

Course: *Automotive Diagnostics*
Unit #: *2 - Preservice Inspections*

Year of Implementation: 2024-2025

Curriculum Team Members *Kevin Dybalski, KDybalski@lrhsd.org; Rebecca Ellis REllis@lrhsd.org*

Stage One - Desired Results

Link(s) to New Jersey Student Learning Standards for this course:

{provide all applicable links to standards here}

<https://www.state.nj.us/education/cccs/2020/>

- **Unit Standards:** *(keep each of the following headings in place)*
 - **Content Standards**
 - 9.3.12.TD-MTN.1 Develop preventative maintenance plans and systems to keep facility and mobile equipment inventory in operation.
 - 9.3.12.TD-MTN.2 Design ways to improve facility and equipment system performance.
 - **21st Century Life & Career Standards**
 - 9.3.ST.2 Use technology to acquire, manipulate, analyze and report data.
 - 9.3.ST.6 Demonstrate technical skills needed in a chosen STEM field.
 - 9.3.ST-ET.1 Use STEM concepts and processes to solve problems involving design and/or production.
 - 9.3.ST-ET.4 Apply the elements of the design process.
 - **English Companion Standards**
 - RST.9-10.5. Analyze the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).
 - RST.11-12.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics
 - **Interdisciplinary Content Standards**
 - N-Q.A.3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

- HS-ETS1-3 Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.
- **NJ Statutes:** NJ State law mandates the inclusion of the following topics in lesson design and instruction as aligned to elementary and secondary curriculum.

Amistad Law: N.J.S.A. 18A 52:16A-88 Every board of education shall incorporate the information regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of elementary and secondary school students.

Holocaust Law: N.J.S.A. 18A:35-28 Every board of education shall include instruction on the Holocaust and genocides in an appropriate place in the curriculum of all elementary and secondary school pupils. The instruction shall further emphasize the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

LGBT and Disabilities Law: N.J.S.A. 18A:35-4.35 A board of education shall include instruction on the political, economic, and social contributions of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum of middle school and high school students as part of the district's implementation of the New Jersey Student Learning Standards (N.J.S.A. 18A:35-4.36) A board of education shall have policies and procedures in place pertaining to the selection of instructional materials to implement the requirements of N.J.S.A. 18A:35-4.35.

Diversity and Inclusion (N.J.S.A. 18A:35-4.36a) A board of education shall incorporate instruction on diversity and inclusion in an appropriate place in the curriculum of students in grades kindergarten through 12 as part of the district's implementation of the New Jersey Student Learning Standards.

Asian American and Pacific Islanders (AAPI) P.L.2021, c.410 Ensures that the contributions, history, and heritage of Asian Americans and Pacific Islanders (AAPI) are included in the New Jersey Student Learning Standards (NJSLs) for Social Studies in kindergarten through Grade 12 (P.L.2021, c.416)

For additional information, see

NJ Amistad Curriculum: <https://www.nj.gov/education/amistad/about/>

Diversity and Inclusion: <https://www.nj.gov/education/standards/dei/index.shtml>

- (Sample Activities/ Lessons): <https://www.nj.gov/education/standards/dei/samples/index.shtml>

Asian American and Pacific Islanders:

- [Asian American and Pacific Islander Heritage and History in the U.S.](#)

A Teacher's Guide from EDSITEment offering a collection of lessons and resources for K-12 social studies, literature and arts classrooms that center around the experiences, achievements and perspectives of Asian Americans and Pacific Islanders across U.S. history.

Transfer Goal: Students will be able to independently use their learning to *analyze and evaluate a vehicle's current condition to efficiently and accurately diagnose faulty parts and failing systems.*

As aligned with LRHSD Long Term Learning Goal(s): <https://www.lrhdsd.org/Page/6163>

1. understand the impact of technology in addressing real-world problems, enhancing life, and extending human capabilities to meet the challenges of 21st century society
2. evaluate careers using critical thinking and problem-solving skills to respond to changing societal and economic conditions
3. communicate and collaborate using appropriate technical terms to describe, analyze, interpret, and judge their work and the work of others
4. acquire, integrate, and apply design processes and essential technical skills to solve problems, create products, and improve the quality of life for our local and global community

Enduring Understandings

Students will understand that. . .

