

Florida Department of Education
Curriculum Framework

Program Title: Diesel Maintenance Technology
Program Type: Career Preparatory
Career Cluster: Transportation, Distribution and Logistics

Secondary – Career Preparatory

Program Number	9504400
CIP Number	0647060514
Grade Level	9-12
Standard Length	4 credits
Teacher Certification	Refer to the Program Structure section
CTSO	SkillsUSA
SOC Codes (all applicable)	49-9098 – Helpers—Installations, Maintenance, and Repair Workers 49-3031 – Bus and Truck Mechanics and Diesel Engine Specialists
CTE Program Resources	http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml

Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Transportation, Distribution and Logistics career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of the Transportation, Distribution and Logistics career cluster.

The course content should also include training in communication, leadership, human relations and employability skills; and safe efficient work practices.

Additional Information relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

Program Structure

This program is a planned sequence of instruction consisting of four credits.

It is highly recommended that the courses be taught in sequential order.

To teach the course(s) listed below, instructors must hold at least one of the teacher certifications indicated for that course.

The following table illustrates the secondary program structure:

Course Number	Course Title	Teacher Certification	Length	SOC Code	Level	Graduation Requirement
8742010	Diesel Engine Service 1	DIESEL MECH @7 7G	1 credit	49-9098	3	
9504410	Diesel Maintenance Technology 1		1 credit	49-3031	2	
9504420	Diesel Maintenance Technology 2		1 credit		3	
9504430	Diesel Maintenance Technology 3		1 credit	49-3031	3	

(Graduation Requirement Abbreviations- EQ= Equally Rigorous Science, PA= Practical Arts, EC= Economics)

National Standards

Programs identified as having Industry or National Standards to the corresponding standards and/or benchmarks for the Medium and Heavy Duty Bus and Truck program can be found using the following link: <https://www.aseeducationfoundation.org/program-accreditation>

Common Career Technical Core – Career Ready Practices

Career Ready Practices describe the career-ready skills that educators should seek to develop in their students. These practices are not exclusive to a Career Pathway, program of study, discipline or level of education. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

1. Act as a responsible and contributing citizen and employee.
2. Apply appropriate academic and technical skills.
3. Attend to personal health and financial well-being.
4. Communicate clearly, effectively and with reason.
5. Consider the environmental, social and economic impacts of decisions.
6. Demonstrate creativity and innovation.
7. Employ valid and reliable research strategies.
8. Utilize critical thinking to make sense of problems and persevere in solving them.
9. Model integrity, ethical leadership and effective management.
10. Plan education and career path aligned to personal goals.
11. Use technology to enhance productivity.
12. Work productively in teams while using cultural/global competence.

Standards

After successfully completing this program, the student will be able to perform the following:

- 01.0 Proficiently explain and apply required shop and personal safety tasks.
- 02.0 Identify the basic diesel components and functions.
- 03.0 Explain and apply required tasks associated with the proper use and handling of tools and equipment.
- 04.0 Identify principles, assemblies, and systems of engine operation.
- 05.0 Demonstrate proficiency in preparing vehicle for routine pre/post maintenance and customer services.
- 06.0 Demonstrate workplace employability skills related to personal standards and work habits/ethics.
- 07.0 Diagnose and repair air supply and service systems.
- 08.0 Diagnose and repair mechanical/foundation air brake systems.
- 09.0 Diagnose and repair parking brakes.
- 10.0 Diagnose and repair air and hydraulic antilock brake systems (ABS) and automatic traction control (ATC).
- 11.0 Diagnose and repair wheel bearings.
- 12.0 Diagnose and repair Engine systems.
- 13.0 Diagnose and repair Fuel system
- 14.0 Diagnose and repair Air induction and exhaust system
- 15.0 Diagnose and repair Cooling system
- 16.0 Diagnose and repair Lubrication system
- 17.0 Diagnose and repair Instruments and controls
- 18.0 Diagnose and repair Safety equipment
- 19.0 Diagnose and repair Hardware
- 20.0 Diagnose and repair Heating, ventilation, and air conditioning (HVAC)
- 21.0 Diagnose and repair Battery and starting systems
- 22.0 Diagnose and repair Electrical/Electronic charging systems
- 23.0 Diagnose and repair Lighting systems.
- 24.0 Diagnose and repair Air brake systems.
- 25.0 Diagnose and repair Hydraulic brake systems.
- 26.0 Diagnose and repair Drive Train systems.
- 27.0 Diagnose and repair Suspension and steering systems.
- 28.0 Diagnose and repair Tires and wheels.
- 29.0 Diagnose and repair Frame and fifth wheel.

