

Automotive Technology III
Revised UBD Curriculum
Egg Harbor Township High School
Industrial Technology Department



Created By: Industrial Technology Committee
Coordinated By: Dr. Carmelita Graham
June 2016

DISTRICT MISSION STATEMENT

Our mission in the Egg Harbor Township School District is to partner with the student, family, school, and community to provide a safe learning environment that addresses rigorous and relevant 21st Century standards and best practices which will develop academic scholarship, integrity, leadership, citizenship, and the unique learning style of students, while encouraging them to develop a strong work ethic and to act responsibly in their school community and everyday society.

CAREER AND TECHNICAL EDUCATION

Mission:

New Jersey's Office of Career and Technical Education seeks to prepare students for career opportunities of the 21st century, succeed as global citizens and support healthy economic growth for New Jersey. Career and Technical Education prepares students to succeed as global citizens for career opportunities for the 21st Century and to support healthy economic growth within the state.

INTRODUCTION

The most precious resource teachers have is time. Regardless of how much time a course is scheduled for, it is never enough to accomplish all that one would like. Therefore, it is imperative that teachers utilize the time they have wisely in order to maximize the potential for all students to achieve the desired learning.

High quality educational programs are characterized by clearly stated goals for student learning, teachers who are well-informed and skilled in enabling students to reach those goals, program designs that allow for continuous growth over the span of years of instruction, and ways of measuring whether students are achieving program goals.

EGG HARBOR TOWNSHIP SCHOOL DISTRICT CURRICULUM TEMPLATE

The Egg Harbor Township School District has embraced the backward-design model as the foundation for all curriculum development for the educational program. When reviewing curriculum documents and the Egg Harbor Township curriculum template, aspects of the backward-design model will be found in the stated enduring *understandings/essential questions*, *unit assessments*, and *instructional activities*. Familiarization with backward-design is critical to working effectively with Egg Harbor Township's curriculum guides.

GUIDING PRINCIPLES: WHAT IS BACKWARD DESIGN?

WHAT IS UNDERSTANDING BY DESIGN?

“Backward design” is an increasingly common approach to planning curriculum and instruction. As its name implies, “backward design” is based on defining clear goals, providing acceptable evidence of having achieved those goals, and then working ‘backward’ to identify what actions need to be taken that will ensure that the gap between the current status and the desired status is closed.

Building on the concept of backward design, Grant Wiggins and Jay McTighe (2005) have developed a structured approach to planning programs, curriculum, and instructional units. Their model asks educators to state goals; identify deep understandings, pose essential questions, and specify clear evidence that goals, understandings, and core learning have been achieved.

Program based on backward design use desired results to drive decisions. With this design, there are questions to consider, such as: What should students understand, know, and be able to do? What does it look like to meet those goals? What kind of program will result in the outcomes stated? How will we know students have achieved that result? What other kinds of evidence will tell us that we have a quality program? These questions apply regardless of whether they are goals in program planning or classroom instruction.

The backward design process involves three interrelated stages for developing an entire curriculum or a single unit of instruction. The relationship from planning to curriculum design, development, and implementation hinges upon the integration of the following three stages.

Stage I: Identifying Desired Results: Enduring understandings, essential questions, knowledge and skills need to be woven into curriculum publications, documents, standards, and scope and sequence materials. Enduring understandings identify the ‘ ‘big ideas’ ’ that students will grapple with during the course of the unit. Essential questions provide a unifying focus for the unit and students should be able to answer more deeply and fully these questions as they proceed through the unit. Knowledge and skills are the ‘ ‘stuff’ ’ upon which the understandings are built.

Stage II: Determining Acceptable Evidence: Varied types of evidence are specified to ensure that students demonstrate attainment of desired results. While discrete knowledge assessments (e.g.: multiple choice, fill-in-the-blank, short answer, etc...) will be utilized during an instructional unit, the overall unit assessment is performance-based and asks students to demonstrate that they have mastered the desired understandings. These culminating (summative) assessments are authentic tasks that students would likely encounter in the real-world after they leave school. They allow students to demonstrate all that they have learned and can do. To demonstrate their understandings students can explain, interpret, apply, provide critical and insightful points of view, show empathy and/or evidence self-knowledge. Models of student performance and clearly defined criteria (i.e.: rubrics) are provided to all students in advance of starting work on

the unit task.

Stage III: Designing Learning Activities: Instructional tasks, activities, and experiences are aligned with stages one and two so that the desired results are obtained based on the identified evidence or assessment tasks. Instructional activities and strategies are considered only once stages one and two have been clearly explicated. Therefore, congruence among all three stages can be ensured and teachers can make wise instructional choices.

At the curricular level, these three stages are best realized as a fusion of research, best practices, shared and sustained inquiry, consensus building, and initiative that involves all stakeholders. In this design, administrators are instructional leaders who enable the alignment between the curriculum and other key initiatives in their district or schools. These leaders demonstrate a clear purpose and direction for the curriculum within their school or district by providing support for implementation, opportunities for revision through sustained and consistent professional development, initiating action research activities, and collecting and evaluating materials to ensure alignment with the desired results. Intrinsic to the success of curriculum is to show how it aligns with the overarching goals of the district, how the document relates to district, state, or national standards, what a high quality educational program looks like, and what excellent teaching and learning looks like. Within education, success of the educational program is realized through this blend of commitment and organizational direction.

INTENT OF THE GUIDE

This guide is intended to provide teachers with course objective and possible activities, as well as assist the teacher in planning and delivering instruction in accordance with the New Jersey Core Curriculum Content Standards. The guide is not intended to restrict or limit the teacher's resources or individual instruction techniques. It is expected that the teacher will reflectively adjust and modify instruction and units during the course of normal lessons depending on the varying needs of the class, provided such modified instruction attends to the objectives and essential questions outlined below.

Unit Name: Automotive Shop Safety

Author: Industrial Technology Committee

Time Frame: 1 Week

UNIT

Subject: *Automotive Technology*

Country: *United States of America*

Course/Grade: *Auto III / Grades 12*

State/Group: *New Jersey*

School: *Egg Harbor Township High School*

UNIT SUMMARY

Whether in personal endeavors or the workplace, and understanding of safety is crucial to our well-being and productivity. Through this unit, students will seek to understand the importance of safety, hazards, and measures to be taken to control identified hazards in the Auto Shop environment. Students will also identify/demonstrate the safe operation of basic Auto Shop power/hand tools, as well as understand all tools as a way to extend human capabilities and solve problems. Additional study of OSHA, DEP, and EPA regulations pertaining to chemicals and personal protective equipment (PPE).

UNIT RESOURCES

Textbook:

Modern Automotive Technology. Duffy, James E. Goodheart-Wilcox Co, Inc.
8th Edition. Tinley Park, IL. 2014.

Auto Fundamentals. Stockel Martin and Chris Johanson. Goodheart-Wilcox Co, Inc.
11th Edition. Tinley Park, IL. 2015.

