

Department of College and Career Readiness

Automotive I

5.0 Credits



Unit One

Automotive I

Course Description

This course will introduce students to the operational and scientific nature of the automotive component systems including fuel, intake, exhaust, ignition, lubrication, braking, cooling, and suspension systems. Practical application of safe work habits and the correct use of tools and precision test instruments will be throughout the course. In addition, to meet the needs of changing technology, this program offers students the opportunity to master the necessary skills to pass the Automotive Service Excellence Certification (ASE) examination.

Automotive I

Pacing Guide		
Unit	Topic	Suggested Timing
Unit 1	Basic Automotive Knowledge and Service	approx. 6 weeks
Unit 2	Basic Automotive Tools and Equipment	approx. 7 weeks
Unit 3	Basic Automotive Skills	approx. 17 weeks
Unit 4	Leadership and Employability Skills	approx. 5 weeks

Educational Technology Standards

8.1.12.A.1, 8.1.12.B.2, 8.1.12.C.1, 8.1.12.D.1, 8.1.12.E.1, 8.1.12.F.1

- **Technology Operations and Concepts**
 - Create a personal digital portfolio which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
- **Creativity and Innovation**
 - Apply previous content knowledge by creating and piloting a digital learning game or tutorial.
- **Communication and Collaboration**
 - Develop an innovative solution to a real world problem or issue in collaboration with peers and experts, and present ideas for feedback through social media or in an online community.
- **Digital Citizenship**
 - Demonstrate appropriate application of copyright, fair use and/or Creative Commons to an original work.
- **Research and Information Literacy**
 - Produce a position statement about a real world problem by developing a systematic plan of investigation with peers and experts synthesizing information from multiple sources.
- **Critical Thinking, Problem Solving, Decision Making**
 - Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.

Career Ready Practices

Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

CRP1. Act as a responsible and contributing citizen and employee

Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.

CRP2. Apply appropriate academic and technical skills.

Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.

CRP3. Attend to personal health and financial well-being.

Career-ready individuals understand the relationship between personal health, workplace performance and personal well-being; they act on that understanding to regularly practice healthy diet, exercise and mental health activities. Career-ready individuals also take regular action to contribute to their personal financial well-being, understanding that personal financial security provides the peace of mind required to contribute more fully to their own career success.

CRP4. Communicate clearly and effectively and with reason.

Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.

CRP5. Consider the environmental, social and economic impacts of decisions.

Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organization, and the environment. They are aware of and utilize new technologies, understandings, procedures, materials, and regulations affecting the nature of their work as it relates to the impact on the social condition, the environment and the profitability of the organization.

CRP6. Demonstrate creativity and innovation.

Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.

CRP7. Employ valid and reliable research strategies.

Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies. They use reliable research process to search for new information. They evaluate the validity of sources when considering the use and adoption of external information or practices in their workplace situation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.

CRP9. Model integrity, ethical leadership and effective management.

Career-ready individuals consistently act in ways that align personal and community-held ideals and principles while employing strategies to positively influence others in the workplace. They have a clear understanding of integrity and act on this understanding in every decision. They use a variety of means to positively impact the directions and actions of a team or organization, and they apply insights into human behavior to change others' action, attitudes and/or beliefs. They recognize the near-term and long-term effects that management's actions and attitudes can have on productivity, morals and organizational culture.

CRP10. Plan education and career paths aligned to personal goals.

Career-ready individuals take personal ownership of their own education and career goals, and they regularly act on a plan to attain these goals. They understand their own career interests, preferences, goals, and requirements. They have perspective regarding the pathways available to them and the time, effort, experience and other requirements to pursue each, including a path of entrepreneurship. They recognize the value of each step in the education and experiential process, and they recognize that nearly all career paths require ongoing education and experience. They seek counselors, mentors, and other experts to assist in the planning and execution of career and personal goals.

CRP11. Use technology to enhance productivity.

Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.

CRP12. Work productively in teams while using cultural global competence.

Career-ready individuals positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.