**Florida Department of Education
Student Performance Standards**

Course Title: Diesel Engine Service 1
Course Number: 8742010
Course Credit: 1

Course Description:

The Diesel Engine Service 1 course prepares students for entry into the Diesel Engine Service industry. Content emphasizes beginning skills and concepts as a recommended requisite. Students study shop and personal safety skills, basic diesel components, tools and equipment, occupational safety, engine operation, and workplace employment skills.

For every task in Diesel Engine Service 1, the following safety task must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing; eye protection; hand protection; proper lifting practices; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of fuels/chemicals/materials in accordance with federal, state, and local regulations.

ASE = Required Supplemental Tasks

CTE Standards and Benchmarks	Priority Number
01.0 Proficiently explain and apply required shop and personal safety tasks.--The student will be able to:	
01.01 Identify basic shop organization and management regulations.	
01.02 Identify and apply general and required shop safety rules and procedures.	ASE
01.03 Utilize safe procedures for handling of tools and equipment.	ASE
01.04 Identify and use proper placement of floor jacks and jack stands.	ASE
01.05 Identify and use proper procedures for safe lift operation.	ASE
01.06 Utilize proper ventilation procedures for working within the lab/shop area.	ASE
01.07 Identify the location and the types of fire extinguishers and other fire safety equipment; demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment.	ASE
01.08 Identify the location and use of eye wash stations.	ASE

CTE Standards and Benchmarks	Priority Number
01.09 Identify and comply with the required use of PPE during lab/shop activities.	ASE
01.10 Secure hair and jewelry for lab/shop activities.	ASE
01.11 Demonstrate awareness of the safety aspects of supplemental restraint systems (SRS), electronic brake control systems, and hybrid vehicle high voltage circuits.	ASE
01.12 Demonstrate awareness of the safety aspects of high voltage circuits (such as high intensity discharge (HID) lamps, ignition systems, injection systems, etc.).	ASE
01.13 Locate and demonstrate knowledge of Safety Data Sheets (SDS).	ASE
01.14 Assist in activities and job tasks, in accordance with local, state, and federal safety and environmental regulations.	
01.15 Identify and comply with personal and environmental safety practices associated with the handling, storage, and disposal of chemicals and hazardous materials.	
02.0 Identify the basic diesel components and functions.--The student will be able to:	
02.01 Identify seals, gaskets, and bearings.	
02.02 Identify drive train components and functions.	
02.03 Identify threaded fasteners by size, type, thread series, thread classes, material hardness, and compatibility	
03.0 Explain and apply required tasks associated with the proper use and handling of tools and equipment.--The student will be able to:	
03.01 Identify tools and demonstrate their proper usage.	ASE
03.02 Identify standard and metric designation.	ASE
03.03 Demonstrate proper cleaning, storage, and maintenance of tools and equipment.	ASE
03.04 Demonstrate proper use of precision measuring tools (i.e. micrometer, dial-indicator, dial-caliper, etc.).	ASE
04.0 Identify principles, assemblies, and systems of engine operation.--The student will be able to:	
04.01 Explain the basic principles in the operation of the four-stroke-cycle diesel engine	
04.02 Identify engine assemblies and systems.	
04.03 Identify the components of and explain the operating principles of two and four-stroke cycle engines.	

CTE Standards and Benchmarks	Priority Number
04.04 Identify governor types and their operating principles.	
05.0 Demonstrate proficiency in preparing vehicle for routine pre/post maintenance and customer services.--The student will be able to:	
05.01 Identify information needed and the service requested on a repair order.	ASE
05.02 Identify purpose and demonstrate proper use of fender covers, mats.	ASE
05.03 Demonstrate use of the three C's (Concern, Cause, and Correction).	ASE
05.04 Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.	ASE
05.05 Ensure vehicle is prepared to return to customer per school/company policy (floor mats, steering wheel cover, etc.)	ASE
06.0 Demonstrate workplace employability skills related to personal standards and work habits/ethics.--The student will be able to:	
06.01 Reports to work daily on time; able to take directions and motivated to accomplish the task at hand.	ASE
06.02 Dresses appropriately and uses language and manners suitable for the workplace.	ASE
06.03 Maintains appropriate personal hygiene.	ASE
06.04 Meets and maintains employment eligibility criteria, such as drug/alcohol-free status, clean driving record, etc.	ASE
06.05 Demonstrates honesty, integrity and reliability.	ASE
06.06 Complies with workplace policies/laws	ASE
06.07 Contributes to the success of the team, assists others and requests help when needed.	ASE
06.08 Works well with all customers and coworkers.	ASE
06.09 Negotiates solutions to interpersonal and workplace conflicts.	ASE
06.10 Contributes ideas and initiative.	ASE
06.11 Follows directions.	ASE
06.12 Communicates (written and verbal) effectively with customers and coworkers.	ASE
06.13 Reads and interprets workplace documents; writes clearly and concisely.	ASE