Internet Resource Links:

www.NBCLearn.com

www.Learn360.com

www.foxnews.com/technology

www.cnn.com/technology

www.popularmechanics.com

www.popularscience.com

www.osha.gov

STAGE ONE

GOALS AND STANDARDS

- **CRP1.** Act as a responsible and contributing citizen and employee.
- **CRP2.** Apply appropriate academic and technical skills.
- **CRP4.** Communicate clearly and effectively and with reason.
- **CRP5.** Consider the environmental, social and economic impacts of decisions.
- **CRP6.** Demonstrate creativity and innovation.
- **CRP7.** Employ valid and reliable research strategies.
- **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them.
- **CRP9.** Model integrity, ethical leadership and effective management.
- **CRP10.** Plan education and career paths aligned to personal goals.
- **CRP11.** Use technology to enhance productivity.
- **CRP12.** Work productively in teams while using cultural global competence
- **CCCS.MATH.CONTENT.HSN-Q.A.1-3** Use units as a way to understand problems and to guide the solution of multistep problems; choose and interpret units consistently in formulas.
- **CCCS.ELA-LITERACY.RST.11-12.4** Workplace Safety
- **CCCS.ELA-LITERACY.WHST.11-12.2.** Critical Thinking, Problem Solving and Decision Making
- **CCCS.ELA-LITERACY.RST.11-12.4.** Follow Multi-step Procedure
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- **CCSS.ELA-LITERACY.CCRA.R.10** Read and comprehend complex literary and informational texts independently and proficiently.
- **CCSS.ELA-LITERACY.RST.11-12.5** Follow precisely a complex, multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze specific results based on explanations in the text.
- **CCSS.ELA-LITERACY.W.11-12.2** Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- **CCSS.ELA-LITERACY.W.11-12.8** Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively.
- **9.3.12.AG-NR.2** Analyze the interrelationships between natural resources and humans.
- **9.3.12.AG-NR.3** Develop plans to ensure sustainable production and processing of natural resources.
- **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 project goals.
- **9.3.12.FN-ACT.2** Utilize accounting tools, strategies and systems to plan, monitor, manage and maintain the use of financial resources
- **9.3.HL-BRD.6** Summarize and explain the larger ethical, moral and legal issues related to biotechnology research, product development and use in society.
- **9.3.HL-DIA.5** Select, demonstrate and interpret diagnostic procedures.
- **9.3.HL-THR.1** Utilize communication strategies to answer patient/client questions and concerns on planned procedures and goals.
- **9.3.HU-CSM.2** Communicate product or equipment features that meet the needs of clients and consumers.
- **9.3.IT.1** Demonstrate effective professional communication skills and practices that enable positive customer relationships.
- **9.3.IT.12** Demonstrate knowledge of the hardware components associated with information systems.
- **9.3.IT.13** Compare key functions and applications of software and determine maintenance strategies for computer systems.

- **9.3.IT-SUP.1** Provide technology support to maintain service
- **9.3.IT-SUP.2** Manage operating systems and software applications, including maintenance of upgrades, patches and service packs
- **9.3.IT-SUP.3** Apply appropriate troubleshooting techniques in resolving computer hardware, software and configuration problems
- **9.3.LW-EFM.10** Demonstrate the use and various applications of the equipment commonly used in emergency and fire management services.
- **9.3.LW-SEC.2** Utilize conflict resolution skills to resolve conflicts among individuals
- **9.3.MN.3** Comply with federal, state and local regulations to ensure worker safety and health and environmental work practices
- **9.3.MN-HSE.4** Evaluate a system of health, safety and/or environmental programs, projects, policies or procedures to determine compliance
- **9.3.MN-PPD.3** Monitor, promote and maintain a safe and productive workplace using techniques and solutions that ensure safe production of products.
- **9.3.MN-PRO.2** Manage safe and healthy production working conditions and environmental risks.
- **9.3.MN-QA.3** Coordinate work teams to create a product that meets quality assurance standards.
- **9.3.MN-QA.5** Perform safety inspections and training to ensure a safe and healthy workplace.
- **9.3.MK-MGT.7** Communicate information about products, services, images and/or ideas.
- **9.3.ST.2** Use technology to acquire, manipulate, analyze and report data.
- **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.
- **9.3.ST-ET.5** Apply the knowledge learned in STEM to solve problems
- **9.3.ST-SM.2** Apply science and mathematics concepts to the development of plans, processes and projects that address real world problems
- **9.3.ST-SM.4** Apply critical thinking skills to review information, explain statistical analysis, and to translate, interpret and summarize research and statistical data
- **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.4** Identify governmental policies and procedures for transportation, distribution and logistics facilities
- **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-HSE.1** Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces
- **9.3.12.TD-SAL.1** Analyze the ongoing performance of transportation, logistics and distribution-related sales and service operations.
- **9.3.12.TD-SAL.2** Demonstrate the use of sales and ongoing service of products and services that are transportation-related to promote development of existing and future clients and customers
- **9.3.12.TD-OPS.2** Analyze performance of transportation operations in order to improve quality and service levels and increase efficiency
- **9.3.12.TD-OPS.3** Comply with policies, laws and regulations in order to maintain safety, security and health and mitigate the economic and environmental risk of transportation operations.
- **2014 NJCCS 8.1.12.A.1** Create a personal digital portfolio which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
- **2014 NJCCS 8.1.12.F.1** Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.
- **2014 NJCCS 8.2.12.A.2** Analyze a current technology and the resources used, to identify the trade-offs in terms of availability, cost, desirability and waste.
- **2014 NJCCS 8.2.12.B.2** Evaluate ethical considerations regarding the sustainability of environmental resources that are used for the design, creation and maintenance of a chosen product.
- **2014 NJCCS 8.2.12.B.4** Investigate a technology used in a given period of history, e.g., stone age, industrial revolution or information age, and identify their impact and how they may have changed to meet human needs and wants.
- **2014 NJCCS 8.2.12.B.5** Research the historical tensions between environmental and economic

considerations as driven by human needs and wants in the development of a technological product, and present the competing viewpoints to peers for review.

- **2014 NJCCS 8.2.12.C.2** Analyze a product and how it has changed or might change over time to meet human needs and wants.
- **2014 NJCCS 8.2.12.C.3** Analyze a product or system for factors such as safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, and human factors engineering (ergonomics).
- **2014 NJCCS 8.2.12.C.4** Explain and identify interdependent systems and their functions.
- **2014 NJCCS 8.2.12.D.1** Design and create a prototype to solve a real world problem using a design process, identify constraints addressed during the creation of the prototype, identify trade-offs made, and present the solution for peer review.
- **2014 NJCCS 8.2.12.D.5** Explain how material processing impacts the quality of engineered and fabricated products.
- **2014 NJCCS 8.2.12.E.1** Demonstrate an understanding of the problem-solving capacity of computers in our world.
- **2014 NJCCS 8.2.12.E.2** Analyze the relationships between internal and external computer components.
- **2014 NJCCS 8.2.12.E.3** Use a programming language to solve problems or accomplish a task (e.g., robotic functions, website designs, applications, and games).
- **2014 NJCCS 8.2.12.E.4** Use appropriate terms in conversation (e.g., troubleshooting, peripherals, diagnostic software, GUI, abstraction, variables, data types and conditional statements).
- **NJCCS 9.1.12.A** Critical Thinking, Problem Solving and Decision Making
- **NJCCS.9.3.12.C** Workplace Safety
- **NJCCS 9.3.12.3** Follow Multi-step Procedure
- **NJCCS 9.3.12.4** 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.
- **NJCCS 9-12.9.1.12.1** Collaboration and teamwork enable individuals or groups to achieve common goals with greater efficiency
- **NJCCS 9-12.9.1.12.F.2** Demonstrate a positive work ethic in various settings, including the classroom and during structured learning experiences.
- **NJCCS 9.1.12.A.1** Apply critical thinking and problem-solving strategies during structured learning experiences.
- **NJCCS 9.1.12.B.3** Assist in the development of innovative solutions to an onsite problem by incorporating multiple perspectives and applying effective problem-solving strategies during structured learning experiences, service learning, or volunteering.
- **NJCCS 9.1.12.F.1** Explain the impact of current and emerging technological advances on the demand for increased and new types of accountability and productivity in the global workplace.
- **NJCCS 9.1.12.F.2** Demonstrate a positive work ethic in various settings, including the classroom and during structured learning experiences.
- **NJCCS 9.1.12.F.3** Defend the need for intellectual property rights, workers' rights, and workplace safety regulations in the United States and abroad.
- **NJCCS 9.2.12.A.1** Analyze the relationship between various careers and personal earning goals.
- **NJCCS 9.2.12.A.5** Evaluate current advances in technology that apply to a selected occupational career cluster.
- **NJCCS 9.2.12.A.8** Analyze how personal and cultural values impact spending and other financial decisions.
- **NJCCS 9.2.12.G.3** Compare the cost of various types of insurance (e.g., life, homeowners, motor vehicle) for the same product or service, given different liability limits and risk factors.
- **NJCCS 9.2.12.G.5** Compare insurance policy coverage limits and related premiums and deductibles to minimize costs.
- **NJCCS 9.3.12.C.2** Characterize education and skills needed to achieve career goals, and take steps to prepare for postsecondary options, including making course selections, preparing for and taking assessments, and participating in extra-curricular activities.
- **NJCCS 9.3.12.C.3** Develop personal interests and activities that support declared career goals and plans.

