



8704
APPLIED HEAVY DUTY
EQUIPMENT TECHNOLOGY
(12D)

40S/40E/40M

A Heavy Duty Equipment Technician Course

8704: APPLIED HEAVY DUTY EQUIPMENT TECHNOLOGY (12D) 40S/40E/40M

Course Description

A student wanting to expand skills in the heavy duty equipment industry must be able to apply diagnostic strategies to a variety of vehicle systems and components. The students will demonstrate the ability to diagnose and correct customer concerns and to complete vehicle repairs to accepted industry standards with a minimum of supervision or direction.

Cross-curricular learning outcomes, or essential skills from subject areas including, but not limited to, information and communication technologies, science, English language arts, and mathematics, are to be integrated into the authentic learning activities of the course.

The curriculum is not sequential. For instructional purposes, the sequence of learning outcomes can vary based on the learning activities within the course.

Goal 1: Describe and apply appropriate **safety** practices for heavy duty equipment technicians.

GLO 1.1: Describe and apply appropriate **safety** practices for heavy duty equipment technicians.

- SLO 12D.1.1.1 Describe and apply appropriate health and safety practices for heavy duty equipment technicians.
- SLO 12D.1.1.2 Describe safety practices, Workplace Hazardous Material Information System (WHMIS), and preventative maintenance. (A1.01)
- SLO 12D.1.1.3 Describe cab, canopy, and ROP/FLOP components, and their operation, inspection, repair, and replacement procedures. (A1.02)
- SLO 12D.1.1.4 Describe the servicing of fire suppression systems. (A1.03)
- SLO 12D.1.1.5 Describe forklift operation and safety. (A1.04)
- SLO 12D.1.1.6 Describe restraint systems and their components, and inspection procedure, manufacturers' tests, and repair/replacement of them. (A1.05)
- SLO 12D.1.1.7 Demonstrate safety procedures for hydraulic hydrostatic system servicing.
- SLO 12D.1.1.8 Demonstrate safety procedures for HVAC system servicing.

SLO 12D.1.1.9	Describe the importance of using personal protective equipment (PPE). (TSA 16)
SLO 12D.1.1.10	Describe safety procedures when handling wheels, tires, and hubs. (F1.04)
SLO 12D.1.1.11	Maintain a safe and organized work environment.
SLO 12D.1.1.12	Document an understanding of the safe use of heavy duty tools and equipment.
SLO 12D.1.1.13	Demonstrate initiative in dealing with health and safety hazards.

GLO 1.2: Demonstrate knowledge of the *Trade Safety Awareness Manual*.

No applicable SLOs.

Goal 2: Identify, select, use, and maintain **tools, equipment, materials, and consumables**.

GLO 2.1: Identify, select, use, and maintain **tools, equipment, materials, and consumables**.

SLO 12D.2.1.1	Identify, select, use, and maintain tools, equipment, materials, and consumables used in heavy duty equipment technology.
SLO 12D.2.1.2	Select the appropriate tools and equipment to correct diagnosed faults with a minimum of supervision and direction.

Goal 3: Describe and demonstrate equipment **access/transport** procedures.

GLO 3.1: Describe and demonstrate equipment **access/transport** procedures.

SLO 12D.3.1.1	Describe lifting equipment. (A2.01)
SLO 12D.3.1.2	Describe safety practices that apply to lifting and to the maintenance of lifting equipment. (A2.02)
SLO 12D.3.1.3	Describe towing, transporting, and coasting precautions. (A2.03)
SLO 12D.3.1.4	Describe manual lifting procedures using correct body mechanics. (A2.04)
SLO 12D.3.1.5	Describe lifting equipment construction, grading, sizing, and limits. (A2.05)
SLO 12D.3.1.6	Select the correct equipment for rigging typical loads. (A2.06)

- SLO 12D.3.1.7 Describe wire rope applications. (A2.07)
- SLO 12D.3.1.8 Describe winch design, and operational and troubleshooting procedures. (A2.08)

Goal 4: Diagnose and repair problems with heavy duty equipment systems.

GLO 4.1: Diagnose problems with heavy duty equipment systems.

- SLO 12D.4.1.1 Inspect vehicle to determine repair or maintenance required.
- SLO 12D.4.1.2 Select the appropriate diagnostic strategies to isolate the cause of customer concern.
- SLO 12D.4.1.3 Diagnose faults with a minimum of supervision and direction.
- SLO 12D.4.1.4 Interpret diagnostic test results.

GLO 4.2: Describe and repair problems with heavy duty equipment.

