

**PROGRAM CONCENTRATION: Architecture, Construction,  
Communications & Transportation**  
**CAREER PATHWAY: Transportation Logistical Operations**  
**COURSE TITLE: Preventative Maintenance Inspection**

Preventative Maintenance Inspection is a course in the Transportation Logistical Operations Pathway. The course will help students build a strong scientific knowledge base and develop skills related to preventative maintenance in the diesel logistics sector. Mastery of these standards through project-based learning and leadership development activities of the Career and Technical Student Organizations will help prepare students with a competitive edge for the diesel logistics marketplace.

Note: For a more comprehensive and authoritative report of national academic related skills please refer to the National Automotive Technicians Education Foundation's document "APPLIED ACADEMIC & WORKPLACE SKILLS FOR AUTOMOBILE TECHNICIANS" available at [www.natef.org](http://www.natef.org)

**ACT-PMI-1 Demonstrate knowledge of engine maintenance inspections.**

**Academic Standards:**

*ELA11LSV2 The student formulates reasoned judgments about written and oral communication in various media genres. The student delivers focused, coherent, and polished presentations that convey a clear and distinct perspective, demonstrate solid reasoning, and combine traditional rhetorical strategies of narration, exposition, persuasion, and description.*

*SPS8. Students will determine relationships among force, mass, and motion.*

*MM3P5. Students will represent mathematics in multiple ways.*

**National Academic Standards (NATEF):**

*LA023 The technician will visually skim or scan the manufacturer's service manuals or databases to identify information that is related to any unfamiliar system under review, then study the applicable information with the intensity necessary for the situation.*

*SC282 The technician can explain the differences between heat and temperature and demonstrate an understanding of how to measure each.*

*MA171 The technician can determine the degree of conformance to the manufacturer's specifications for length, volume, and other appropriate measurements using the metric system.*

**ACT-PMI-2 Demonstrate knowledge of hydraulic system maintenance inspections.**

**Academic Standards:**

*ELA11W3 The student uses research and technology to support writing.*

*SPS8. Students will determine relationships among force, mass, and motion.*

*MM3P4. Students will make connections among mathematical ideas and to other disciplines.*

***National Academic Standards (NATEF):***

*LA286 The technician uses the service manual, in both database and hard copy formats, to identify the manufacturer's specifications for system operation, component specifications, and potential malfunctions.*

*SC510 The technician can explain the dynamic control properties of a hydraulic system in terms of its impact on selected fluid driven systems in the vehicle.*

*MA161 The technician can determine the degree of conformance to the manufacturer's specifications for length, volume and any other appropriate measurements in the English system.*

**ACT-PMI-3 Demonstrate knowledge of electrical system maintenance inspections.**

***Academic Standards:***

*ELA11W3 The student uses research and technology to support writing.*

*SPS5. Students will compare and contrast the phases of matter as they relate to atomic and molecular motion.*

***National Academic Standards (NATEF):***

*LA035 The technician attends to all written and oral directions that relate to the task or system of the truck under study.*

*SC338 The technician can explain the need for a specific gravity test of battery electrolyte to determine charge.*

*MA228 The technician can analyze and solve problems requiring the use of fractions, decimals, ratios, or percentages by a direct or indirect variation of the numerical elements of the problem.*

**ACT-PMI-4 Demonstrate knowledge of interior system maintenance inspections.**

***Academic Standards:***

*ELA11W3 The student uses research and technology to support writing.*

*SPS10. Students will investigate the properties of electricity and magnetism.*

***National Academic Standards (NATEF):***

*LA035 The technician attends to all written and oral directions that relate to the task or system of the truck under study.*

*SC280 The technician can explain the role of insulation in preventing unwanted heat transfer and in the deadening of sound.*

*MA228 The technician can analyze and solve problems requiring the use of fractions, decimals, ratios, or percentages by a direct or indirect variation of the numerical elements of the problem.*

### **ACT-PMI-5 Demonstrate knowledge of exterior system maintenance inspections.**

***Academic Standards:***

*SCSh4. Students will use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.*

*MM4A2. Students will use the circle to define the trigonometric functions.*

*ELA11LSVI The student participates in student-to-teacher, student-to-student, and group verbal interactions.*

***National Academic Standards (NATEF):***

*LA278 The technician uses text resources such as glossaries of terms, service manual indexes, database menus, and tables of contents to gather data for diagnosis and repair.*