- **NJCCS 9.3.12.C.4** Use online resources to examine licensing, certification, and credentialing requirements at the local, state, and national levels to maintain compliance with industry requirements in areas of career interest.
- **NJCCS 9.3.12.C.7** Pursue a variety of activities related to career preparation (e.g., volunteer, seek employment, and/or apply for training grants, higher education grants, and loans).
- **NJCCS 9.3.12.C.9** Investigate career opportunities in the United States or abroad that involve working with people from diverse cultures and that require knowledge of other languages or cultures.
- **NJCCS 9.3.12.C.11** Evaluate the responsibilities of employers and employees for maintaining workplace safety, and explain health rights related to a particular occupation/career.
- **NJCCS 9.3.12.C.18** Determine how an individual's driving record (e.g., tickets, points, penalties for driving while intoxicated) and/or credit score may impact opportunities for employment, job retention, or job advancement.
- **NJCCS 9.3.12.C.21** Determine the extent to which an individual's online behavior (e.g., social networking, photo exchanges, video postings) may impact opportunities for employment, job retention, or job advancement.
- **NJCCS 9.3.12.C.22** Compare and contrast New Jersey school district policies with employer policies related to individual behavior and responsibilities (e.g., absenteeism and tardiness, plagiarism, harassment).
- **NJCCS 9.3.12.C.23** Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors.

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ENDURING UNDERSTANDING: Students will be able to...

- Understand that tools and machines be used properly or injuries will occur.
- Understand that a clean workplace will help keep injuries to a minimum.
- Identify common automotive hand and power tools.
- List safety rules for using hand and power tools in the Auto Shop.
- Select the correct tool for a given job.
- Correctly answer ASE certification questions referring to hand/power tools.

ESSENTIAL QUESTIONS

- What hazardous tools and chemicals should I recognize in the Auto Shop?
- What proactive measures can I take to avoid injury from these hazards?
- How can I use safety equipment located in the Auto Shop to help suppress 'out of control' hazards?

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KNOWLEDGE AND SKILLS: Students will know...

- Chemical handling
- Tool safety
- Purpose of common hand tools
- Organization of hand tools
- Power tool / machine safety / Air tool safety
- Fire Suppression and safety

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STAGE TWO

PERFORMANCE TASKS: Students will be able to...

- Handle shop chemicals safely.
- Identify and safely handle common hand tools.
- Know the locations of fire extinguishers, fire blankets, eye wash stations, and emergency power shut off buttons
- Demonstrate safe operation of power tools such as metal grinder, wire wheels, and reciprocating saws.
- Demonstrate safe operation of all air tools.
- Understand the necessity of keeping tools clean, organized, and properly maintained.

OTHER EVIDENCE

- Quizzes, Tests, Quarterly Exams
- Unit Worksheets
- Supplemental Written Assignments (Homework and Classwork)
- Individual Student Lab Assessments
- Skill Presentations
- Current Events
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STAGE THREE

LEARNING PLAN

- Sketch out a floor plan for the Auto Shop and label different areas, safety hazards, location of fire extinguishers, exits, eye flushing stations, fire blankets, and emergency shut-off buttons.
- Study the anatomy of a fire extinguisher. Demonstrate its proper use.
- Create a list of hand tools / power tools used in the Auto Shop. Explain proper tool safety for each.
- Instructor-led tour of Auto Shop to discuss location of safety equipment, hand tools, and power tools.
- Small-group collaboration to complete assigned worksheets from class textbook.
- Demonstrate correct use of instructor-selected hand/power/air tools.
- Completion of current event assignment focusing on industrial shop safety accidents.

Unit Name: Automotive Career Success and ASE Certifications

Author: Industrial Technology Committee

Time Frame: On-Going/Year-Long

UNIT

Subject: **Automotive Technology**

Country: **United States of America**

Course/Grade: **Auto III / Grade 12**

State/Group: **New Jersey**

School: **Egg Harbor Township High School**

UNIT SUMMARY

In this unit, students will investigate and study a wide variety of career opportunities available in the automotive industry, as well as discuss and explore the many factors that can determine success when employed in such a rapidly-changing career field. There is more to being a good technician than just being able to work on vehicles. Students will learn how to search for prospective employment opportunities, as well learning the simple things that can be done to help achieve success at all levels in the automotive industry. Instructor-led discussion and exploration of ASE certifications to ensure the highest standards of automotive service.

UNIT RESOURCES

Textbook:

***Modern Automotive Technology.* Duffy, James E. Goodheart-Wilcox Co, Inc. 8th Edition. Tinley Park, IL. 2014.**

***Auto Fundamentals.* Stockel Martin and Chris Johanson. Goodheart-Wilcox Co, Inc. 11th Edition. Tinley Park, IL. 2015.**

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www.popularscience.com

www.osha.gov

STAGE ONE

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- **NJCCS 9.1.12.B.3** Assist in the development of innovative solutions to an onsite problem by incorporating multiple perspectives and applying effective problem-solving strategies during structured learning experiences, service learning, or volunteering.
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- **NJCCS 9.1.12.F.3** Defend the need for intellectual property rights, workers' rights, and workplace safety regulations in the United States and abroad.
- **NJCCS 9.2.12.A.1** Analyze the relationship between various careers and personal earning goals.
- **NJCCS 9.2.12.A.5** Evaluate current advances in technology that apply to a selected occupational career cluster.
- **NJCCS 9.2.12.A.8** Analyze how personal and cultural values impact spending and other financial decisions.
- **NJCCS 9.2.12.G.3** Compare the cost of various types of insurance (e.g., life, homeowners, motor vehicle) for the same product or service, given different liability limits and risk factors.
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ENDURING UNDERSTANDING: Students will be able to...

- **List traits that employers look for in their employees.**
- **Summarize the different systems used to calculate pay in the automotive industry.**
- **Identify the wide-variety of employment opportunities available in the automotive industry.**
- **Explain how to search for and locate job openings in the automotive field.**
- **Recognize specific ASE certifications/credentials and training required for prospective employment positions.**

ESSENTIAL QUESTIONS

- **What specific employment would I enjoy in the automotive industry?**
- **What proactive measures can I take to help me gain employment?**
- **How can I use the resources available to me to seek and apply for prospective employment opportunities?**
- **What ASE certification tests do I need to pass that will allow me to apply for jobs in the automotive industry?**

KNOWLEDGE AND SKILLS: Students will know...