- SLO 12D.4.2.1 Select appropriate repair procedures to correct faults.
- SLO 12D.4.2.2 Apply service manual procedures to repairs.
- SLO 12D.4.2.3 Perform repairs with a minimum of supervision and direction.
- SLO 12D.4.2.4 Perform a comprehensive inspection to determine the vehicle's condition (e.g., seasonal inspections, potential purchase).
- SLO 12D.4.2.5 Determine additional maintenance or repairs required.

GLO 4.3: Perform maintenance on heavy duty equipment systems.

- SLO 12D.4.3.1 Describe and perform maintenance on heavy duty equipment with a minimum of supervision.

Goal 5: Describe and demonstrate the transferable cross-curricular knowledge and skills pertaining to heavy duty equipment technology.

GLO 5.1: Read, interpret, and communicate information relevant to heavy duty equipment technology.

- SLO 12D.5.1.1 Read, interpret, and communicate information relevant to heavy duty equipment technicians' practices.
- SLO 12D.5.1.2 Select and interpret the service information documents relevant to the issue.
- SLO 12D.5.1.3 Correctly interpret service information (e.g., technical bulletins).

GLO 5.2: Apply knowledge and skills from **mathematics**.

SLO 12D.5.2.1 Apply knowledge and skills from mathematics to heavy duty equipment technicians' practices as they apply to heavy duty equipment technology.

GLO 5.3: Apply knowledge and skills from **the sciences**.

SLO 12D.5.3.1 Apply knowledge and skills from the sciences to heavy duty equipment technicians' practices as they apply to heavy duty equipment technology.

GLO 5.4: Apply knowledge and skills from **information and communication technology**.

No applicable SLOs.

Goal 6: Demonstrate an awareness of **sustainability** as it pertains to heavy duty equipment technology.

GLO 6.1: Describe the heavy duty equipment industry's **sustainability practices** and its impact on the environment.

No applicable SLOs.

GLO 6.2: Describe the impact of the heavy duty equipment industry on **human health and well-being**.

No applicable SLOs.

GLO 6.3: Describe **sustainable business practices** within the heavy duty equipment service and repair industry.

No applicable SLOs.

Goal 7: Demonstrate an awareness of the **ethical and legal standards** as they pertain to the heavy duty equipment service and repair industry.

GLO 7.1: Demonstrate an awareness of the **ethical and legal expectations** of heavy duty equipment technicians.

SLO 12D.7.1.1 Demonstrate an awareness of the licences required for driving various types of vehicles.

Goal 8: Demonstrate **employability skills** related to the heavy duty equipment service and repair industry.

GLO 8.1: Demonstrate fundamental **employability skills**.

- SLO 12D.8.1.1 Demonstrate problem-solving skills.
 - SLO 12D.8.1.2 Demonstrate critical thinking skills.
 - SLO 12D.8.1.3 Demonstrate regular attendance and punctuality.
 - SLO 12D.8.1.4 Demonstrate accountability by taking responsibility for own actions.
 - SLO 12D.8.1.5 Demonstrate adaptability, initiative, and effort.
 - SLO 12D.8.1.6 Demonstrate the ability to accept and follow direction and feedback.
 - SLO 12D.8.1.7 Demonstrate teamwork skills.
 - SLO 12D.8.1.8 Demonstrate the ability to stay on task and to make effective use of time in class and shop environments.
 - SLO 12D.8.1.9 Demonstrate the ability to communicate respectfully and effectively with coworkers and customers.
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GLO 8.2: Demonstrate an understanding of the **business operation** of a heavy duty equipment service and repair facility.

- SLO 12D.8.2.1 Verify and document customer concern.
 - SLO 12D.8.2.2 Demonstrate an understanding of work orders.
 - SLO 12D.8.2.3 Read, interpret, and follow work orders.
 - SLO 12D.8.2.4 Communicate with customers regarding diagnosis, repair, and maintenance procedures.
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Goal 9: Understand **career opportunities** in heavy duty equipment technology and associated professions.

GLO 9.1: Demonstrate an understanding of **career opportunities** in heavy duty equipment technology and associated professions.

- SLO 12D.9.1.1 Describe training, career opportunities, and industry groups related to heavy duty equipment technology and associated professions.
- SLO 12D.9.1.2 Demonstrate an understanding of the working conditions and dynamics of the automotive service and repair industry.

Goal 10: Demonstrate an awareness of the **evolution** of heavy duty equipment technology, including its **technological progression and emerging trends**.

GLO 10.1: Describe the **evolution** of heavy duty equipment service and repair, including its **technological progression and emerging trends**.

No applicable SLOs.