Essential Questions

EU 1

- effective communication and knowledge of vehicle's systems allow technicians to solve problems more efficiently.

EU 2

- vehicle diagnostics allow the maintenance of automotive systems to optimize vehicle operations and minimize premature wear.

- *How can a pre-inspection report make a technician more accurate and efficient?*
- *How does a car get from A to B?*

Knowledge

Students will know . . .

EU 1

- the importance of communication with the owner of a vehicle. (HS-ETS1-3)
- valid resources to use for investigation on vehicles. (9.3.ST.2)

EU 2

- the fundamentals of various systems of an automobile. (9.3.12.TD-MTN.2)
- how various systems are interrelated and can affect each other. (HS-ETS1-3)

Skills

Students will be able to . . .

EU 1

- communicate the results of a pre-inspection report (9.3.ST.2)
- use prodemand software to create an estimate. (9.3.ST.2)
- interpret results of diagnostic equipment (N-Q.A.3.)

EU 2

- diagnose common vehicle system malfunctions. (9.3.ST-ET.4)
- explain service procedures for various systems. (9.3.ST.2)
- perform vehicle inspections using various diagnostic equipment. (9.3.ST-ET.4)

Stage Two - Assessment	
Stage Three - Instruction	
<p><u>Learning Plan:</u> Suggested Learning Activities to Include Differentiated Instruction and Interdisciplinary Connections: Each learning activity listed must be accompanied by a learning goal of A= Acquiring basic knowledge and skills, M= Making meaning and/or a T= Transfer. {place A, M and/or T along with the applicable EU number in parentheses after each statement} All knowledge and skills must be addressed in this section with a corresponding lesson/activity which teaches each concept. The following color codes are used to notate activities that correspond with interdisciplinary connections and 21st Century Life & Career Connections (which involves Technology Literacy): Red = Interdisciplinary Connection; Purple = 21st Century Life & Career Connection</p> <ul style="list-style-type: none"> ● Teacher led demonstration on performing pre-inspection reports (A, EU1, EU2) ● Teacher led demonstration on performing a customer interview (A, EU1) ● Pretest on various components and systems (A, EU2) ● Student presentations on various systems in the automobile (M, EU2) <ul style="list-style-type: none"> ○ Each group gets one system and reviews it with the class ● Partner work on effective communication (M, EU1) ● Student demonstration on performing pre-inspection reports (T, EU1, EU2) ● Student demonstration on performing a customer interview (T, EU1) ● Student use of ProDemand software to diagnose vehicles. (T, EU2) ● Student use of ProDemand software to create estimates (M, T, EU2) 	

Pacing Guide

{This chart will be identical in all of the units for this course.}

Unit #	Title of Unit	Approximate # of teaching days
1	Safety	12
2	Pre-Service Inspection	12
3	Diagnostics and Repair	43
4		

Instructional Materials

Modern Automotive Technology 9th Edition, Goodheart-Wilcox

Pro Demand Software

OBD scan tools

Shop vehicle

Measurement equipment calipers, micrometers, vacuum gauges, pressure gauges, alignment machine, tire balancing, etc.

Accommodations

Special Education: The curriculum will be modified as per the Individualized Education Plan (IEP). Students will be accommodated based on specific accommodations listed in the IEP.

Students with 504 Plans: Students will be accommodated based on specific accommodations listed in the 504 Plan.

English Language Learners: Students will be accommodated based on individual need and in consultation with the ELL teacher.

Students at Risk of School Failure: Students will be accommodated based on individual need and provided various structural supports through their school.

Gifted and Talented Students: Students will be challenged to enhance their knowledge and skills through acceleration and additional independent research on the subject matter.