- **Beneficial traits that employers look for in employees**
- **Proper resume skills and layout**
- **Utilize available resources to seek, research, and apply for employment positions**
- **How to interview and accept employment positions**
- **Required education and certifications for positions in the automotive field**

STAGE TWO

PERFORMANCE TASKS: Students will be able to...

- **Identify personal positions of interest in the automotive industry**
- **Know the locations of numerous educational opportunities for attaining certifications and credentials**
- **Demonstrate the ability to research and present employment opportunities**
- **Develop a resume for consideration in the automotive industry.**

OTHER EVIDENCE

- **Unit Worksheets (Resumes, career exploration, etc...)**
- **Supplemental Written Assignments (Homework and Classwork)**
- **Current Events/Employment**
- **PowerPoint presentations of interested career opportunities.**

STAGE THREE

LEARNING PLAN

- **Make a list of career interest in the automotive industry.**
- **Visit numerous post-secondary educational facilities offering the necessary training to gain employment in the automotive industry**
- **Design and create a resume that focuses on gaining employment in the automotive field.**
- **Create a list of hand tools / power tools used in the Auto Shop. Explain proper tool safety for each.**
- **Instructor-led discussion of certifications and credentials required for employment.**
- **Small-group collaboration to complete assigned worksheets from class textbook.**
- **Completion of PowerPoint assignment focusing on areas of interest in the automotive industry**

Unit Name: Independent Application of Skills and Knowledge

Author: Industrial Technology Committee

Time Frame: On-Going/Year-Long

UNIT

Subject: **Automotive Technology**

Country: **United States of America**

Course/Grade: **Auto III / Grade 12**

State/Group: **New Jersey**

School: **Egg Harbor Township High School**

UNIT SUMMARY

A good technician has developed the ability to inspect, diagnose, and repair a wide-variety of service concerns on vehicles of all types and designs. As a student enrolled in Auto Technology III, it is expected that a certain level of skill has been cultivated in understanding the modern automobile and the numerous systems utilized in its construction. In this unit, students will work independently and in small groups on practical, real-life problems brought into the Auto Shop classroom either on their personal vehicles or those belonging to real-life customers. Students will become familiar with Work Order Request forms, time-on-task sheets, and personal log of work completed on numerous tasks such as, but not limited to:

- ✓ Computer scans/visual diagnostics of the entire automobile/electronic control unit (ECU/ECM)
- ✓ Ignition system repairs
- ✓ Brake system repairs
- ✓ Cooling system repairs
- ✓ Lubrication system maintenance
- ✓ Steering system repairs
- ✓ Suspension system repairs
- ✓ Tire and Wheel maintenance/repair
- ✓ Electrical system repairs
- ✓ Routine/Scheduled maintenance

UNIT RESOURCES

Textbook:

Modern Automotive Technology. Duffy, James E. Goodheart-Wilcox Co, Inc. 8th Edition. Tinley Park, IL. 2014.

Auto Fundamentals. Stockel Martin and Chris Johanson. Goodheart-Wilcox Co, Inc. 11th Edition. Tinley Park, IL. 2015.

Internet Resource Links:

www.NBCLearn.com

www.Learn360.com

www.foxnews.com/technology

www.cnn.com/technology

www.popularmechanics.com

www.popularscience.com

www.osha.gov

STAGE ONE

GOALS AND STANDARDS

- **CRP1.** Act as a responsible and contributing citizen and employee.
- **CRP2.** Apply appropriate academic and technical skills.
- **CRP4.** Communicate clearly and effectively and with reason.
- **CRP5.** Consider the environmental, social and economic impacts of decisions.
- **CRP6.** Demonstrate creativity and innovation.
- **CRP7.** Employ valid and reliable research strategies.
- **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them.
- **CRP9.** Model integrity, ethical leadership and effective management.
- **CRP10.** Plan education and career paths aligned to personal goals.
- **CRP11.** Use technology to enhance productivity.
- **CRP12.** Work productively in teams while using cultural global competence
- **CCCS.MATH.CONTENT.HSN-Q.A.1-3** Use units as a way to understand problems and to guide the solution of multistep problems; choose and interpret units consistently in formulas.
- **CCCS.ELA-LITERACY.RST.11-12.4** Workplace Safety
- **CCCS.ELA-LITERACY.WHST 11-12.2.** Critical Thinking, Problem Solving and Decision Making
- **CCCS.ELA-LITERACY.RST.11-12.4.** Follow Multi-step Procedure
- **CCCS.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.
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- **CCSS.ELA-LITERACY.CCRA.R.10** Read and comprehend complex literary and informational texts independently and proficiently.
- **CCSS.ELA-LITERACY.RST.11-12.5** Follow precisely a complex, multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze specific results based on explanations in the text.
- **CCSS.ELA-LITERACY.W.11-12.2** Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- **CCSS.ELA-LITERACY.W.11-12.8** Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively.
- **2014 NJCCS 8.1.12.A.1** Create a personal digital portfolio which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.

- **2014 NJCCS 8.1.12.F.1** Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.
- **2014 NJCCS 8.2.12.A.2** Analyze a current technology and the resources used, to identify the trade-offs in terms of availability, cost, desirability and waste.
- **2014 NJCCS 8.2.12.B.2** Evaluate ethical considerations regarding the sustainability of environmental resources that are used for the design, creation and maintenance of a chosen product.
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- **2014 NJCCS 8.2.12.B.5** Research the historical tensions between environmental and economic considerations as driven by human needs and wants in the development of a technological product, and present the competing viewpoints to peers for review.
- **2014 NJCCS 8.2.12.C.2** Analyze a product and how it has changed or might change over time to meet human needs and wants.
- **2014 NJCCS 8.2.12.C.3** Analyze a product or system for factors such as safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, and human factors engineering (ergonomics).
- **2014 NJCCS 8.2.12.C.4** Explain and identify interdependent systems and their functions.
- **2014 NJCCS 8.2.12.D.1** Design and create a prototype to solve a real world problem using a design process, identify constraints addressed during the creation of the prototype, identify trade-offs made, and present the solution for peer review.
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- **2014 NJCCS 8.2.12.E.1** Demonstrate an understanding of the problem-solving capacity of computers in our world.
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- **NJCCS 9.3.12.4** 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.
- **NJCCS 9-12.9.1.12.1** Collaboration and teamwork enable individuals or groups to achieve common goals with greater efficiency
- **NJCCS 9-12.9.1.12.F.2** Demonstrate a positive work ethic in various settings, including the classroom and during structured learning experiences.
- **NJCCS 9.1.12.A.1** Apply critical thinking and problem-solving strategies during structured learning experiences.
- **NJCCS 9.1.12.B.3** Assist in the development of innovative solutions to an onsite problem by incorporating multiple perspectives and applying effective problem-solving strategies during structured learning experiences, service learning, or volunteering.
- **NJCCS 9.1.12.F.1** Explain the impact of current and emerging technological advances on the demand for increased and new types of accountability and productivity in the global workplace.
- **NJCCS 9.1.12.F.2** Demonstrate a positive work ethic in various settings, including the classroom and during structured learning experiences.
- **NJCCS 9.1.12.F.3** Defend the need for intellectual property rights, workers' rights, and workplace safety regulations in the United States and abroad.
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- **NJCCS 9.2.12.G.3** Compare the cost of various types of insurance (e.g., life, homeowners, motor vehicle) for the same product or service, given different liability limits and risk factors.
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- **NJCCS 9.3.12.C.21** Determine the extent to which an individual's online behavior (e.g., social networking, photo exchanges, video postings) may impact opportunities for employment, job retention, or job advancement.
- **NJCCS 9.3.12.C.22** Compare and contrast New Jersey school district policies with employer policies related to individual behavior and responsibilities (e.g., absenteeism and tardiness, plagiarism, harassment).
- **NJCCS 9.3.12.C.23** Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors.