Differentiated Instruction

Strategies to Accommodate Students Based on Individual Needs

<u>Time/General</u>	<u>Processing</u>	<u>Comprehension</u>	<u>Recall</u>
<ul style="list-style-type: none"> • Extra time for assigned tasks • Adjust length of assignment • Timeline with due dates for projects • Communication system between home and school • Provide notes/outline 	<ul style="list-style-type: none"> • Extra Response time • Have students verbalize steps • Repeat, clarify or reword directions • Mini-breaks between tasks • Provide a warning for transitions • Work partners 	<ul style="list-style-type: none"> • Precise step-by-step directions • Short manageable tasks • Brief and concrete directions • Provide immediate feedback • Small group instruction • Emphasize multi-sensory learning 	<ul style="list-style-type: none"> • Teacher-made checklist • Use visual graphic organizers • Reference resources to promote independence • Visual and verbal reminders • Graphic organizers
<u>Assistive Technology</u>	<u>Tests/Quizzes/Grading</u>	<u>Behavior/Attention</u>	<u>Organization</u>
<ul style="list-style-type: none"> • Computer/whiteboard • Audio Recorder • Spell-checker • Audio-taped books 	<ul style="list-style-type: none"> • Extended time • Study guides • Shortened tests • Read directions aloud 	<ul style="list-style-type: none"> • Consistent daily structured routine • Simple and clear classroom rules • Frequent feedback 	<ul style="list-style-type: none"> • Individual daily planner • Display a written agenda • Note-taking assistance • Color code activities

Enrichment

Strategies Used to Accommodate Based on Students Individual Needs:

- Adaption of Material and Requirements
- Evaluate Vocabulary
- Elevated Activity Complexity
- Additional Projects
- Independent Student Options
- Projects completed individual or with Partners
- Self Selection of Project
- Tiered/Multilevel Projects
- Learning Centers
- Individual Response Blog
- Independent Studies of Manuals
- Open-ended Projects
- Community/Subject expert mentorships

Assessments

Suggested Formative/Summative Classroom Assessments

- Graphic Organizers
- Teacher-created Unit Assessments, Chapter Assessments, Quizzes
- Systematic Skills assessment
- Accountable Talk, Oral Report, Think Pair, and Share
- Projects, Portfolio,
- Homework
- Schematic Mapping
- Photo, Video problem solving analysis
- NATEF task sheets
- NATEF end of program exams

Interdisciplinary Connections

English Language Arts

- Journal writing
- Close reading of Automotive-related content
- Create a brochure for a Auto industry
- Keep a running word wall of Automotive vocabulary

Social Studies

- Research the history of a given Automotive Industry
- Research prominent historical individuals in Automotive Industry
- Use historical references to solve problems

World Language

- Translate Automotive/Transportation-content
- Create a translated index of Automotive vocabulary
- Generate a translated list of words and phrases related to workplace safety

Math

- Research Automotive occupation salaries for a geographic area and juxtapose against local cost of living
- Go on a geometry scavenger hunt within Automotive repair shop
- Track various data, such as Transportation's impact on the GDP, career opportunities or among individuals currently occupying Automotive careers

Fine & Performing Arts

- Create a poster advertising your Automotive Repair Shop
- Design a flag or logo to represent your shop

Science

- Research the environmental impact of Automotive industry
- Research latest developments in automotive technology
- Investigate automotive applicable-careers in STEM fields

New Jersey Student Learning Standards

9.3– Career and Technical Education

TRANSPORTATION, DISTRIBUTION & LOGISTICS CAREER CLUSTER

- 9.3.12.TD.1: Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy.
- 9.3.12.TD.2: Describe the application and use of new and emerging advanced techniques to provide solutions for transportation, distribution and logistics problems.
- 9.3.12.TD.3: Describe the key operational activities required of successful transportation, distribution and logistics facilities
- 9.3.12.TD.4: Identify governmental policies and procedures for transportation, distribution and logistics facilities
- 9.3.12.TD.5: Describe transportation, distribution and logistics employee rights and responsibilities and employers' obligations concerning occupational safety and health.
- 9.3.12.TD.6: Describe career opportunities and means to achieve those opportunities in each of the Transportation, Distribution & Logistics Career Pathways.

