Diesel Technology

Career Cluster	Transportation, Distribution & Logistics
Course Code	20107
Prerequisite(s)	Automotive Engine Repair and Performance
Credit	1
Program of Study and Sequence	Automotive Engine Repair and Performance – **Diesel Technology** – Capstone Experience
Student Organization	SkillsUSA
Coordinating Work-Based Learning	NA
Industry Certifications	NA
Dual Credit or Dual Enrollment	Lake Area Technical Institute - C or better (class grade) for dual enrollment
Teacher Certification	Transportation, Distribution & Logistics Cluster Endorsement; Autobody Technology Pathway Endorsement; *Autobody Technology
Resources	

Course Description:

Students will develop an understanding of the Automotive Diesel service and repair pathway including Over the Road Transportation, Construction Equipment and Agricultural Equipment. The desire for students to receive industry training at the basic level and then be able to step up to the higher level of competency in this field is the ultimate goal of this course. Completion of this course will help students with post-secondary education and training and prepare them for the workforce and further technical education, qualifications and experience.

Program of Study Application

Diesel Technology is a second pathway course in the Transportation, Distribution & Logistics career cluster, Diesel pathway.

Career Cluster: Transportation, Distribution & Logistics

Course: Diesel Technology

Course Standards

DT 1 Students will adhere to health and safety standards in the work place, including systems and procedures.

Webb Level	*Sub-indicator*	*Integrated Content*
Level 1: Recall	DT 1.1 Apply skills and knowledge of health and safety practices and expectations to ensure a safe working environment for the individual and co-workers (fellow students) Examples: • Identify and describe personal safety equipment, including eye, hair and hearing protection, clothing and footwear. • Know and understand how to work safely around vehicles in the workplace. • Identify, isolate and remove potential work place hazards, that is, fix the risks. • Know and understand how to work safely with hoists and lifting equipment. • Understand how to identify and manage potential and actual fires and fire hazards in the workplace. • Know and understand evacuation procedures in the workplace, including personal and collective responsibilities. • Know and understand how to work safely using hand and shop tools and equipment. • Know and understand how to work safely with hazardous materials, including disposal and storage.	Occupational Safety Health Administration (OSHA) Environmental Protection Agency (EPA)

Notes

Career Cluster: Transportation, Distribution & Logistics

Course: Diesel Technology

DT 2 Students will learn and understand basic electricity and electronics principles.

Webb Level	*Sub-indicator*	*Integrated Content*
Level 2: Skill/Concept	DT 2.1 Understand and implement basic electricity and electronic principles that apply to diesel powered equipment, including starting, charging, lighting and accessories Examples: • Understand basic electricity theory. • Explain the basic fundamentals of electricity. • Calculate values of resistance, current and voltage using Ohms Law. • Explore series circuits. • Investigate parallel circuits. • Examine series-parallel circuits. • Explore common electrical components. • Investigate the starter, its related components and circuits. • Explore the principles and components relating to the charging circuit.	
Level 2: Skill/Concept	DT 2.2 Perform basic electrical repair techniques Examples: • Make solder connections. • Demonstrate the proper use of a digital multi-meter. • Diagnose the condition of starter circuits, performing the necessary steps using a load tester and multi-meter. • Analyze the function and condition of a lead-acid battery.	

Notes

Career Cluster: Transportation, Distribution & Logistics

Course: Diesel Technology

DT 3 Students will demonstrate their understanding of basic aspects of diesel engines.

Webb Level	*Sub-indicator*	*Integrated Content*
Level 2: Skill/Concept	DT 3.1 Understand the technical and nontechnical aspects of diesel engines Examples: • Know and understand different types of hand, shop and measurement tools. • Distinguish between different types of fasteners. • Understand the role of the technician in the diesel industry. • Identify, define and demonstrate basic diesel engine principles. • Identify and define power formulas in diesel industry. • Disassemble a diesel engine. • Assemble a diesel engine per engine manual. • Demonstrate the ability to rebuild a cylinder head. • Start a diesel engine.	

Notes This information will give them the basic understanding needed to continue in the Diesel Mechanic program.

Career Cluster: Transportation, Distribution & Logistics

Course: Diesel Technology

DT 4 Students will apply principles of basic hydraulic systems.

Webb Level	*Sub-indicator*	*Integrated Content*
Level 2: Skill/Concept	DT 4.1 Research and inspect basic mobile hydraulics Examples: • Report how basic hydraulic systems have evolved and developed. • Calculate the force of a given cylinder under given pressures. • Inspect a hydraulic jack. • Evaluate a gear pump for possible repairs. • Evaluate a vane pump for possible repairs. • Examine a piston pump for possible repairs. • Examine a hydraulic cylinder. • Flow rate a pump on the test stand (Megatech). • Analyze the principles of circuits on the test stand (Amatrol). • Explore the fundamentals of hydraulic ISO symbols. • Explore the fundamentals of a small backhoe.	

Notes: Students will be introduced to the principles, components, fluid systems and circuits of hydraulic systems.

DT 5. Students will demonstrate how basic braking systems operate.

Webb Level	*Sub-indicator*	*Integrated Content*
Level 2: Skill/Concept	DT 5.1 Identify and understand basic vehicle braking systems, including hydraulic and air brake systems Examples: • Explore the principles of brakes. • Demonstrate the hydraulic drum brake rebuild procedure. • Demonstrate the hydraulic disc brake rebuild procedure. • Understand different types of power brakes. • Explain the operation of brake valves. • Examine the fundamentals of the air system.	

Notes

Career Cluster: Transportation, Distribution & Logistics

Course: Diesel Technology

DT 6. Students will apply principles of fuel systems on diesel engines.

Webb Level	*Sub-indicator*	*Integrated Content*
Level 2: Skill/Concept	DT 6.1 Differentiate between, and identify components of, fuel delivery systems • Identify principles, components, systems and circuits for fuel delivery systems • Analyze fuel injection components and principle • Demonstrate how to time an in-line fuel pump • Demonstrate how to time a rotary fuel pump • Analyze non-starting situations related to fuel and engine phasing	

Notes