ENDURING UNDERSTANDING: Students will be able to...

- **Summarize the expected maintenance/repairs for a customer's vehicle and locate necessary parts**
- **Identify the wide-variety of the mechanical and electrical problems with an automobile**
- **Explain how to search for and locate critical data necessary for complete repair and maintenance**
- **Develop and utilize proper customer/client relationship skills**

ESSENTIAL QUESTIONS

- **What is the customer saying is wrong with their vehicle?**
- **What proactive measures can I take to help me locate the problem with a vehicle?**
- **How can I use the resources available to me to help me locate and fix a diagnosed problem with a vehicle?**
- **Do I feel I have the skills, knowledge, and tools necessary to make this repair, or should I seek assistance?**

KNOWLEDGE AND SKILLS: Students will know...

- **Beneficial traits of a good technician**
- **Knowledge of where to locate available resources for making repairs/performing routine maintenance.**
- **Safely and correctly utilize available resources (data, co-workers, professionals, tools)**
- **How to interview customers**

STAGE TWO

PERFORMANCE TASKS: Students will be able to...

- **Identify/diagnose necessary repairs/maintenance on a variety of automobiles**
- **Know how to interview clients/customers to gather information about their concerns**
- **Demonstrate the ability safely utilize all resources in the Auto Shop environment**
- **Develop a Personal Portfolio that reflects their experiences/efforts throughout**

OTHER EVIDENCE

- **Unit Worksheets (Work Order Request forms, Time-on-Task sheets)**
- **Supplemental Written Assignments (Personal Portfolio)**
- **Daily class participation evaluations**
- **ASE Sample Tests**

STAGE THREE

LEARNING PLAN

- **Make a list of tools/gather tools necessary to make repairs**
- **Visit numerous online resources available to confirm repair procedures**
- **Design and create a Personal Portfolio that accurately reflects experiences throughout the school year**
- **Small-group collaboration to complete assigned repairs/maintenance**

Unit Name: Automotive Career Success and ASE Certifications

Author: Industrial Technology Committee

Time Frame: On-Going/Year-Long

UNIT

Subject: **Automotive Technology**

Country: **United States of America**

Course/Grade: **Auto III / Grade 12**

State/Group: **New Jersey**

School: **Egg Harbor Township High School**

UNIT SUMMARY

In this unit, students will investigate and study a wide variety of career opportunities available in the automotive industry, as well as discuss and explore the many factors that can determine success when employed in such a rapidly-changing career field. There is more to being a good technician than just being able to work on vehicles. Students will learn how to search for prospective employment opportunities, as well learning the simple things that can be done to help achieve success at all levels in the automotive industry. Instructor-led discussion and exploration of ASE certifications to ensure the highest standards of automotive service.

UNIT RESOURCES

Textbook:

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Internet Resource Links:

www.NBCLearn.com

www.Learn360.com

www.foxnews.com/technology

www.cnn.com/technology

www.popularmechanics.com

www.popularscience.com

www.osha.gov

STAGE ONE

GOALS AND STANDARDS

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- **NJCCS 9.3.12.C.22** Compare and contrast New Jersey school district policies with employer policies related to individual behavior and responsibilities (e.g., absenteeism and tardiness, plagiarism, harassment).
- **NJCCS 9.3.12.C.23** Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors.

ENDURING UNDERSTANDING: Students will be able to...

- **List traits that employers look for in their employees.**
- **Summarize the different systems used to calculate pay in the automotive industry.**
- **Identify the wide-variety of employment opportunities available in the automotive industry.**
- **Explain how to search for and locate job openings in the automotive field.**
- **Recognize specific ASE certifications/credentials and training required for prospective employment positions.**

ESSENTIAL QUESTIONS

- **What specific employment would I enjoy in the automotive industry?**
- **What proactive measures can I take to help me gain employment?**
- **How can I use the resources available to me to seek and apply for prospective employment opportunities?**
- **What ASE certification tests do I need to pass that will allow me to apply for jobs in the automotive industry?**

KNOWLEDGE AND SKILLS: Students will know...

- **Beneficial traits that employers look for in employees**
- **Proper resume skills and layout**
- **Utilize available resources to seek, research, and apply for employment positions**
- **How to interview and accept employment positions**
- **Required education and certifications for positions in the automotive field**

STAGE TWO

PERFORMANCE TASKS: Students will be able to...

- **Identify personal positions of interest in the automotive industry**
- **Know the locations of numerous educational opportunities for attaining certifications and credentials**
- **Demonstrate the ability to research and present employment opportunities**
- **Develop a resume for consideration in the automotive industry.**

OTHER EVIDENCE

- **Unit Worksheets (Resumes, career exploration, etc...)**
- **Supplemental Written Assignments (Homework and Classwork)**
- **Current Events/Employment**
- **PowerPoint presentations of interested career opportunities.**

STAGE THREE

LEARNING PLAN

- **Make a list of career interest in the automotive industry.**
- **Visit numerous post-secondary educational facilities offering the necessary training to gain employment in the automotive industry**
- **Design and create a resume that focuses on gaining employment in the automotive field.**
- **Create a list of hand tools / power tools used in the Auto Shop. Explain proper tool safety for each.**
- **Instructor-led discussion of certifications and credentials required for employment.**
- **Small-group collaboration to complete assigned worksheets from class textbook.**
- **Completion of PowerPoint assignment focusing on areas of interest in the automotive industry**

Unit Name: Independent Application of Skills and Knowledge

Author: Industrial Technology Committee

Time Frame: On-Going/Year-Long

UNIT

Subject: **Automotive Technology**

Country: **United States of America**

Course/Grade: **Auto III / Grade 12**

State/Group: **New Jersey**

School: **Egg Harbor Township High School**

UNIT SUMMARY

A good technician has developed the ability to inspect, diagnose, and repair a wide-variety of service concerns on vehicles of all types and designs. As a student enrolled in Auto Technology III, it is expected that a certain level of skill has been cultivated in understanding the modern automobile and the numerous systems utilized in its construction. In this unit, students will work independently and in small groups on practical, real-life problems brought into the Auto Shop classroom either on their personal vehicles or those belonging to real-life customers. Students will become familiar with Work Order Request forms, time-on-task sheets, and personal log of work completed on numerous tasks such as, but not limited to:

- ✓ Computer scans/visual diagnostics of the entire automobile/electronic control unit (ECU/ECM)
- ✓ Ignition system repairs
- ✓ Brake system repairs
- ✓ Cooling system repairs
- ✓ Lubrication system maintenance
- ✓ Steering system repairs
- ✓ Suspension system repairs
- ✓ Tire and Wheel maintenance/repair
- ✓ Electrical system repairs
- ✓ Routine/Scheduled maintenance

UNIT RESOURCES

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Auto Fundamentals. Stockel Martin and Chris Johanson. Goodheart-Wilcox Co, Inc. 11th Edition. Tinley Park, IL. 2015.