Pathway: FACILITY & MOBILE EQUIPMENT MAINTENANCE (TD□MTN)/ TRANSPORTATION OPERATIONS (TD□OPS)

- 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.
- 9.3.12.TD□OPS.1: Develop and evaluate transportation plans to move people and/or goods to meet customer requirements.
- 9.3.12.TD□OPS.2: Analyze performance of transportation operations in order to improve quality and service levels and increase efficiency.

Common Career Technical Core (CCTC)

Career Cluster Education & Training

TD 01 – Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy.

- TD 01.3 – Identify the major modes of transportation and their role in society.

TD-MTN 1– Develop preventative maintenance plans and systems to keep facility and mobile equipment inventory in operation.

- TD-MTN 01.1 – Develop preventive maintenance plans and systems to meet equipment manufacturer requirements.
- TD-MTN 01.2 – Apply strategies used to monitor and evaluate the performance of maintenance plans and systems.

TD-MTN 2– Design ways to improve equipment performance.

- TD-MTN 02.1 – Develop plans for improving equipment performance.
- TD-MTN 02.2 – Execute repair plans for mobile equipment.
- TD-MTN 02.3 – Develop and execute repair plans based upon an assessment of the equipment inventory.

TD-HSE 1- Describe the health, safety and environmental rules and regulations in transportation workplace.

- TD-HSE 1.1 – Conduct audits and inspections and evaluate compliance with company policies and government laws and regulations.
- TD-HSE 1.3– Manage the ongoing implementation of health, safety and environmental policies, procedures and documentation systems including development of communication plans that promote and support the effort.

Common Core State Standards (CCSS)

CCSS - English-Language Arts

Key Ideas and Details:

- CCSS.ELA-LITERACY.RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

Craft and Structure:

- CCSS.ELA-LITERACY.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.

Integration of Knowledge and Ideas:

- CCSS.ELA-LITERACY.RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

Range of Reading and Level of Text Complexity:

- CCSS.ELA-LITERACY.RST.11-12.10 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

Common Core State Standards (CCSS)

CCSS - Mathematics

Explain volume formulas and use them to solve problems:

- CCSS.MATH.CONTENT.HSG.GMD.A.1 Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder.
- CCSS.MATH.CONTENT.HSG.GMD.A.3 Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.

Apply geometric concepts in modeling situations:

- CCSS.MATH.CONTENT.HSG.MG.A.1 Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder)
- CCSS.MATH.CONTENT.HSG.MG.A.2 Apply concepts of density based on area and volume in modeling situations (e.g., BTUs per cubic foot).
- CCSS.MATH.CONTENT.HSG.MG.A.3 Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost).

Reason quantitatively and use units to solve problems:

- CCSS.MATH.CONTENT.HSN.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.
- CCSS.MATH.CONTENT.HSN.Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

<p>Course: Automotive I Unit: I – Basic Service Grade Level: 9-12</p>	<p>Unit Overview: This course will introduce students to the operational and scientific nature of the automotive component systems including fuel, intake, exhaust, ignition, lubrication, braking, cooling, and suspension systems. Practical application of safe work habits and the correct use of tools and precision test instruments will be throughout the course. Understanding of basic automotive tools, safety practices and regular maintenance is an essential first step in fulfilling the training that is needed for an automotive service career.</p>
<p>New Jersey Student Learning Standards (NJSLS): 9.3.12.TD.1, 9.3.12.TD.2, 9.3.12.TD.6</p>	
<p>Common Career Technical Core (CCTC): TD 01.3,TD-MTN 01.1, TD-MTN 01.2, TD-MTN 02.1,TD-MTN 02.2,TD-MTN 02.3</p>	
<p>Common Core State Standards (CCSS): RST.11-12.3; RST.11-12.4; RST.11-12.7; RST.11-12.10; HSG.GMD.A.1; HSG.GMD.A.3; HSG.MG.A.1; HSG.MG.A.2; HSG.MG.A.3; HSN.Q.A.1; HSN.Q.A.3</p>	

