Troubleshooting

## **Western Star**

### **Course Code CVL01**

This course covers familiarization with the Western Star line of vehicles. Students will learn the functions, operation and troubleshooting basics for the electronically-controlled modules and the electrical system. They will become familiar with power distribution and dash gauge operations on these vehicles.

#### **What Will Be Covered**

- Product overview
- Component familiarization
- Instrument cluster operation and diagnostics
- Service manuals and online resources
- HVAC overview, operation and diagnostics
- Principles of power distribution
- Parts Pro and EZ Wiring
- Troubleshooting & Diagnostics

#### **Length of Course**

This 4 day course begins at 8:30 am and ends at 4:30 pm each day.

#### **Prerequisites (Instructor Led Training)**

Heavy Duty Truck Systems CVG01 (or Service & Maintenance CVM01 + Brakes & ABS CVB01)

Electrical Troubleshooting CVE12 (or Electrical Problem Solving CVE01)

Electronic Systems CVE05

HVAC Diagnostics CVH02 (or HVAC CVH01)

#### **Prerequisites (Web-Based Training)**

Web Based Training (WBT) Courses & Exams: [Accessfreightliner.com](http://Accessfreightliner.com) > Aftermarket Resource Center (ARC)

**OVL02** – Star Gauges

**OVD16** – DiagnosticLink 8.0 for Vehicles

**OVQ16** – Western Star 5700 Introduction

## **Advanced Diagnostics NVH**

### **Course Code CVD13**

This expert level course will provide the technician an in depth understanding of Noise, Vibration, and Harshness. Technicians will learn about vehicle alignment with the main focus of hands on to understand, identify and resolve vibration issues. Some shop exercises will support the Express Assessment timeline to support these Technicians quickly narrowing possibilities. Intended audience; Lead Technicians, Express Assessment Tech's, Technical Shop Foreman, and those being developed into these roles.

#### **What Will Be Covered**

- Alignment and tire wear
- Caster/Camber/Toe
- Front axle shimmy causes
- Tire mounting
- Frame beaming
- Driveline vibrations
- Driveline angles
- Engine vibrations
- Electronic Vibration Analysis (EVA) tool and diagnostics
- Service manuals and online resources

#### **Length of Course**

This 2 day course begins at 8:30 am and ends at 4:30 pm each day.

#### **Prerequisites (Instructor Led Training)**

Heavy Duty Truck Systems CVG01 (or Service & Maintenance CVM01 + Brakes & ABS CVB01)

Electrical Troubleshooting CVE12 (or Electrical Problem Solving CVE01)

Electronic Systems CVE05

HVAC Diagnostics CVH02 (or HVAC CVH01)

#### **Prerequisites (Web-Based Training)**

Web Based Training (WBT) Courses & Exams: [Accessfreightliner.com](http://Accessfreightliner.com) > Aftermarket Resource Center (ARC)

**OVV32** – Shop Talk Vibration Analysis Course

## **DT12 Transmission**

### **Course Code CVG12**

This course will cover the component identification, basic mechanical transmission operation, using special transmission tools for key service procedures, using the special transmission service routines in DiagnosticLink, transmission diagnostics with an emphasis on log file analysis and basic parameter management.

#### **What Will Be Covered**

- DT12 Transmission components overview
- DT12 Transmission sensors overview
- DT12 Transmission features and operation
- DT12 Transmission power flow overview
- Disassembly and assembly of repairable components
- Service procedures
- DiagnosticLink 8.x Service Routines
- Log file analysis
- DT12 Transmission parameters
- Troubleshooting and diagnostics
- Service manuals and online resources

#### **Length of Course**

This 2 day course begins at 8:30 am and ends at 4:30 pm each day.

#### **Prerequisites (Instructor Led Training)**

Heavy Duty Truck Systems CVG01 (or Service & Maintenance CVM01 + Brakes & ABS CVB01)  
Electrical Troubleshooting CVE12 (or Electrical Problem Solving CVE01)

#### **Prerequisites (Web-Based Training)**

Web Based Training (WBT) Courses & Exams: [Accessfreightliner.com](http://Accessfreightliner.com) > Aftermarket Resource Center (ARC)

**OVG10** – DT12 Familiarization

**OVG11** – DT12 Component Identification

**OVG12** – DT12 Mechanical Theory and Operation

**OVG13** – DT12 Pneumatic Theory and Operation

**OVG14** – DT12 Diagnostics and Repair Part 1

**OVG15** – DT12 Diagnostics and Repair Part 2

**OVD16** – DiagnosticLink 8.0 for Vehicles

## **Detroit Axle Products**

### **Course Code CVG16**

This course will cover Detroit steer and drive axle components identification, basic axle operation, using special tools for key service procedures and failure analysis with root cause diagnostics.

#### **What Will Be Covered**

- Detroit axle identification and overview
- Axle ratios
- Differential operation
- Driver controlled differential lock (DCDL)
- Gear set configurations
- Pinion bearing replacement and carrier overhaul procedures
- Service procedures
- Contact pattern analysis
- Forward rear tandem axle components and power flow
- Interaxle differential lock (IAD) overview and replacement procedures
- Axle lubrication
- Steer axle overview and repair procedures
- Troubleshooting and diagnostics
- Service manuals and online resources

#### **Length of Course**

This 2 day course begins at 8:30 am and ends at 4:30 pm each day.

#### **Prerequisites (Instructor Led Training)**

Heavy Duty Truck Systems CVG01 (or Service & Maintenance CVM01 + Brakes & ABS CVB01)  
Electrical Troubleshooting CVE12 (or Electrical Problem Solving CVE01)

#### **Prerequisites (Web-Based Training)**

Web Based Training (WBT) Courses & Exams: [Accessfreightliner.com](http://Accessfreightliner.com) > Aftermarket Resource Center (ARC)

**OEG04** – Driver Controlled Differential Lock DCDL

**OEG05** – Differential Rebuild Procedures

**OEG06** – Interaxle Differential Replacement Procedures

**OEG07** – Detroit Axle Familiarization

**OEG08** – Detroit Axle Differential Component Identification and Operation

**Video27Exam** – Detroit Model 4 Axle Pinion Bearing Replacement Video

#### **DISCLAIMER**

*Due to the demand for training in certain classes, training dates may be added or cancelled without notice. Please check the schedule on our website at [www.truckcentercompanies.com/training](http://www.truckcentercompanies.com/training) or contact us to ensure that the training date you require is still available before submitting an application. The Training Center reserves the right to cancel or reschedule any class.*