Maryland CTE Programs of Study

Medium/Heavy Truck Basics (2025)

GENERAL REQUIREMENTS. This course is recommended for students in Grades 9-12. 1

1 GENERAL REQUIREMENTS. This course is recommended for students in Grades 9-12. 1

INTRODUCTION 2

A Career and Technical Education (CTE) instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions. 2.A

B The Supply Chain & Transportation Career Cluster encompasses the transfer, coordination, and management of goods from production to consumption, ensuring efficient movement across various modes of transportation including air, ground, and water, as well as maintenance of the respective transport modes. This Cluster integrates logistics and distribution networks to facilitate the seamless flow of materials and products, playing a crucial role in global commerce, 2.B

C The Medium/Heavy Truck Technician Program of Study is a comprehensive four-course sequence that prepares students for careers in diesel technology and heavy equipment maintenance. Throughout the program, students perform essential tasks such as testing electrical circuits, servicing brake systems, conducting engine diagnostics, and aligning steering components. The curriculum aligns with ASE Education Foundation standards, preparing students for ASE Entry-Level certification in Medium/Heavy Truck as well as other industry credentials such as EPA Section 609 MVAC certification. Graduates are prepared for entry-level positions as diesel technicians, fleet maintenance technicians, or heavy equipment service technicians. 2.C

D Medium/Heavy Truck Basics introduces students to the fundamental concepts, systems, and safety protocols of medium/heavy trucks and equipment. Students will explore essential shop practices, employability skills, and basic service procedures for major vehicle systems, including diesel engines, electrical/electronic systems, brakes, and suspension/steering. Emphasis is placed on personal safety, tool use, environmental regulations, and career awareness. The Medium/Heavy Truck provides foundational knowledge that

Skip to main content

supports ASE Entry-Level certification preparation in M/H Truck Electrical/Electronic Systems and Inspection, Maintenance & Minor Repair. 2.D

E **Students will participate in at least two Career-Connected Education and Work-Based Learning experiences in this course, which might include informational interviews or job shadowing relevant to the program of study.** 2.E

F **Students are encouraged to participate in extended learning experiences through aligned Career and Technical Student Organizations (CTSOs). CTSOs are a cocurricular requirement in the Carl D. Perkins Act, and alignment to CTSO activities is an expectation for CTE programs in the state of Maryland.** 2.F

KNOWLEDGE AND SKILLS 3

A **The student demonstrates the necessary skills for career development, maintenance of employability, and successful completion of course outcomes. The student is expected to:** 3.A

1. Identify and demonstrate positive work behaviors that enhance employability and job advancement, such as regular attendance, promptness, proper attire, maintenance of a clean and safe work environment, and pride in work. 3.A.1
2. Demonstrate positive personal qualities such as flexibility, open-mindedness, initiative, active listening, and a willingness to learn. 3.A.2
3. Employ effective reading, writing, and technical documentation skills. 3.A.3
4. Solve problems using critical thinking techniques and structured troubleshooting methodologies. 3.A.4
5. Demonstrate leadership skills and collaborate effectively as a team member. 3.A.5
6. Implement safety procedures, including proper handling of hardware and following OSHA guidelines. 3.A.6
7. Exhibit an understanding of legal and ethical responsibilities in the Medium/Heavy Truck and Equipment field, following applicable laws and best practices for safety. 3.A.7
8. Demonstrate time-management skills and the ability to prioritize tasks in a technical setting. 3.A.8

B **The student demonstrates appropriate personal and communication skills. The student is expected to:** 3.B

1. Demonstrate respectful interaction with peers, instructors, and customers. 3.B.1
2. Apply active listening techniques to gather information accurately. 3.B.2
3. Prepare written documentation that is clear, concise, and professional. 3.B.3
4. Deliver verbal explanations of technical work to both technical and non-technical audiences. 3.B.4

C **The student demonstrates academic skills related to the requirements of naintaining and repairing medium/heavy trucks. The student is expected to:** 3.C

1. Apply mathematical calculations to measurement, torque, and basic circuit analysis. 3.C.1

Skip to main content

2 Interpret tables, charts, and technical diagrams. 3.C.2

3 Read and follow technical service bulletins and manufacturer procedures. 3.C.3

D The student understands the technical knowledge and skills of automotive systems related to medium/heavy trucks. The student is expected to: 3.D

1 Identify the major systems of a medium/heavy truck and describe their functions. 3.D.1

2 Explain the interaction between powertrain, brake, steering, and suspension systems. 3.D.2

3 Describe the role of preventive maintenance in vehicle reliability and safety. 3.D.3

E The student applies the technical knowledge and skills of inspection, maintenance, and minor repair (ASE IMMR). The student is expected to: 3.E

1 Locate and interpret manufacturer preventive maintenance schedules. (ASE IMMR A1) 3.E.1

2 Perform visual inspections for wear, leaks, and damage on all major systems. (ASE IMMR A2) 3.E.2

3 Check and record fluid levels and conditions (engine oil, coolant, DEF, fuel). (ASE T2 D1, IMMR A2) 3.E.3

4 Inspect tires for wear, tread depth, and inflation pressure. (ASE IMMR C1–C3) 3.E.4

5 Inspect and clean battery terminals; secure battery mounting. (ASE T6 B3, B8) 3.E.5

6 Perform safe jump-starting procedures. (ASE T6 B5) 3.E.6

F The student applies the technical knowledge and skills of basic electrical/electronic systems. The student is expected to: 3.F

1 Identify series and parallel circuits. (ASE T6 A2) 3.F.1

2 Use a digital multimeter (DMM) to measure voltage, resistance, and continuity. (ASE T6 A3) 3.F.2

3 Inspect basic lighting system components; replace bulbs and fuses. (ASE T6 E1–E4) 3.F.3

G The student applies the technical knowledge and skills of safety and environmental practices. The student is expected to: 3.G

1 Follow OSHA regulations for shop operations. (General Safety) 3.G.1

2 Identify hazards and demonstrate mitigation strategies. (General Safety) 3.G.2

3 Handle and dispose of hazardous materials per EPA/state rules. (General Safety) 3.G.3

H The student applies the technical knowledge and skills of tools, equipment, and technology. The student is expected to: 3.H

1 Identify hand, power, and shop tools and their uses. (ASE IMMR A6) 3.H.1

Skip to main content

2 Demonstrate safe lifting and support of vehicles. (ASE IMMR A6) 3.H.2

3 Maintain tools and shop equipment in serviceable condition. (ASE IMMR A6) 3.H.3