

## Transportation Technology/Diesel

### Level I Unit Outline

#### **Unit 1: Safety and First Aid in the Shop**

- Identify safety concerns in the shop.
- Protective clothing/equipment- Safety glasses, boots, pants, gloves etc.
- Identify safety equipment i.e., fire extinguishers, eye wash etc.
- Demonstrate first aid procedures.
- OSHA
- Tool safety
  - Hand tool safety
  - Power tool safety
- Shop equipment safety
- Spills, Blood Borne Pathogens (BBP's)
- Around the vehicle safety
- Hazards in the work place

#### **Unit 2: Tools**

- Safety
- Tool care
- Fractional/Metric systems
- Measurements
- Basic hand tools
- Basic power tools
- Advanced hand tools
- Advanced power tools
- General shop equipment
- Lift safety course

#### **Unit 3: Shop Cleanliness**

- Safety
- Floors (sweeping/mopping)
- Windows-proper clean/remove dirt/dust
- Tools- clean/organize in proper place
- Storage- Cabinets/tool boxes/cages
- Organizers- Tool box/cabinets
- Brooms/mops/sink- storage, cleanliness
- Rags/waste disposal- Waste bins/fire bins
- Degreasing- removing engine oil/grease

- Stain removal- Remove stains from skin/floor/clothes

#### **Unit 4: General Drive Trains Diagnosis**

- Identify drive train concerns and components
- Research and analyze vehicle service history, bulletins, precautions, and fluid types
- Check fluids, leaks, and drain and refill of transmissions

#### **Unit 5: Clutch Diagnosis and Repair**

- Clutch types, concerns, and repair
- Clutch components, pressures, and plates
- Bleeding clutch systems and inspections

#### **Unit 6: Transmission/Transaxle Diagnosis and Repair**

- Remove, clean, inspect, diagnose concerns, reinstall and reassemble transmission/transaxle components.
- Inspect, adjust, replace, align, and install components relating to transmission/transaxle components, linkages, shafts, brackets, bushings, cables, pivots, powertrain mounts, gaskets, seals, and sealants and take necessary action.
- Inspect, measure, diagnose, repair and describe all other functions of transmissions with respect to all types of transmissions and their components, gears, bearings, sensors, switches, and devices.

#### **Unit 7: Drive Shaft and Half Shaft, Universal and Constant-Velocity and Repair**

- Diagnose constant-velocity and universal joint noises and vibration concerns and determine action
- Remove and replace front wheel drive front wheel bearing and inspect, service, and replace shafts, yokes, boots, and CV joints as well as shaft center support bearings
- Check shaft balance and phasing, measure shaft runout and driveline angles.

#### **Unit 8: Drive Axle Diagnosis and Repair**

- Diagnose and repair drive axles vehicles with ring and pinion gears and differential case assemblies.
- Diagnose and repair drive axles vehicles with limited slip differential.
- Diagnose and repair drive axle shaft components.

#### **Unit 9: Four Wheel Drive/All-Wheel Drive Component Diagnosis and Repair**

- Diagnose noise, vibrations, steering concerns related to tire circumferences, drive ratios, or unusual conditions.
- Inspect, adjust and repair shifting controls, bushings, mounts, levers, and brackets

- Disassemble or remove, service, reinstall or reassemble transfer case and components. Inspect front bearings and locking hubs and perform necessary repairs.
- Check drive assemblies (4 wheel or all wheel) seals, vents, electrical components and lubrication levels.

#### **Unit 10: Air Brakes**

- Identify and understand principles and concepts relating to Air brake systems in heavy truck using industry standards.
- Identify mechanical functions and foundations associated with air brakes in heavy trucks and be able to make the appropriate repairs and adjustments using industry standards.
- Demonstrate understanding of proper maintenance and repair of parking brakes and its components using industry standards

#### **Unit 11: Hydraulic Brakes**

- Identify and understand principles and concepts relating to hydraulic brake systems in heavy truck using industry standards.
- Identify mechanical functions and foundations associated with hydraulic brakes in heavy trucks and be able to make the appropriate repairs and adjustments using industry standards.
- Demonstrate understanding of proper maintenance and repair of power assist units of hydraulic brakes and its components using industry standards.

#### **Unit 12: ABS and ATC Brake Systems**

- Understand proper functioning and maintaining of the ABS brake system in heavy trucks.
- Understand proper functioning and maintaining of the ATC brake system in heavy trucks.

#### **Unit 13: Wheel Bearings**

- Understand proper functioning and maintaining of wheel bearings, cups, seals, rings, and retaining hardware
- Inspect or replace extended service wheel bearing assemblies.

Transportation Technology/Diesel  
New Jersey Student Learning Standards (NJSLS)

**NJ Learning Standards: CTE.9.3**

<b>CONTENT AREA:</b>	<b>9.3 CAREER AND TECHNICAL EDUCATION</b>
<b>TRANSPORTATION, DISTRIBUTION &amp; LOGISTICS CAREER CLUSTER<sup>®</sup></b>	
<b>Number</b>	<b>Standard Statement</b>
<i>By the end of Grade 12, Career and Technical Education Program completers should be able to:</i>	
<b>CAREER CLUSTER<sup>®</sup>:</b>	<b>TRANSPORTATION, DISTRIBUTION &amp; LOGISTICS (TD)</b>
<b>PATHWAY:</b>	<b>SALES &amp; SERVICE (TD-SAL)</b>
<b>9.3.12.TD-SAL.1</b>	<b>Analyze the ongoing performance of transportation, logistics and distribution-related sales and service operations.</b>
<b>9.3.12.TD-SAL.2</b>	<b>Demonstrate the use of sales and ongoing service of products and services that are transportation related to promote development of existing and future clients and customers.</b>