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
<p>Why is it important to adhere to shop rules as outlined in class safety protocols and in the student handbook?</p> <p>NJSLS: 9.3.12.TD.3, 9.3.12.TD.2 9.3.12.TD.4,</p> <p>CCTC: TD-MTN 02.1, TD-MTN 02.2, TD-HSE</p>	<p>How will developing a relationship with the teacher and others in the class help me to develop skill sets associated with employment potential and be a successful high school student and later as potential employee?</p> <p>Why is following and adhering to clear</p>	<ul style="list-style-type: none"> • Identify common hazards in the repair shop, including (a) improper use of tools, (b) unguarded machinery, (c) tripping and falling, (d) excessive exposure to exhaust gases, parts, cleaners, paints, and dust, (e) electrical 	<p>Graphic Organizer Create a three column graphic organizer outlining shop hazards and remedies, first aid procedures</p> <p>Writing Exercise Write a safety pamphlet outlining a safety procedure</p>	<p>OSHA Website https://www.osha.gov/law-regs.html</p> <p>Auto Safety Government Website http://www.autosafety.org/</p>

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
<p>1.1, TD-HSE 1.3</p> <p>CCSS: RL.9-10.1; RI.9-10.5; SL.9-10.1</p>	<p>directions important to shop safety?</p> <p>Where are all safety and First Aid equipment located within shop?</p>	<p>hazards, and (f) improper lifting.</p> <ul style="list-style-type: none"> ▪ Identify and explain warning signs posted in the shop area. ▪ Explain Material Safety Data Sheets. ▪ Pass the Lab Safety Exam with Min. 70 	<p>Close Reading Document Analysis of First Aid Procedure</p>	
<p>Given examples of repair jobs and shop situations, we apply personal safety rules and procedures by identifying safe and unsafe practices.</p> <p>NJSLS: 9.3.12.TD.3, 9.3.12.TD.2 9.3.12.TD.4,</p> <p>CCTC: TD-MTN 02.1, TD-MTN 02.2, TD-HSE 1.1, TD-HSE 1.3</p> <p>CCSS: RL.9-10.1; RI.9-10.5; SL.9-10.1</p>	<p>How can we identify types of personal safety equipment and explain their applications?</p> <p>What types of repair work require eye and ear protection?</p> <p>What types of protective clothing and shoes are to be worn in the Lab (Shop) area? Describe the conditions, which require their use.</p> <p>When are respirators and shields used?</p> <p>What are the specific personal safety rules and</p>	<ul style="list-style-type: none"> ▪ Explain safe practices for the storage and use of hazardous materials. ▪ Monitor compliance with relevant environmental health and safety regulations and procedures. ▪ Describe procedures for documenting and reporting lab accidents to appropriate authorities. ▪ Organize steps logically in applying 	<p>Concept Map Create a concept map that outlines the lab expectations of instructor</p> <p>Journal Write a journal entry from the perspective of a teacher safety inspector interviewing students.</p> <p>Venn Diagram Create a Venn Diagram that compares and contrasts how different machines require different safety equipment.</p>	<p>OSHA Website https://www.osha.gov/law-regs.html</p> <p>Auto Safety Government Website http://www.autosafety.org/</p> <p>National Highway Traffic Safety Administration http://www.nhtsa.gov/Vehicle+Safety</p>