CTE Standards and Benchmarks	Priority Number
06.14 Analyzes and resolves problems that arise in completing assigned tasks.	ASE
06.15 Organizes and implements a productive plan of work.	ASE
06.16 Uses scientific, technical, engineering and mathematics principles and reasoning to accomplish assigned tasks.	ASE
06.17 Identifies and address the needs of all customers, providing helpful, courteous and knowledgeable service and advice as needed.	ASE

**Florida Department of Education
Student Performance Standards**

Course Title: Diesel Maintenance Technology 1
Course Number: 9504410
Course Credit: 1

Course Description:

The Diesel Maintenance Technology 1 course prepares students for entry into the Diesel Engine Service industry. Content emphasizes beginning skills and concepts as a recommended requisite. Students study diagnostic, service, and repair of air brakes.

For every task in Diesel Maintenance Technology 1 the following safety task must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing; eye protection; hand protection; proper lifting practices; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of fuels/chemicals/materials in accordance with federal, state, and local regulations.

Abbreviations:

BR – Brakes

BR Task List:	
P-1 =	33
P-2 =	5
P-3 =	3
Total	41

CTE Standards and Benchmarks	Priority Number
07.0 Diagnose and repair air supply and service systems.--The student will be able to:	
07.01 Identify and diagnose poor stopping, air leaks, premature wear, pulling, grabbing, dragging, or balance problems caused by supply and service system malfunctions; determine needed action.	P-1
07.02 Check air system build-up time; determine needed action.	P-1
07.03 Drain air reservoir/tanks; check for oil, water, and foreign material; determine needed action.	P-1
07.04 Inspect air compressor drive gear, belts and coupling; adjust or replace as needed.	P-3
07.05 Inspect air compressor inlet; inspect oil supply and coolant lines, fittings, and mounting brackets; repair or replace as needed.	P-1
07.06 Inspect and test air system pressure controls: governor, unloader assembly valves, filters, lines, hoses, and fittings; replace as needed.	P-1

CTE Standards and Benchmarks	Priority Number
07.07 Inspect air system lines, hoses, fittings, and couplings; repair or replace as needed.	P-1
07.08 Inspect and test air tank relief (safety) valves, one-way (single) check valves, two-way (double) check-valves, and manual/automatic drain valves; replace as needed.	P-1
07.09 Inspect and clean air drier systems, filters, valves, heaters, wiring, and connectors; repair or replace as needed.	P-1
07.10 Inspect and test brake application (foot/treadle) valve, fittings, and mounts; check pedal operation; replace as needed.	P-1
07.11 Inspect and test stop light circuit switches, wiring, and connectors; repair or replace as needed.	P-1
07.12 Inspect and test hand brake (trailer) control valve, lines, fittings, and mountings; repair or replace as needed.	P-1
07.13 Inspect and test brake relay valve; replace as needed.	P-1
07.14 Inspect and test quick release valves; replace as needed.	P-1
07.15 Inspect and test tractor protection valve; replace as needed.	P-1
07.16 Inspect and test emergency (spring) brake control/modulator valve(s); replace as needed. (as applicable)	P-1
07.17 Inspect and test low pressure warning devices, wiring, and connectors; repair or replace as needed.	P-1
07.18 Inspect and test air pressure gauges, lines, and fittings; replace as needed.	P-2
08.0 Diagnose and repair mechanical/foundation air brake systems.--The student will be able to:	
08.01 Identify and diagnose poor stopping, brake noise, premature wear, pulling, grabbing, or dragging problems caused by the foundation brake, slack adjuster, and brake chamber problems; determine needed action.	P-1
08.02 Inspect and test service brake chambers, diaphragm, clamp, spring, pushrod, clevis, and mounting brackets; repair or replace as needed.	P-1
08.03 Identify type, inspect and service slack adjusters; perform needed action.	P-1
08.04 Inspect camshafts, tubes, rollers, bushings, seals, spacers, retainers, brake spiders, shields, anchor pins, and springs; replace as needed.	P-1
08.05 Inspect, clean, and adjust air disc brake caliper assemblies; determine needed repairs.	P-2
08.06 Inspect and measure brake shoes or pads; perform needed action.	P-1
08.07 Inspect and measure brake drums or rotors; perform needed action.	P-1

