Maryland CTE Programs of Study

Medium/Heavy Truck II (2025)

GENERAL REQUIREMENTS. This course is recommended for students in Grades 11-12. 1

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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, economic development, and community health. 2.B

C The Medium/Heavy Truck and Equipment 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 In Medium/Heavy Truck II, students advance to diagnosis and repair of diesel engines and suspension/steering systems following ASE M/H Truck Test Specifications (Diesel Engines, Suspension & Steering). Instruction covers engine mechanical systems, lubrication, cooling, air induction, exhaust, fuel delivery, and emission control. Students also service steering gears, linkages, power steering systems, and suspension components. Prepares students for ASE Entry-Level Diesel Engines and Suspension/Steering certifications. 2.D

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

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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 diesel engine general diagnosis (ASE T2-A). The student is expected to: 3.E

1 Diagnose start/no-start, rough idle, low power, and shutdown conditions. (ASE T2 A7–A8) 3.E.1

2 Identify engine component configurations and types. (ASE T2 A6) 3.E.2

F The student applies the technical knowledge and skills of cylinder head and valve train service (ASE T2-B). The student is expected to: 3.F

1 Inspect cylinder heads for cracks, damage, and warpage. (ASE T2 B2) 3.F.1

2 Adjust valve clearances and injector settings. (ASE T2 B6) 3.F.2

G The student applies the technical knowledge and skills of engine block service (ASE T2-C). The student is expected to: 3.G

1 Inspect crankshaft, pistons, liners, and bearings. (ASE T2 C12–C17) 3.G.1

2 Check clearances and reinstall components to spec. (ASE T2 C13) 3.G.2

H The student applies the technical knowledge and skills of lubrication and cooling systems (ASE T2-D/E). The student is expected to: 3.H

1 Test oil pressure; service oil pump and filters. (ASE T2 D1–D7) 3.H.1

2 Inspect coolant type, level, and condition; pressure test system. (ASE T2 E1–E7) 3.H.2

I The student applies the technical knowledge and skills of air induction, exhaust, and engine brakes (ASE T2-F). The student is expected to: 3.I

1 Inspect turbocharger operation and piping systems. (ASE T2 F1–F2) 3.I.1

2 Diagnose and service EGR systems. (ASE T2 F6) 3.I.2

J The student applies the technical knowledge and skills of fuel systems (ASE T2-G). The student is expected to: 3.J

1 Inspect fuel tanks, lines, and filters. (ASE T2 G2–G4) 3.J.1

2 Prime and bleed the system. (ASE T2 G4) 3.J.2

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The student applies the technical knowledge and skills of suspension and steering (ASE T5). The student is expected to: 3.K

1. Inspect and service suspension components: springs, bushings, airbags, torque arms. (ASE T5 A3) 3.K.1
2. Diagnose steering gear and linkage issues. (ASE T5 B1) 3.K.2
3. Check and adjust wheel alignment. (ASE T5 C) 3.K.3
4. Diagnose and service electronic steering and suspension control systems, including sensors, actuators, and control modules. (ASE T5 C2) 3.K.4