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
	procedures for welding and cutting?	safety procedures. <ul style="list-style-type: none"> ▪ Use language, terminology and complexity suitable to explaining industry safety equipment. ▪ Reference prior knowledge and experience in determining safety procedures. ▪ Address both content and processes involved in welding and cutting processes in the lab. 		
Identify examples of types of fires, fire extinguishers, and shop situations, apply fire safety rules and procedures by identifying safe and unsafe practices.	How can we identify the common causes of fire in automotive repair shops and common methods of avoiding or preventing fires? What types of fire suppression are used in the Lab? Which form of suppression is applied to	<ul style="list-style-type: none"> ▪ Identify and explain the applications for (a) foam, (b) carbon dioxide, (c) soda acid,(d) pump tank, (e) gas cartridge, (f) dry chemical, and (g) multipurpose dry chemical fire extinguisher 	<p>Journal Describe the shop's fire and emergency evacuation route(s)</p> <p>Venn Diagram Create a Venn Diagram that compares and contrasts the different fire suppression equipment and the type</p>	<p>National Fire Protection Association www.nfpa.org</p> <p>Harleysville Risk Services https://www.harleysvillegroup.com/losc/TRS/RS/R_S1032.pdf</p>

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
<p>NJSLS: NJSLS: 9.3.12.TD.3, 9.3.12.TD.2 9.3.12.TD.4,</p> <p>CCTC: TD-MTN 02.1, TD-MTN 02.2, TD-HSE 1.1, TD-HSE 1.3</p> <p>CCSS: RL.9-10.1; RI.9- 10.5; SL.9-10.1</p>	<p>specific types of fire(s)?</p> <p>In case of fire what are the exit plans from the lab area?</p>	<ul style="list-style-type: none"> ▪ Be able to articulate to other students the evacuation procedure in the event of fire. 	<p>of fire meant to extinguish.</p>	<p>OSHA Improper Ventilation Causes Fire in Confined Space https://www.osha.gov/video/shipyard_accidents/04_confined_space.html</p>
<p>Develop the special skills needed for electrical safety rules and procedures</p> <p>NJSLS: NJSLS: 9.3.12.TD.3, 9.3.12.TD.2 9.3.12.TD.4,</p> <p>CCTC: TD-MTN 02.1, TD-MTN 02.2, TD-HSE 1.1, TD-HSE 1.3</p>	<p>What dangers do frayed and exposed wires create in the Lab?</p> <p>Why is proper identification of junction boxes, outlets, and switches be identified as to their uses?</p> <p>What different types of electrical service (amps, watts, volts) are used in the Lab area? Why is proper identification</p>	<ul style="list-style-type: none"> ▪ Explain the proper methods for using flexible extension cords and drop lights ▪ Identify and explain the electrical hazards of and safety rules and procedures for welding, cutting, and brazing ▪ Identify the approved location for all electrical equipment and power sources in 	<p>Poster Create a poster identifying electrical hazards and utilizing electrical safety rules and procedures</p> <p>Video Create a video with fellow classmates outlining proper electrical safety in the shop</p> <p>Diagram</p>	<p>OSHA Extensive PDF file on Electrical safety https://www.osha.gov/dte/grant_materials/fy10/sh-20999-10/electrical_safety_manual.pdf</p> <p>UAW Electrical Safety Excellent work safety PDF on Auto specific electrical safety https://www.osha.gov/dte</p>