CTE Standards and Benchmarks	Priority Number
09.0 Diagnose and repair parking brakes.--The student will be able to:	
09.01 Inspect and test parking (spring) brake chamber diaphragm and seals; replace parking (spring) brake chamber; dispose of removed chambers in accordance with local regulations.	P-1
09.02 Inspect and test parking (spring) brake check valves, lines, hoses, and fittings; replace as needed.	P-1
09.03 Inspect and test parking (spring) brake application and release valve; replace as needed.	P-1
09.04 Manually release (cage) and reset (uncage) parking (spring) brakes in accordance with manufacturers' recommendations.	P-1
09.05 Identify and test anti compounding brake function.	P-1
10.0 Diagnose and repair air and hydraulic antilock brake systems (ABS) and automatic traction control (ATC).-- The student will be able to:	
10.01 Observe antilock brake system (ABS) warning light operation (includes trailer and dash mounted ABS warning light); determine needed action.	P-1
10.02 Diagnose antilock brake system (ABS) electronic control(s) and components using self-diagnosis and/or electronic service tool(s); determine needed action.	P-1
10.03 Identify poor stopping and wheel lock-up caused by failure of the antilock brake system (ABS); determine needed action.	P-1
10.04 Test and check operation of antilock brake system (ABS) air, hydraulic, electrical, and mechanical components; perform needed action.	P-1
10.05 Test antilock brake system (ABS) wheel speed sensors and circuits; adjust or replace as needed.	P-1
10.06 Bleed the ABS hydraulic circuits according to manufacturers' procedures.	P-2
10.07 Observe automatic traction control (ATC) warning light operation; determine needed action.	P-3
10.08 Diagnose automatic traction control (ATC) electronic control(s) and components using self-diagnosis and/or specified test equipment (scan tool, PC computer); determine needed action.	P-3
10.09 Verify power line carrier (PLC) operations.	P-2
10.10 Diagnose, service, and adjust antilock brake system (ABS) wheel speed sensors and circuits following manufacturers' recommended procedures (including voltage output, resistance, shorts to voltage/ground, and frequency data).	
11.0 Diagnose and repair wheel bearings.--The student will be able to:	
11.01 Clean, inspect, lubricate and replace wheel bearings and races/cups; replace seals and wear rings; inspect spindle/tube; inspect and replace retaining hardware; adjust wheel bearings. Verify end play with dial indicator method.	P-1

CTE Standards and Benchmarks	Priority Number
11.02 Identify, inspect or replace unitized/preset hub bearing assemblies.	P-2

**Florida Department of Education
Student Performance Standards**

Course Title: Diesel Maintenance Technology 2
Course Number: 9504420
Course Credit: 1

Course Description:

The Diesel Maintenance Technology 2 course prepares students for entry into the Diesel Engine Service industry. Content emphasizes beginning skills and concepts as a recommended requisite. Students study engine, fuel, air induction and exhaust, lubrication, instruments and control, safety equipment, hardware, heating, ventilation, and air conditioning systems.

For every task in Diesel Maintenance Technology 2, the following safety task must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing; eye protection; hand protection; proper lifting practices; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of fuels/chemicals/materials in accordance with federal, state, and local regulations.

The tasks included in the Diesel Maintenance Technology 2 area are entry-level technician inspection tasks designed to introduce the student to correct procedures and practices of vehicle inspection in a teaching/learning environment. They are not intended to satisfy the Annual Federal Vehicle Inspection requirement as prescribed in the Federal Motor Carrier Safety Regulations, Part 396, Appendix G to Subchapter B, Minimum Periodic Inspection Standards.