Internet Resource Links:

www.NBCLearn.com

www.Learn360.com

www.foxnews.com/technology

www.cnn.com/technology

www.popularmechanics.com

www.popularscience.com

www.osha.gov

STAGE ONE

GOALS AND STANDARDS

- **CRP1.** Act as a responsible and contributing citizen and employee.
- **CRP2.** Apply appropriate academic and technical skills.
- **CRP4.** Communicate clearly and effectively and with reason.
- **CRP5.** Consider the environmental, social and economic impacts of decisions.
- **CRP6.** Demonstrate creativity and innovation.
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- **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them.
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- **NJCCS 9.3.12.C.22** Compare and contrast New Jersey school district policies with employer policies related to individual behavior and responsibilities (e.g., absenteeism and tardiness, plagiarism, harassment).
- **NJCCS 9.3.12.C.23** Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors.

ENDURING UNDERSTANDING: Students will be able to...

- **Summarize the expected maintenance/repairs for a customer's vehicle and locate necessary parts**
- **Identify the wide-variety of the mechanical and electrical problems with an automobile**
- **Explain how to search for and locate critical data necessary for complete repair and maintenance**
- **Develop and utilize proper customer/client relationship skills**

ESSENTIAL QUESTIONS

- **What is the customer saying is wrong with their vehicle?**
- **What proactive measures can I take to help me locate the problem with a vehicle?**
- **How can I use the resources available to me to help me locate and fix a diagnosed problem with a vehicle?**
- **Do I feel I have the skills, knowledge, and tools necessary to make this repair, or should I seek assistance?**

KNOWLEDGE AND SKILLS: Students will know...

- **Beneficial traits of a good technician**
- **Knowledge of where to locate available resources for making repairs/performing routine maintenance.**
- **Safely and correctly utilize available resources (data, co-workers, professionals, tools)**
- **How to interview customers**

STAGE TWO

PERFORMANCE TASKS: Students will be able to...

- **Identify/diagnose necessary repairs/maintenance on a variety of automobiles**
- **Know how to interview clients/customers to gather information about their concerns**
- **Demonstrate the ability safely utilize all resources in the Auto Shop environment**
- **Develop a Personal Portfolio that reflects their experiences/efforts throughout**

OTHER EVIDENCE

- **Unit Worksheets (Work Order Request forms, Time-on-Task sheets)**
- **Supplemental Written Assignments (Personal Portfolio)**
- **Daily class participation evaluations**
- **ASE Sample Tests**

STAGE THREE

LEARNING PLAN

- **Make a list of tools/gather tools necessary to make repairs**
- **Visit numerous online resources available to confirm repair procedures**
- **Design and create a Personal Portfolio that accurately reflects experiences throughout the school year**
- **Small-group collaboration to complete assigned repairs/maintenance**

Unit Name: Automotive Career Success and ASE Certifications

Author: Industrial Technology Committee

Time Frame: On-Going/Year-Long

UNIT

Subject: **Automotive Technology**

Country: **United States of America**

Course/Grade: **Auto III / Grade 12**

State/Group: **New Jersey**

School: **Egg Harbor Township High School**

UNIT SUMMARY

In this unit, students will investigate and study a wide variety of career opportunities available in the automotive industry, as well as discuss and explore the many factors that can determine success when employed in such a rapidly-changing career field. There is more to being a good technician than just being able to work on vehicles. Students will learn how to search for prospective employment opportunities, as well learning the simple things that can be done to help achieve success at all levels in the automotive industry. Instructor-led discussion and exploration of ASE certifications to ensure the highest standards of automotive service.

UNIT RESOURCES

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ENDURING UNDERSTANDING: Students will be able to...

- **List traits that employers look for in their employees.**
- **Summarize the different systems used to calculate pay in the automotive industry.**
- **Identify the wide-variety of employment opportunities available in the automotive industry.**
- **Explain how to search for and locate job openings in the automotive field.**
- **Recognize specific ASE certifications/credentials and training required for prospective employment positions.**

ESSENTIAL QUESTIONS

- **What specific employment would I enjoy in the automotive industry?**
- **What proactive measures can I take to help me gain employment?**
- **How can I use the resources available to me to seek and apply for prospective employment opportunities?**
- **What ASE certification tests do I need to pass that will allow me to apply for jobs in the automotive industry?**

KNOWLEDGE AND SKILLS: Students will know...

- **Beneficial traits that employers look for in employees**
- **Proper resume skills and layout**
- **Utilize available resources to seek, research, and apply for employment positions**
- **How to interview and accept employment positions**
- **Required education and certifications for positions in the automotive field**

STAGE TWO

PERFORMANCE TASKS: Students will be able to...

- **Identify personal positions of interest in the automotive industry**
- **Know the locations of numerous educational opportunities for attaining certifications and credentials**
- **Demonstrate the ability to research and present employment opportunities**
- **Develop a resume for consideration in the automotive industry.**

OTHER EVIDENCE

- **Unit Worksheets (Resumes, career exploration, etc...)**
- **Supplemental Written Assignments (Homework and Classwork)**
- **Current Events/Employment**
- **PowerPoint presentations of interested career opportunities.**

STAGE THREE

LEARNING PLAN

- **Make a list of career interest in the automotive industry.**
- **Visit numerous post-secondary educational facilities offering the necessary training to gain employment in the automotive industry**
- **Design and create a resume that focuses on gaining employment in the automotive field.**
- **Create a list of hand tools / power tools used in the Auto Shop. Explain proper tool safety for each.**
- **Instructor-led discussion of certifications and credentials required for employment.**
- **Small-group collaboration to complete assigned worksheets from class textbook.**
- **Completion of PowerPoint assignment focusing on areas of interest in the automotive industry**

Unit Name: Independent Application of Skills and Knowledge

Author: Industrial Technology Committee

Time Frame: On-Going/Year-Long

UNIT

Subject: **Automotive Technology**

Country: **United States of America**

Course/Grade: **Auto III / Grade 12**

State/Group: **New Jersey**

School: **Egg Harbor Township High School**

UNIT SUMMARY

A good technician has developed the ability to inspect, diagnose, and repair a wide-variety of service concerns on vehicles of all types and designs. As a student enrolled in Auto Technology III, it is expected that a certain level of skill has been cultivated in understanding the modern automobile and the numerous systems utilized in its construction. In this unit, students will work independently and in small groups on practical, real-life problems brought into the Auto Shop classroom either on their personal vehicles or those belonging to real-life customers. Students will become familiar with Work Order Request forms, time-on-task sheets, and personal log of work completed on numerous tasks such as, but not limited to:

- ✓ Computer scans/visual diagnostics of the entire automobile/electronic control unit (ECU/ECM)
- ✓ Ignition system repairs
- ✓ Brake system repairs
- ✓ Cooling system repairs
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- **NJCCS 9.1.12.A** Critical Thinking, Problem Solving and Decision Making
- **NJCCS.9.3.12.C** Workplace Safety
- **NJCCS 9.3.12.3** Follow Multi-step Procedure
- **NJCCS 9.3.12.4** 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.
- **NJCCS 9-12.9.1.12.1** Collaboration and teamwork enable individuals or groups to achieve common goals with greater efficiency
- **NJCCS 9-12.9.1.12.F.2** Demonstrate a positive work ethic in various settings, including the classroom and during structured learning experiences.
- **NJCCS 9.1.12.A.1** Apply critical thinking and problem-solving strategies during structured learning experiences.
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- **NJCCS 9.2.12.A.8** Analyze how personal and cultural values impact spending and other financial decisions.
- **NJCCS 9.2.12.G.3** Compare the cost of various types of insurance (e.g., life, homeowners, motor vehicle) for the same product or service, given different liability limits and risk factors.
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- **NJCCS 9.3.12.C.4** Use online resources to examine licensing, certification, and credentialing requirements at the local, state, and national levels to maintain compliance with industry requirements in areas of career interest.
- **NJCCS 9.3.12.C.7** Pursue a variety of activities related to career preparation (e.g., volunteer, seek employment, and/or apply for training grants, higher education grants, and loans).
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- **NJCCS 9.3.12.C.21** Determine the extent to which an individual's online behavior (e.g., social networking, photo exchanges, video postings) may impact opportunities for employment, job retention, or job advancement.
- **NJCCS 9.3.12.C.22** Compare and contrast New Jersey school district policies with employer policies related to individual behavior and responsibilities (e.g., absenteeism and tardiness, plagiarism, harassment).
- **NJCCS 9.3.12.C.23** Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors.

ENDURING UNDERSTANDING: Students will be able to...

- **Summarize the expected maintenance/repairs for a customer's vehicle and locate necessary parts**
- **Identify the wide-variety of the mechanical and electrical problems with an automobile**
- **Explain how to search for and locate critical data necessary for complete repair and maintenance**
- **Develop and utilize proper customer/client relationship skills**

ESSENTIAL QUESTIONS

- **What is the customer saying is wrong with their vehicle?**
- **What proactive measures can I take to help me locate the problem with a vehicle?**
- **How can I use the resources available to me to help me locate and fix a diagnosed problem with a vehicle?**
- **Do I feel I have the skills, knowledge, and tools necessary to make this repair, or should I seek assistance?**

KNOWLEDGE AND SKILLS: Students will know...

- **Beneficial traits of a good technician**
- **Knowledge of where to locate available resources for making repairs/performing routine maintenance.**
- **Safely and correctly utilize available resources (data, co-workers, professionals, tools)**
- **How to interview customers**

STAGE TWO

PERFORMANCE TASKS: Students will be able to...

- **Identify/diagnose necessary repairs/maintenance on a variety of automobiles**
- **Know how to interview clients/customers to gather information about their concerns**
- **Demonstrate the ability safely utilize all resources in the Auto Shop environment**
- **Develop a Personal Portfolio that reflects their experiences/efforts throughout**

OTHER EVIDENCE

- **Unit Worksheets (Work Order Request forms, Time-on-Task sheets)**
- **Supplemental Written Assignments (Personal Portfolio)**
- **Daily class participation evaluations**
- **ASE Sample Tests**

STAGE THREE

LEARNING PLAN

- **Make a list of tools/gather tools necessary to make repairs**
- **Visit numerous online resources available to confirm repair procedures**
- **Design and create a Personal Portfolio that accurately reflects experiences throughout the school year**
- **Small-group collaboration to complete assigned repairs/maintenance**

Unit Name: Automotive Career Success and ASE Certifications

Author: Industrial Technology Committee

Time Frame: On-Going/Year-Long

UNIT

Subject: **Automotive Technology**

Country: **United States of America**

Course/Grade: **Auto III / Grade 12**

State/Group: **New Jersey**

School: **Egg Harbor Township High School**

UNIT SUMMARY

In this unit, students will investigate and study a wide variety of career opportunities available in the automotive industry, as well as discuss and explore the many factors that can determine success when employed in such a rapidly-changing career field. There is more to being a good technician than just being able to work on vehicles. Students will learn how to search for prospective employment opportunities, as well learning the simple things that can be done to help achieve success at all levels in the automotive industry. Instructor-led discussion and exploration of ASE certifications to ensure the highest standards of automotive service.

UNIT RESOURCES

Textbook:

Modern Automotive Technology. Duffy, James E. Goodheart-Wilcox Co, Inc. 8th Edition. Tinley Park, IL. 2014.

Auto Fundamentals. Stockel Martin and Chris Johanson. Goodheart-Wilcox Co, Inc. 11th Edition. Tinley Park, IL. 2015.

Internet Resource Links:

www.NBCLearn.com

www.Learn360.com

www.foxnews.com/technology

www.cnn.com/technology

www.popularmechanics.com

www.popularscience.com

www.osha.gov

STAGE ONE

GOALS AND STANDARDS

- **CRP1.** Act as a responsible and contributing citizen and employee.
- **CRP2.** Apply appropriate academic and technical skills.
- **CRP4.** Communicate clearly and effectively and with reason.
- **CRP5.** Consider the environmental, social and economic impacts of decisions.
- **CRP6.** Demonstrate creativity and innovation.
- **CRP7.** Employ valid and reliable research strategies.
- **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them.
- **CRP9.** Model integrity, ethical leadership and effective management.
- **CRP10.** Plan education and career paths aligned to personal goals.
- **CRP11.** Use technology to enhance productivity.
- **CRP12.** Work productively in teams while using cultural global competence
- **CCCS.MATH.CONTENT.HSN-Q.A.1-3** Use units as a way to understand problems and to guide the solution of multistep problems; choose and interpret units consistently in formulas.
- **CCCS.ELA-LITERACY.RST.11-12.4** Workplace Safety
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- **CCSS.ELA-LITERACY.CCRA.R.10** Read and comprehend complex literary and informational texts independently and proficiently.
- **CCSS.ELA-LITERACY.RST.11-12.5** Follow precisely a complex, multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze specific results based on explanations in the text.
- **CCSS.ELA-LITERACY.W.11-12.2** Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- **CCSS.ELA-LITERACY.W.11-12.8** Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively.
- **2014 NJCCS 8.1.12.A.1** Create a personal digital portfolio which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
- **2014 NJCCS 8.1.12.F.1** Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.
- **2014 NJCCS 8.2.12.A.2** Analyze a current technology and the resources used, to identify the trade-offs in terms of availability, cost, desirability and waste.
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- **2014 NJCCS 8.2.12.B.5** Research the historical tensions between environmental and economic considerations as driven by human needs and wants in the development of a technological product, and present the competing viewpoints to peers for review.
- **2014 NJCCS 8.2.12.C.2** Analyze a product and how it has changed or might change over time to meet human needs and wants.
- **2014 NJCCS 8.2.12.C.3** Analyze a product or system for factors such as safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, and human factors engineering (ergonomics).

- **2014 NJCCS 8.2.12.C.4** Explain and identify interdependent systems and their functions.
- **2014 NJCCS 8.2.12.D.1** Design and create a prototype to solve a real world problem using a design process, identify constraints addressed during the creation of the prototype, identify trade-offs made, and present the solution for peer review.
- **2014 NJCCS 8.2.12.D.5** Explain how material processing impacts the quality of engineered and fabricated products.
- **2014 NJCCS 8.2.12.E.1** Demonstrate an understanding of the problem-solving capacity of computers in our world.
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- **NJCCS 9.2.12.A.5** Evaluate current advances in technology that apply to a selected occupational career cluster.
- **NJCCS 9.2.12.A.8** Analyze how personal and cultural values impact spending and other financial decisions.
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- **NJCCS 9.2.12.G.5** Compare insurance policy coverage limits and related premiums and deductibles to minimize costs.
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- **NJCCS 9.3.12.C.23** Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors.

ENDURING UNDERSTANDING: Students will be able to...

- **List traits that employers look for in their employees.**
- **Summarize the different systems used to calculate pay in the automotive industry.**
- **Identify the wide-variety of employment opportunities available in the automotive industry.**
- **Explain how to search for and locate job openings in the automotive field.**
- **Recognize specific ASE certifications/credentials and training required for prospective employment positions.**

ESSENTIAL QUESTIONS

- **What specific employment would I enjoy in the automotive industry?**
- **What proactive measures can I take to help me gain employment?**
- **How can I use the resources available to me to seek and apply for prospective employment opportunities?**
- **What ASE certification tests do I need to pass that will allow me to apply for jobs in the automotive industry?**

KNOWLEDGE AND SKILLS: Students will know...