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
CCSS: RL.9-10.1; RI.9-10.5; SL.9-10.1	important?	the repair shop	Create an electrical circuit	/grant_materials/fy09/sh-18794-09/electrical_safety_manual.pdf
<p>Identify the proper procedures for hazardous waste disposal</p> <p>NJSLS: NJSLS: 9.3.12.TD.3, 9.3.12.TD.2 9.3.12.TD.4,</p> <p>CCTC: TD-MTN 02.1, TD-MTN 02.2, TD-HSE 1.1, TD-HSE 1.3</p> <p>CCSS: RL.9-10.1; RI.9-10.5; SL.9-10.1</p>	<p>What are the most dangerous materials in the lab? How do we properly dispose of them?</p> <p>What are the environmental ramifications for not of disposing of oil based materials?</p> <p>Why are drains NOT acceptable waste disposal receptacles?</p> <p>What type(s) of injuries can occur if [Hazmat] are not properly dealt with?</p>	<ul style="list-style-type: none"> ▪ Identify the hazardous waste materials found in a repair shop ▪ Explain the proper procedures for disposing of asbestos, oil and oil based materials, paint and paint thinner, solvents, electrical insulating compounds ▪ Be able to identify the presence of hazardous waste according to OSHA safety regulations. ▪ Be able to identify the proper receptacles for disposing of hazardous wastes 	<p>Inspection/Checklist Conduct an inspection of the repair shop to detect the presence of hazardous wastes in accordance with OSHA and EPA guidelines</p> <p>Science Lab Illustrate via science experiment the effects of selected Hazmat on the environment.</p>	<p>EPA Automotive waste disposal page https://www.epa.gov/uic/motor-vehicle-waste-disposal-wells</p> <p>EPA Environmental Compliance Guide for Auto Repair Shops http://www.epa.ohio.gov/portals/41/sb/publication/s/AutoRepairGuide.pdf</p> <p>OSHA Hazardous Materials https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9760</p>
Understand importance	What are the proper	<ul style="list-style-type: none"> ▪ Identify types of 	Inspection/Checklist	EPA

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
<p>of proper storage care and maintenance of individual safety equipment</p>	<p>storage areas for personal safety equipment?</p> <p>What are potential signs of protection equipment losing their effectiveness?</p> <p>What are some of the specialty equipment safety equipment and what are the reasons for their use?</p>	<p>repair work that require respirators and shields</p> <ul style="list-style-type: none"> ▪ Explain regulations and procedures pertaining to sanitation in shop and rest room areas ▪ Explain the methods for cleaning and storing personal safety equipment ▪ Identify types of repair work that require eye protection ▪ Identify types of repair work that require hearing protection 	<p>Conduct an inspection of the repair shop and identify the storage receptacles for various safety equipment</p> <p><u>Prezy/Power Point</u> Oral presentation providing possible signs respirators and eye protection may be losing effectiveness</p>	<p>Environmental Compliance Guide for Auto Repair Shops http://www.epa.ohio.gov/portals/41/sb/publications/AutoRepairGuide.pdf</p> <p><u>OSHA</u> Compliance duties owed to each employee by employer(s)/Instructional Institution. https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=14019</p>

Unit 1 Vocabulary

Hydraulic
Vehicle lifts
Solvent
Hydrogen gas
Catalysts
Thinners
Refinishing
Conformity
Respirator
Extinguish
Frayed
Junction box
Breaker switches
Deteriorated
Circuit breakers
Welding
Brazing
OSHA
EPA

Asbestos
Insulating compounds
Carbon monoxide
Compressed air equipment
"Right to Know" Law
Hydraulic jacks
Safety stands

Suggested Unit Projects

Choose At Least One

Writing Exercise

Write a safety pamphlet outlining a safety procedure in the Lab

Group Exercise

In a group create an action plan for improving safety in the Lab.

Suggested Structured Learning Experiences

Youth and Adult Automotive Training Center in Newark
 201 Bergen St, Newark, NJ 07103
[https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8-q=Youth and Adult Automotive Training Center in Newark&tbs=lf:1,lf_ui:2&rflfq=1&rlha=0&rlag=40740789,-74189932,406&tbm=icl&rdimm=1045171484867486717](https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8-q=Youth+and+Adult+Automotive+Training+Center+in+Newark&tbs=lf:1,lf_ui:2&rflfq=1&rlha=0&rlag=40740789,-74189932,406&tbm=icl&rdimm=1045171484867486717)

Lincoln Tech
 70 McKee Dr, Mahwah, NJ 07430
 Phone: (201) 529-1414
 Email: info@allairevillage.org
<http://www.lincolntech-usa.com/>

Vintage Automobile Museum of New Jersey
 1800 Bay Ave. Building #13
 Point Pleasant, NJ
 Phone: 732-899-0012
<http://www.vintageautomuseum.org/>