Abbreviations:

PM = Preventative Maintenance

PM Task List:	
P-1 =	49
P-2 =	7
P-3 =	0
Total	56

CTE Standards and Benchmarks	Priority Number
12.0 Diagnose and repair Engine systems.--The student will be able to:	
12.01 Check engine starting/operation (including unusual noises, vibrations, exhaust smoke, etc.); record idle and governed rpm.	P-1
12.02 Inspect vibration damper.	P-1
12.03 Inspect belts, tensioners, and pulleys; check and adjust belt tension; check belt alignment.	P-1
12.04 Check engine oil level and condition; check dipstick seal.	P-1

CTE Standards and Benchmarks	Priority Number
12.05 Inspect engine mounts for looseness and deterioration.	P-1
12.06 Check engine for oil, coolant, air, fuel and exhaust leaks (Engine Off and Running).	P-1
12.07 Check engine compartment wiring harnesses, connectors, and seals for damage and proper routing.	P-1
12.08 Check electrical wiring, routing, and hold-down clamps, including Engine Control Module/Powertrain Control Module (ECM/PCM).	
13.0 Diagnose and repair Fuel system.--The student will be able to:	
13.01 Check fuel tanks, mountings, lines, caps, and vents.	P-1
13.02 Drain water from fuel system.	P-1
13.03 Service water separator/fuel heater; replace fuel filter(s); prime and bleed fuel system.	P-1
14.0 Diagnose and repair Air induction and exhaust system.--The student will be able to:	
14.01 Check exhaust system mountings for looseness and damage.	P-1
14.02 Check engine exhaust system for leaks, proper routing, and damaged or missing components to include exhaust gas recirculation (EGR) system and after treatment devices, if equipped.	P-1
14.03 Check air induction system: piping, charge air cooler, hoses, clamps, and mountings; check for air restrictions and leaks.	P-1
14.04 Inspect turbocharger for leaks; check mountings and connections.	P-1
14.05 Check operation of engine compression/exhaust brake.	P-2
14.06 Service or replace air filter as needed; check and reset air filter restriction indicator.	P-1
14.07 Inspect and service crankcase ventilation system.	P-1
14.08 Inspect diesel exhaust fluid (DEF) system, to include tanks, lines, gauge pump, and filter (if equipped).	P-1
14.09 Inspect selective catalyst reduction (SCR) system; including diesel exhaust fluid (DEF) for proper levels, leaks, mounting and connections (if equipped).	P-2
15.0 Diagnose and repair Cooling system.--The student will be able to:	
15.01 Check operation of fan clutch.	P-1
15.02 Inspect radiator (including air flow restriction, leaks, and damage) and mountings.	P-1

CTE Standards and Benchmarks	Priority Number
15.03 Inspect fan assembly and shroud.	P-1
15.04 Pressure test cooling system and radiator cap.	P-1
15.05 Inspect coolant hoses and clamps.	P-1
15.06 Inspect coolant recovery system.	P-1
15.07 Check coolant for contamination, additive package concentration, aeration, and protection level (freeze point).	P-1
15.08 Service coolant filter (if equipped).	P-1
15.09 Inspect water pump.	P-1
16.0 Diagnose and repair Lubrication system.--The student will be able to:	
16.01 Change engine oil and filters; visually check oil for coolant or fuel contamination; inspect and clean magnetic drain plugs.	P-1
16.02 Take an engine oil sample for analysis.	P-1
17.0 Diagnose and repair Instruments and control systems.--The student will be able to:	
17.01 Inspect key condition and operation of ignition switch.	P-1
17.02 Check warning indicators.	P-1
17.03 Check instruments; record oil pressure and system voltage.	P-1
17.04 Check operation of electronic power take off (PTO) and engine idle speed controls (if applicable)	P-2
17.05 Check HVAC controls.	P-1
17.06 Check operation of all accessories.	P-1
17.07 Using electronic service tool(s) or on-board diagnostic system; retrieve engine monitoring information; check and record diagnostic codes and trip/operational data (including engine, transmission, ABS, and other systems).	P-1
17.08 Check mechanical and electronic engine speed controls (if equipped).	
18.0 Diagnose and repair Safety equipment.--The student will be able to:	
18.01 Check operation of electric/air horns and back-up warning devices.	P-1

