Course: *Automotive Technology* **Unit #:** *Safety, Equipment and Measuring - Unit 1*	**Year of Implementation:** 2024-2025

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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.MN-HSE.1 Demonstrate the safe use of manufacturing equipment.
    - 9.3.MN-HSE.3 Demonstrate a safety inspection process to assure a healthy and safe manufacturing environment.
    - 9.3.12.AC-CST.5 Apply practices and procedures required to maintain jobsite safety.
    - 9.3.12.AC-CST.9 Safely use and maintain appropriate tools, machinery, equipment and resources to accomplish construction project goals.
    - 9.3.MN-PRO.2 Manage safe and healthy production working conditions and environmental risks
    - 9.3.MN-PPD.3 Monitor, promote and maintain a safe and productive workplace using techniques and solutions that ensure safe production of products.
  - ***21st Century Life & Career Standards***
    - 9.3.12.TD-OPS.3 Describe ways to improve the system utilization, flow, safety and environmental performance of transportation systems.
  - ***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***
  - NJSLS-Math N-Q.A.1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
  - NJSLS-Math N-Q.A.2. Define appropriate quantities for the purpose of descriptive modeling.
  - NJSLS-Math N-Q.A.3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

- ***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 safely and efficiently solve problems to enhance career skills.

As aligned with LRHSD Long Term Learning Goal(s):https://www.lrhsd.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. 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
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. . . *EU 1* the implementation of proper safety procedures will minimize potential hazards. EU 2 accurate measurement is critical.	*Essential Questions* ● *How can you keep yourself safe?* ● *How do tolerances affect the performance and operation of a vehicle?*
Knowledge *Students will know . . .* *EU 1* ● proper classroom safety rules. (9.3.12.AC-CST.5) ● the form, function, and safe applications of tools and equipment. (9.3.MN-HSE.1) ● The dangers associated with working in an automotive shop. (9.3.MN-PRO.2) *EU 2* ● the proper names of measuring tools and equipment. (NJSLS-Math N-Q.A.1.) ● how to measure in SAE, metric, pressure, and electrical units. (NJSLS-Math N-Q.A.3)	*Skills* *Students will be able to. . .* *EU 1* ● demonstrate proper lab safety. (9.3.MN-HSE.1) ● demonstrate proper operation of tools and equipment. (9.3.MN-PRO.2) ● select the appropriate tool for a required task. (9.3.MN-PPD.3) *EU 2* ● identify basic measuring tools. (9.3.MN-PRO.2) ● Identify advanced measuring diagnostic tools. (NJSLS-Math N-Q.A.1.) ● use conversion charts. (NJSLS-Math N-Q.A.3) ● record measurements in SAE and metric. (NJSLS-Math N-Q.A.3) ● demonstrate accuracy when measuring. (NJSLS-Math N-Q.A.3.)

Stage Two - Assessment	
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Stage Three - Instruction	
Learning Plan: **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* • *Teacher led discussions on safety and hand/power tool usage (A)* • *Create a safety and operations worksheet outlining the function of given tools (M,T)* • *Student demonstration on proper hand/power tool usage (M,T)* • *Scavenger hunt on tools (A, T)* • *Worksheet on measuring lines (A)* • *Teacher-led demonstration on how to use a measuring tools (A)* • *Activity using measuring tools to measure various components (M)* • *Workbook on safety, tools, and measuring (A)* • *Videos on safety (A)* • *Student demonstration on how to use measuring tools (M,T)*	

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, Equipment and Measuring*	30
2	*Internal Combustion Engine*	30
3	*Modern Automotive Systems*	75

Instructional Materials

- *Modern Automotive Technology 9th Edition, Goodheart-Wilcox*
- *Pro Demand Software*
- *OBD scan tools*
- *Shop vehicle*
- *Vernier Calipers*
- *Micrometers*
- *Feeler Gauges*
- *Rulers*
- *Stick Gauge*
- *Tread Depth Gauge*
- *Torque Wrench*
- *Digital Multimeter*
- *Automotive Lift*

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.