

Course Title – Automotive Technology

Implement start year – 2017-2018

Revision Committee Members – Becki Ellis rellis@lrhsd.org, x8905; Charles Markovitz cmarkovitz@lrhsd.org, x8649

Unit #1 - Safety, Tools and Measuring

Transfer Goal –

Students will be able to safely work, use tools, and measure in the lab/workshop setting by applying technology to address real-world problems, enhance life, and extend human capabilities to meet the challenges of 21st century society.

Stage 1 – Desired Results

Established Goals

2009 NJCCC Standard(s), Strand(s)/CPI #
(<http://www.nj.gov/education/cccs/2009/final.htm>)

Common Core Curriculum Standards for Math and English
(<http://www.corestandards.org/>)

8.2 Technology Education, Engineering, and Design

All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.

G. The Designed World: The designed world is the product of a design process that provides the means to convert resources into products and systems.

- 8.2.12.G.1 Analyze the interactions among various technologies and collaborate to create a product or system demonstrating their interactivity.

21st Century Themes

(www.21stcenturyskills.org)

- Global Awareness
- Financial, Economic, Business and Entrepreneurial Literacy
- Civic Literacy
- Health Literacy
- Environmental Literacy

21st Century Skills

Learning and Innovation Skills:

- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication and Collaboration

Information, Media and Technology Skills:

- Information Literacy
- Media Literacy
- ICT (Information, Communications and Technology) Literacy

<p>CCSS.ELA-LITERACY.RST.9-10.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.</p> <p>CCSS.ELA-LITERACY.WHST.9-10.2.F Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).</p> <p>9.1 21st-Century Life & Career Skills All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.</p> <p>9.1.12.A.1 Apply critical thinking and problem-solving strategies during structured learning experiences.</p>	<p><i>Life and Career Skills:</i></p> <p><input checked="" type="checkbox"/> Flexibility and Adaptability</p> <p><input checked="" type="checkbox"/> Initiative and Self-Direction</p> <p><input checked="" type="checkbox"/> Social and Cross-Cultural Skills</p> <p><input checked="" type="checkbox"/> Productivity and Accountability</p> <p><input checked="" type="checkbox"/> Leadership and Responsibility</p>
<p><u>Enduring Understandings:</u> <i>Students will understand that . . .</i></p> <p><i>EU 1</i> the implementation of proper safety procedures will minimize potential hazards.</p> <p><i>EU 2</i> selecting the proper tool for the task is essential.</p> <p><i>EU 3</i> accuracy in measurement is critical in the automotive field.</p>	<p><u>Essential Questions:</u></p> <p><i>EU 1</i></p> <ul style="list-style-type: none"> • Why is safety important? • How does behavior affect safety? • How does the maintenance of tools and machines impact safety? • How does classroom environment influence safety? <p><i>EU 2</i></p> <ul style="list-style-type: none"> • Why is the selection of the correct tool Important? • How does the design of a tool give you an advantage? <p><i>EU 3</i></p> <ul style="list-style-type: none"> • How can one ensure accurate measurements in the automotive field? • How do tolerances affect the performance and operation of a vehicle?

Knowledge:

Students will know . . .

EU 1

- proper classroom expectations (attire, behavior, procedures, etc.).
- the form, function, and safe application of hand tools.
- the form, function, and safe application of power tools.
- the dangers associated with flammable materials, gasses, and liquids used in the lab.

EU 2

- how to identify broken or defective tools.
- the proper names of hand tools and power tools.
- how using the correct tool for a specific task is advantageous.
- when to use a 1/4", 3/8", or 1/2" drive ratchets.
- when to use manual or power tools.

EU 3

- the proper names of measuring tools.
- how to use measuring tools.
- how to measure in SAE, metric, pressure, and electrical units.

Skills:

Students will be able to . . .

EU 1

- demonstrate proper general lab safety.
- demonstrate the proper safety, form and function of hand tools.
- demonstrate the proper safety, form and function of power tools.
- select the appropriate tool for a required task.
- safely work with flammable materials, gasses, and liquids commonly used in the lab.

EU 2

- maintain and store tools properly.
- demonstrate the proper selection and use of hand tools.
- demonstrate the proper selection and use of power tools.

EU 3

- identify basic measuring tools.
- use conversion charts.
- describe both SAE and metric
- demonstrate accuracy when measuring.

Stage 2 – Assessment Evidence

Other Recommended Evidence:

- Quiz/Test
- Students demonstrate setup, safety, and operation of hand/power tools
- Group discussions on proper safety practices
- Observe students handling flammable materials, gasses, and liquids in a safe manner

Stage 3 – 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.*

- Teacher led discussions on safety and hand/power tool usage (A)
- Practice new skillsets on hand and power tools (M)
- Create a safety and operations worksheet outlining the function of given tools (M,T)
- Demonstrate proper tool usage (M,T)
- Scavenger hunt on tools (A, T)
- Teacher-led demonstration on how to use a ruler (A)
- Worksheet on measuring lines (A)
- Teacher-led demonstration on how to use a micrometer (A)
- Activity using micrometer to measure components (M)
- Workbook on safety, tools, and measuring such as chapters 3, 4, 5, and 6 in *Modern Automotive Technology* (A)
- Demonstrate safety procedures on welding (A,M,T)
- Videos on safety (A)
- Student demonstration on how to use a micrometer (T)
- Student demonstration on how to use plasti-gauge (T)