CTE Standards and Benchmarks	Priority Number
18.02 Check condition of spare fuses, safety triangles, fire extinguisher, and all required decals.	P-1
18.03 Inspect seat belts and sleeper restraints.	P-1
18.04 Inspect wiper blades and arms.	P-1
19.0 Diagnose and repair Hardware.--The student will be able to:	
19.01 Check operation of wiper and washer.	P-1
19.02 Inspect windshield glass for cracks or discoloration; check sun visor.	P-1
19.03 Check seat condition, operation, and mounting.	P-1
19.04 Check door glass and window operation.	P-1
19.05 Inspect steps, catwalks, and grab handles (if applicable).	P-1
19.06 Inspect mirrors, mountings, brackets, and glass.	P-1
19.07 Record all observed physical damage.	P-2
19.08 Lubricate all cab and hood grease fittings.	P-2
19.09 Inspect and lubricate door and hood hinges, latches, strikers, lock cylinders, safety latches, linkages, and cables.	P-1
19.10 Inspect cab mountings, hinges, latches, linkages and ride height; service as needed.	P-1
19.11 Inspect tilt cab hydraulic pump, lines, and cylinders for leakage; inspect safety devices; service as needed.	
20.0 Diagnose and repair Heating, ventilation, and air conditioning (HVAC).--The student will be able to:	
20.01 Inspect A/C condenser and lines for condition and visible leaks; check mountings.	P-2
20.02 Inspect A/C compressor and lines for condition and visible leaks; check mountings.	P-2
20.03 Check A/C system condition and operation; check A/C monitoring system, if applicable.	P-1
20.04 Check HVAC air inlet filters and ducts; service as needed.	P-1

**Florida Department of Education
Student Performance Standards**

Course Title: Diesel Maintenance Technology 3
Course Number: 9504430
Course Credit: 1

Course Description:

The Diesel Maintenance Technology 3 course prepares students for entry into the Diesel Engine Service industry. Content emphasizes beginning skills and concepts as a recommended requisite. Students study electrical/electronic; battery and starting systems, charging systems, and lighting systems; air brakes, hydraulic brakes, drive train, suspension and steering, tires and wheels, frame and fifth wheel systems.

For every task in Diesel Maintenance Technology 3, the following safety task must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing; eye protection; hand protection; proper lifting practices; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of fuels/chemicals/materials in accordance with federal, state, and local regulations.

The tasks included in the Diesel Maintenance Technology 3 area are entry-level technician inspection tasks designed to introduce the student to correct procedures and practices of vehicle inspection in a teaching/learning environment. They are not intended to satisfy the Annual Federal Vehicle Inspection requirement as prescribed in the Federal Motor Carrier Safety Regulations, Part 396, Appendix G to Subchapter B, Minimum Periodic Inspection Standards.

Abbreviations:

PM = Preventative Maintenance

PM Task List:	
P-1 =	83
P-2 =	4
P-3 =	0
Total	87

CTE Standards and Benchmarks	Priority Number
21.0 Diagnose and repair Electrical/Electronic battery and starting systems.--The student will be able to:	
21.01 Inspect battery box(s), cover(s), and mountings.	P-1
21.02 Inspect battery hold-downs, connections, cables, and cable routing; service as needed.	P-1
21.03 Check/record battery state-of-charge (open circuit voltage) and condition.	P-1
21.04 Perform battery test (load and/or capacitance).	P-1

CTE Standards and Benchmarks	Priority Number
21.05 Inspect starter, mounting, and connections.	P-1
21.06 Engage starter; check for unusual noises, starter drag, and starting difficulty.	P-1
22.0 Diagnose and repair Electrical/Electronic charging systems.--The student will be able to:	
22.01 Inspect alternator, mountings, cable, wiring, and wiring routing; determine needed action.	P-1
22.02 Perform alternator output tests.	P-1
23.0 Diagnose and repair Electrical/Electronic lighting systems.--The student will be able to:	
23.01 Check operation of interior lights; determine needed action.	P-1
23.02 Check all exterior lights, lenses, reflectors, and conspicuity tape; check headlight alignment; determine needed action.	P-1
23.03 Inspect and test tractor-to-trailer multi-wire connector(s), cable(s), and holder(s); determine needed action.	P-1
24.0 Diagnose and repair Air brake systems.--The student will be able to:	
24.01 Check operation of parking brake.	P-1
24.02 Record air governor cut-in and cut-out setting (psi).	P-1
24.03 Check operation of air reservoir/tank drain valves.	P-1
24.04 Check air system for leaks (brakes released).	P-1
24.05 Check air system for leaks (brakes applied).	P-1
24.06 Test one-way and double-check valves.	P-1
24.07 Check low air pressure warning devices.	P-1
24.08 Check emergency (spring) brake control/modulator valve, if applicable.	P-1
24.09 Check tractor protection valve.	P-1
24.10 Test air pressure build-up time.	P-1
24.11 Inspect coupling air lines, holders, and glad-hands.	P-1