*SC35 The technician can demonstrate an understanding of circular motion in a truck as it relates to the rotational components in the driveline.*

*MA180 The technician can use angle measurement equipment and techniques to determine any vehicle angle measurement variance from the manufacturer's specifications.*

### **ACT-PMI-6 Demonstrate knowledge of chassis system maintenance inspections.**

***Academic Standards:***

*SCSh4. Students will use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.*

*MM4A2. Students will use the circle to define the trigonometric functions.*

*ELA11LSVI The student participates in student-to-teacher, student-to-student, and group verbal interactions.*

***National Academic Standards (NATEF):***

*LA283 The technician uses computerized and other databases to obtain system information.*

*SC516 The technician can explain how rotational motion can be changed to linear motion and why balance is important in these rotating systems.*

*MA153 The technician can visually formulate an angle, (e.g. engine, suspension system, cab, or chassis component alignment) and verify its conformance to the manufacturer's specified angle.*

## **ACT-PMI-7 Demonstrate knowledge of HVAC system maintenance inspections.**

### ***Academic Standards:***

*ELA11W3 The student uses research and technology to support writing.*

*SPS5. Students will compare and contrast the phases of matter as they relate to atomic and molecular motion.*

### ***National Academic Standards (NATEF):***

*LA285 The technician can comprehend and apply information in the operator's manuals to operate and maintain truck tools and equipment.*

*SC282 The technician can explain the differences between heat and temperature and demonstrate an understanding of how to measure each.*

*MA174 The technician can interpret charts, tables, or graphs to determine the manufacturer's specifications for a given system.*

## **ACT-PMI-8 Demonstrate knowledge of alternative fuels maintenance inspections.**

### ***Academic Standards:***

*ELA11W3 The student uses research and technology to support writing.*

*SCSh9. Students will enhance reading in all curriculum areas.*

### ***National Academic Standards (NATEF):***

*LA286 The technician uses the service manual, in both database and hard copy formats, to identify the manufacturer's specifications for system operation, component specifications, and potential malfunctions.*

*SC194 The technician can demonstrate an understanding of the role of the generator in maintaining battery and system voltage.*

## **CTAE Foundation Skills**

The Foundation Skills for Career, Technical and Agricultural Education (CTAE) are critical competencies that students pursuing any career pathway should exhibit to be successful. As core standards for all career pathways in all program concentrations, these skills link career, technical and agricultural education to the state's academic performance standards.

The CTAE Foundation Skills are aligned to the foundation of the U. S. Department of Education's 16 Career Clusters. Endorsed by the National Career Technical Education Foundation (NCTEF) and the National Association of State Directors of Career Technical Education Consortium (NASDCTEc), the foundation skills were developed from an analysis of all pathways in the sixteen occupational areas. These standards were identified and validated by a national advisory group of employers, secondary and postsecondary educators, labor associations, and other stakeholders. The Knowledge and Skills provide learners a broad foundation for managing lifelong learning and career transitions in a rapidly changing economy.

**CTAE-FS-1 Technical Skills:** Learners achieve technical content skills necessary to pursue the full range of careers for all pathways in the program concentration.

**CTAE-FS-2 Academic Foundations:** Learners achieve state academic standards at or above grade level.

**CTAE-FS-3 Communications:** Learners use various communication skills in expressing and interpreting information.

**CTAE-FS-4 Problem Solving and Critical Thinking:** Learners define and solve problems, and use problem-solving and improvement methods and tools.

**CTAE-FS-5 Information Technology Applications:** Learners use multiple information technology devices to access, organize, process, transmit, and communicate information.

**CTAE-FS-6 Systems:** Learners understand a variety of organizational structures and functions.

**CTAE-FS-7 Safety, Health and Environment:** Learners employ safety, health and environmental management systems in corporations and comprehend their importance to organizational performance and regulatory compliance.

**CTAE-FS-8 Leadership and Teamwork:** Learners apply leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.

**CTAE-FS-9 Ethics and Legal Responsibilities:** Learners commit to work ethics, behavior, and legal responsibilities in the workplace.

**CTAE-FS-10 Career Development:** Learners plan and manage academic-career plans and employment relations.

**CTAE-FS-11 Entrepreneurship:** Learners demonstrate understanding of concepts, processes, and behaviors associated with successful entrepreneurial performance.