- **Beneficial traits that employers look for in employees**
- **Proper resume skills and layout**
- **Utilize available resources to seek, research, and apply for employment positions**
- **How to interview and accept employment positions**
- **Required education and certifications for positions in the automotive field**

STAGE TWO

PERFORMANCE TASKS: Students will be able to...

- **Identify personal positions of interest in the automotive industry**
- **Know the locations of numerous educational opportunities for attaining certifications and credentials**
- **Demonstrate the ability to research and present employment opportunities**
- **Develop a resume for consideration in the automotive industry.**

OTHER EVIDENCE

- **Unit Worksheets (Resumes, career exploration, etc...)**
- **Supplemental Written Assignments (Homework and Classwork)**
- **Current Events/Employment**
- **PowerPoint presentations of interested career opportunities.**

STAGE THREE

LEARNING PLAN

- **Make a list of career interest in the automotive industry.**
- **Visit numerous post-secondary educational facilities offering the necessary training to gain employment in the automotive industry**
- **Design and create a resume that focuses on gaining employment in the automotive field.**
- **Create a list of hand tools / power tools used in the Auto Shop. Explain proper tool safety for each.**
- **Instructor-led discussion of certifications and credentials required for employment.**
- **Small-group collaboration to complete assigned worksheets from class textbook.**
- **Completion of PowerPoint assignment focusing on areas of interest in the automotive industry**

Unit Name: Independent Application of Skills and Knowledge

Author: Industrial Technology Committee

Time Frame: On-Going/Year-Long

UNIT

Subject: **Automotive Technology**

Country: **United States of America**

Course/Grade: **Auto III / Grade 12**

State/Group: **New Jersey**

School: **Egg Harbor Township High School**

UNIT SUMMARY

A good technician has developed the ability to inspect, diagnose, and repair a wide-variety of service concerns on vehicles of all types and designs. As a student enrolled in Auto Technology III, it is expected that a certain level of skill has been cultivated in understanding the modern automobile and the numerous systems utilized in its construction. In this unit, students will work independently and in small groups on practical, real-life problems brought into the Auto Shop classroom either on their personal vehicles or those belonging to real-life customers. Students will become familiar with Work Order Request forms, time-on-task sheets, and personal log of work completed on numerous tasks such as, but not limited to:

- ✓ Computer scans/visual diagnostics of the entire automobile/electronic control unit (ECU/ECM)
- ✓ Ignition system repairs
- ✓ Brake system repairs
- ✓ Cooling system repairs
- ✓ Lubrication system maintenance
- ✓ Steering system repairs
- ✓ Suspension system repairs
- ✓ Tire and Wheel maintenance/repair
- ✓ Electrical system repairs
- ✓ Routine/Scheduled maintenance

UNIT RESOURCES

Textbook:

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Auto Fundamentals. Stockel Martin and Chris Johanson. Goodheart-Wilcox Co, Inc. 11th Edition. Tinley Park, IL. 2015.

Internet Resource Links:

www.NBCLearn.com

www.Learn360.com

www.foxnews.com/technology

www.cnn.com/technology

www.popularmechanics.com

www.popularscience.com

www.osha.gov

STAGE ONE

GOALS AND STANDARDS

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- **CRP2.** Apply appropriate academic and technical skills.
- **CRP4.** Communicate clearly and effectively and with reason.
- **CRP5.** Consider the environmental, social and economic impacts of decisions.
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- **CCSS.ELA-LITERACY.W.11-12.8** Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively.
- **2014 NJCCS 8.1.12.A.1** Create a personal digital portfolio which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.

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- **NJCCS 9.3.12.C.23** Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors.

ENDURING UNDERSTANDING: Students will be able to...

- **Summarize the expected maintenance/repairs for a customer's vehicle and locate necessary parts**
- **Identify the wide-variety of the mechanical and electrical problems with an automobile**
- **Explain how to search for and locate critical data necessary for complete repair and maintenance**
- **Develop and utilize proper customer/client relationship skills**

ESSENTIAL QUESTIONS

- **What is the customer saying is wrong with their vehicle?**
- **What proactive measures can I take to help me locate the problem with a vehicle?**
- **How can I use the resources available to me to help me locate and fix a diagnosed problem with a vehicle?**
- **Do I feel I have the skills, knowledge, and tools necessary to make this repair, or should I seek assistance?**

KNOWLEDGE AND SKILLS: Students will know...

- **Beneficial traits of a good technician**
- **Knowledge of where to locate available resources for making repairs/performing routine maintenance.**
- **Safely and correctly utilize available resources (data, co-workers, professionals, tools)**
- **How to interview customers**

STAGE TWO

PERFORMANCE TASKS: Students will be able to...

- **Identify/diagnose necessary repairs/maintenance on a variety of automobiles**
- **Know how to interview clients/customers to gather information about their concerns**
- **Demonstrate the ability safely utilize all resources in the Auto Shop environment**
- **Develop a Personal Portfolio that reflects their experiences/efforts throughout**

OTHER EVIDENCE

- **Unit Worksheets (Work Order Request forms, Time-on-Task sheets)**
- **Supplemental Written Assignments (Personal Portfolio)**
- **Daily class participation evaluations**
- **ASE Sample Tests**

STAGE THREE

LEARNING PLAN

- **Make a list of tools/gather tools necessary to make repairs**
- **Visit numerous online resources available to confirm repair procedures**
- **Design and create a Personal Portfolio that accurately reflects experiences throughout the school year**
- **Small-group collaboration to complete assigned repairs/maintenance**

Curriculum Resources - Differentiated Instruction

Special Education Interventions in General Education

Visual Supports

Extended time to complete tests and assignments

Graphic Organizers

Mnemonic tricks to improve memory

Study guides

Use agenda book for assignments

Provide a posted daily schedule

Use of classroom behavior management system

Use prompts and model directions

Use task analysis to break down activities and lessons into each individual step needed to complete the task

Use concrete examples to teach concepts

Have student repeat/rephrase written directions

Heterogeneous grouping

Resources:

Do to Learn:

<http://www.do2learn.com/>

Sen Teacher:

<http://www.senteacher.org/>

Intervention Central:

<http://www.interventioncentral.org/>

Learning Ally:

<https://www.learningally.org/>

English Language Learners Interventions in Regular Education

Resources:

FABRIC - Learning Paradigm for ELLs (NJDOE)

www.nj.gov/education/bilingual/pd/fabric/fabric.pdf

Guide to Teaching ELL Students

<http://www.colorincolorado.org/new-teaching-ells>

Edutopia - Supporting English Language Learners

<https://www.edutopia.org/blog/strategies-and-resources-supporting-ell-todd-finley>

Reading Rockets

<http://www.readingrockets.org/reading-topics/english-language-learners>

Gifted and Talented Interventions in Regular Education

Resources:

Who are Gifted and Talented Students

<http://www.npr.org/sections/ed/2015/09/28/443193523/who-are-the-gifted-and-talented-and-what-do-they-need>

Hoagies Gifted Education Page

<http://www.hoagiesgifted.org/programs.htm>

21st Century Learning

Resources:

Partnership for 21st Century Learning

<http://www.p21.org/>

Career Ready Practices (NJDOE)

<http://www.nj.gov/education/cte/hl/CRP.pdf>