CTE Standards and Benchmarks	Priority Number
24.12 Check brake chambers and air lines for secure mounting and damage.	P-1
24.13 Check operation of air drier.	P-1
24.14 Inspect and record brake shoe/pad condition, thickness, and contamination.	P-1
24.15 Inspect and record condition of brake drums/rotors.	P-1
24.16 Check antilock brake system wiring, connectors, seals, and harnesses for damage and proper routing	P-1
24.17 Check operation and adjustment of brake automatic slack adjusters (ASA); check and record push rod stroke.	P-1
24.18 Lubricate all brake component grease fittings.	P-1
24.19 Check condition and operation of hand brake (trailer) control valve, if applicable.	P-2
24.20 Perform antilock brake system (ABS) operational system self-test.	P-1
24.21 Drain air tanks and check for contamination.	P-1
24.22 Check condition of pressure relief (safety) valves.	P-1
25.0 Diagnose and repair Hydraulic brake systems.--The student will be able to:	
25.01 Check master cylinder fluid level and condition.	P-1
25.02 Inspect brake lines, fittings, flexible hoses, and valves for leaks and damage.	P-1
25.03 Check parking brake operation; inspect parking brake application and holding devices; adjust as needed.	P-1
25.04 Check operation of hydraulic system: pedal travel, pedal effort, pedal feel.	P-1
25.05 Inspect calipers for leakage, binding and damage.	P-1
25.06 Inspect brake assist system (booster), hoses and control valves; check for leaks.	P-1
25.07 Inspect and record brake lining/pad condition, thickness, and contamination.	P-1
25.08 Inspect and record condition of brake rotors.	P-1
25.09 Check antilock brake system wiring, connectors, seals, and harnesses for damage and proper routing.	P-1

CTE Standards and Benchmarks	Priority Number
25.10 Check drum brakes for proper adjustment.	
26.0 Diagnose and repair Drive Train systems.--The student will be able to:	
26.01 Check operation of clutch, clutch brake, and gearshift.	P-1
26.02 Check clutch linkage/cable for looseness or binding, if applicable.	P-1
26.03 Check hydraulic clutch slave and master cylinders, lines, fittings, and hoses, if applicable.	P-1
26.04 Check clutch adjustment; adjust as needed.	P-1
26.05 Check transmission case, seals, filter, hoses, lines and cooler for cracks and leaks.	P-1
26.06 Inspect transmission breather.	P-1
26.07 Inspect transmission mounts.	P-1
26.08 Check transmission oil level, condition, determine proper type and service as needed.	P-1
26.09 Inspect U-joints, yokes, drive-shafts, boots/seals, center bearings, and mounting hardware for looseness, damage, and proper phasing.	P-1
26.10 Inspect axle housing(s) for cracks and leaks.	P-1
26.11 Inspect axle breather(s).	P-1
26.12 Lubricate all drivetrain grease fittings.	P-1
26.13 Check drive axle(s) oil level, condition, determine proper type, and service as needed.	P-1
26.14 Change drive axle(s) oil and filter/screen, if applicable; check and clean magnetic plugs.	P-2
26.15 Check transmission wiring, connectors, seals, and harnesses for damage and proper routing.	P-1
26.16 Change transmission oil and filter, if applicable; check and clean magnetic plugs.	P-2
26.17 Check inter-axle differential lock operation.	P-1
26.18 Check transmission range shift operation.	P-1
27.0 Diagnose and repair Suspension and steering systems.--The student will be able to:	
27.01 Check steering wheel operation for free play and binding.	P-1

