PROGRAM OVERVIEW

Apprentices registered in the Truck and Coach Technician trade are scheduled for three eight-week sections of in-school training which is scheduled through the Ministry of Training, Colleges & Universities.

The basic level is Program #6080 - Commercial Vehicle & Equipment Common Core (CVAE Level One) curriculum which has been developed in keeping with the prescribed Ministry of Training, Colleges & Universities Apprenticeship Training Standards and is common to the four trades of Heavy Duty Equipment Technician, Truck and Coach Technician, Power Lift Truck Technician and Farm Equipment Mechanic.

The next two levels are Level Two and Level Three of the Truck and Coach Technician trade. Objectives of all three levels of curriculum are to provide more comprehensive learning experiences for the speciality trade of Truck and Coach Technician in terms of:

- Sound theoretical training to meet the challenges presented by the increasingly more complex designs and testing techniques.
- Acquisition of fundamental and specific skills of the trade through the training of practical applications.
- Strengthening the apprentices’ high standards of craftsmanship, problem-solving skills and personal pride of their respective trades.
- Strengthening desirable work attitudes and a keen sense of responsibility, particularly in regard to public and personal safety.

PROGRAM OF STUDY

Level II (6081)

TCT711 - 4 Trade Practices and Auxiliary Systems
TCT712 - 5 Engine Systems
TCT713 - 5 Electrical Systems
TCT714 - 3 Fuel Systems
TCT715 - 2 Vehicle Management Electronics and Emissions Systems
TCT716 - 5 Drive Train
TCT717 - 6 Steering, Suspension and Brake Systems

Level III (6082)

TCT811 - 3 Trade Practices and Auxiliary Systems
TCT812 - 5 Engine Systems
TCT813 - 4 Electrical Systems
TCT814 - 3 Fuel Systems
TCT815 - 4 Vehicle Electronics Management and Emissions Systems
TCT816 - 5 Drive Train
TCT817 - 6 Steering, Suspension and Brake Systems
PROGRAM OF STUDY NOTES

Note:

To view Level I courses, please see the courses displayed under the Commerical Vehicle Common Core Program - Program #6080.

Course Descriptions

Level II (6081)

**Trade Practices and Auxiliary Systems** (TCT711) (4 credits)
Upon successful completion the apprentice is able to perform down-hand welding repairs and installations on vehicle chassis components, and identify the characteristics of sound welds using electric arc and MIG welding process; is able to use manufacturer's service literature, personal computers and networks to locate service and parts information, and understand networking protocols of OEM Intranet data hubs; is able to repair vehicle cab components and fixtures to the manufacturers and statutory standards; and is able to describe the different types of truck and coach rig configuration used in highway applications, and access information to determine legal vehicles by weight, height and length.

**Engine Systems** (TCT712) (5 credits)
Upon successful completion the apprentice is able to understand the principle of operation, diagnose and repair diesel engine cylinder heads, valve trains, and gasoline engines.

**Electrical Systems** (TCT713) (5 credits)
Upon successful completion the apprentice is able to understand the principles of operation, diagnose and repair heavy-duty batteries, truck and heavy duty cranking circuits, and truck and coach auxiliary electrical components; is able to understand the principles of Electrical circuit schematics and use them to diagnose and repair truck and coach electrical systems; and is able to understand the fundamental of electronics and diagnose malfunctions in electronically managed circuits and components.

**Fuel Systems** (TCT714) (3 credits)
Upon successful completion the apprentice is able to understand the principles of high pressure diesel fuel injection; is able to understand the principle of operation, diagnose and repair Electronic Unit Injector (EUI) diesel fuel systems, and gasoline and alternate fuel injection systems; and is able to understand the principles of diesel engine governing.

**Vehicle Management Electronics and Emissions Systems** (TCT715) (2 credits)
Upon successful completion the apprentice is able to use generic and proprietary ESTs and PCs to read, troubleshoot and reprogram vehicle electronic systems; is able to understand the basics of a vehicle computer control system and how it functions to process information and produce outcomes; and is able to understand the principles of operation, diagnose and repair electronic input circuit components.

**Drive Train** (TCT716) (5 credits)
Upon successful completion the apprentice is able to understand the principles of operation, diagnose and repair pull-type clutches and flywheel assemblies, countershaft manual transmission and auxiliary sections, multiple speed and double reduction drive axle assemblies, power divided tandem drive assemblies, and electronically automated standard transmissions.
Steering, Suspension and Brake Systems (TCT717) (6 credits)
Upon successful completion the apprentice is able to understand the principles of operation of truck and coach air brake systems; is able to diagnose and repair truck and coach air brake systems, and suspension systems; is able to understand the principles of operation, diagnose and repair heavy duty hydraulic and air-over-hydraulic brakes, wheel end assemblies, and truck and coach mechanical suspensions; and is able to understand the operating principles of truck and coach tire and wheel assemblies, and air suspension systems.

Level III (6082)

Trade Practices and Auxiliary Systems (TCT811) (3 credits)
Upon successful completion the apprentice is able to understand the principles of operation, diagnose and repair truck and coach heating, ventilation and air conditioning systems to manufacturers and environmental safety standards; and is able to describe the legal responsibilities of employers and employees for safety, environment and equipment practices according to Government Safety and Environmental Legislation.

Engine Systems (TCT812) (5 credits)
Upon successful completion the apprentice is able to understand the principles of operation, diagnose and repair heavy duty, diesel engine intake systems, exhaust systems, turbochargers, heavy duty cooling systems, and diesel engine brakes and retarders; is able to describe the operating principles of heavy duty lubricating systems and oils, and repair typical lubricating circuit problems; is able to understand the principles of failure analysis and implement them on failed diesel engine components; is able to understand the principles and practices of sequential troubleshooting strategies and symptom based diagnostic routines on heavy duty diesel engines; and is able to describe how to break-in a new or rebuilt diesel engine and interpret dynamometer test results on diesel engines.

Electrical Systems (TCT813) (4 credits)
Upon successful completion the apprentice is able to understand the principle of operation, diagnose and repair heavy duty charging circuits, and heavy duty ignitions systems and components; and is able to disassemble, repair, reassemble and diagnose heavy duty electrical components.

Fuel Systems (TCT814) (3 credits)
Upon successful completion the apprentice is able to understand the principles of operation, diagnose and repair hydraulically actuated, electronic unit injector systems; electronic unit pump diesel fuel systems, time-pressure (TP), electronic common rail systems, and electronically controlled, common rail accumulator, high pressure injection pumps.

Vehicle Electronics Management and Emissions Systems (TCT815) (4 credits)
Upon successful completion the apprentice is able to understand the difference between customer and proprietary data programming and outline the procedure required to perform vehicle computer programming; is able to understand the basics of vehicle electronic system multiplexing and describe how digital communications can reduce the complexity of control circuits; is able to understand the principles of operation, diagnose and repair emission control devices and systems on trucks and coaches; is able to understand the operating principles and perform repairs on hybrid drive (diesel/electric) systems and their control mechanisms; and is able to describe the operating principles of typical collision avoidance systems, identify the system hardware and access stored data in the system.

Drive Train (TCT816) (5 credits)
Upon successful completion the apprentice is able to understand the principles of operation, diagnose and repair truck and coach torque converter units, automatic transmissions and vehicle retarders to manufacturers standards, and electronically controlled automatic transmissions, transfer case drop box and power take-off assemblies.
Steering, Suspension and Brake Systems (TCT817) (6 credits)
Upon successful completion the apprentice is able to interpret pneumatic schematic symbols and circuits, and use schematics to troubleshoot typical vehicle problems; is able to understand the principles of operation, diagnose and repair ABS, ATC and RDS systems to manufacturers and statutory standards; is able to perform air brake troubleshooting using service literature, air brake schematics and test instruments; is able to understand the principles of operation, diagnose and repair of ABS and ATC systems, mechanical steering gears, truck, coach, bus and trailer frames and bodies, truck and coach coupling systems, and hydraulic vehicle alignment components.