CTE Standards and Benchmarks	Priority Number
27.02 Check power steering pump, mounting, and hoses for leaks, condition, and routing; check fluid level.	P-1
27.03 Change power steering fluid and filter.	P-1
27.04 Inspect steering gear for leaks and secure mounting.	P-1
27.05 Inspect steering shaft U-joints, pinch bolts, splines, pitman arm-to-steering sector shaft, tie rod ends, and linkages.	P-1
27.06 Check kingpins for wear.	P-1
27.07 Check wheel bearings for looseness and noise; adjust as necessary.	P-1
27.08 Check oil level and condition in all non-drive hubs; check for leaks.	P-1
27.09 Inspect springs, pins, hangers, shackles, spring U-bolts, and insulators.	P-1
27.10 Inspect shock absorbers for leaks and secure mounting.	P-1
27.11 Inspect air suspension springs, mounts, hoses, valves, linkage, and fittings for leaks and damage.	P-1
27.12 Check and record suspension ride height.	P-1
27.13 Lubricate all suspension and steering grease fittings.	P-1
27.14 Check axle locating components (radius, torque, and/or track rods).	P-1
28.0 Diagnose and repair Tires and wheels.--The student will be able to:	
28.01 Inspect tires for wear patterns and proper mounting.	P-1
28.02 Inspect tires for cuts, cracks, bulges, and sidewall damage.	P-1
28.03 Inspect valve caps and stems; determine needed action.	P-1
28.04 Measure and record tread depth; probe for imbedded debris.	P-1
28.05 Check and record air pressure; adjust air pressure in accordance with manufacturers' specifications.	P-1
28.06 Check wheel mounting hardware condition; determine needed action.	P-1
28.07 Inspect wheel/rims for proper application, load range and design; ensure dual rims are properly clocked to access valve stems; determine needed action.	P-1

CTE Standards and Benchmarks	Priority Number
28.08 Check tire matching (diameter and tread) on single and dual tire applications.	P-1
28.09 Re-torque lugs in accordance with manufacturer's specifications.	
29.0 Diagnose and repair Frame and fifth wheel.--The student will be able to:	
29.01 Inspect fifth wheel mounting, bolts, air lines, and locks.	P-1
29.02 Test operation of fifth wheel locking device; adjust if necessary.	P-1
29.03 Check quarter fenders, mud flaps, and brackets.	P-1
29.04 Check pintle hook assembly and mounting; if applicable.	P-2
29.05 Lubricate all fifth wheel grease fittings and plate; if applicable	P-1
29.06 Inspect frame and frame members for cracks and damage.	P-1

Additional Information

Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

Florida Standards for English Language Development (ELD)

English language learners communicate for social and instructional purposes within the school setting. ELD.K12.ELL.SI.1

English Language Development (ELD) Standards Special Notes:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate for social and instructional purposes within the school setting. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: <http://www.cpalms.org/uploads/docs/standards/eld/SI.pdf>. For additional information on the development and implementation of the ELD standards, please contact the Bureau of Student Achievement through Language Acquisition at sala@fldoe.org.

Special Notes

The occupational standards and benchmarks outlined in this secondary program correlate to the standards and benchmarks of the Diesel Maintenance Technician postsecondary program (T440400).

The safety guidelines in the student performance standards have been recommended in the ASE Program Certification Standards for Medium/Heavy Truck Technician Training Program administered by National Automotive Technicians Education Foundation (NATEF).

Career and Technical Student Organization (CTSO)

SkillsUSA is the intercurricular career and technical student organization for providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered. The activities of such organizations are defined as part of the curriculum in accordance with Rule 6A-6.065, F.A.C.

Cooperative Training – OJT

On-the-job training is appropriate but not required for this program. Whenever offered, the rules, guidelines, and requirements specified in the OJT framework apply.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's Individual Educational Plan (IEP) or 504 plan or postsecondary student's accommodations' plan to meet individual needs and ensure equal access. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

In addition to accommodations, some secondary students with disabilities (students with an IEP served in Exceptional Student Education (ESE)) will need modifications to meet their needs. Modifications change the outcomes or what the student is expected to learn, e.g., modifying the curriculum of a secondary career and technical education course. Note: postsecondary curriculum and regulated secondary programs cannot be modified.

Some secondary students with disabilities (ESE) may need additional time (i.e., longer than the regular school year), to master the student performance standards associated with a regular course or a modified course. If needed, a student may enroll in the same career and technical course more than once. Documentation should be included in the IEP that clearly indicates that it is anticipated that the student may need an additional year to complete a Career and Technical Education (CTE) course. The student should work on different competencies and new applications of competencies each year toward completion of the CTE course. After achieving the competencies identified for the year, the student earns credit for the course. It is important to ensure that credits earned by students are reported accurately. The district's information system must be designed to accept multiple credits for the same course number for eligible students with disabilities.

Additional Resources

For additional information regarding articulation agreements, Bright Futures Scholarships, Fine Arts/Practical Arts Credit and Equivalent Mathematics and Equally Rigorous Science Courses please refer to:

<http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml>