

Wallenpaupack Area School District Planned Course Curriculum Guide

Career & Technical Education

Automotive Technology I

Course Description:

This introductory course prepares students for careers as professional automotive technicians by exploring the fundamentals of automotive systems, diagnostics, and service. Students engage in hands-on lab activities focused on engineering principles, computer applications, and safe shop practices. Topics include automotive chemicals and safety, tool usage, shop operations, and career pathways.

The curriculum integrates communication, problem-solving, customer relations, technical writing, computer science, measurement systems, blueprint reading, and hazard prevention. Students will gain foundational knowledge of the internal combustion engine, examining its systems to understand how it operates.

The course also introduces engine performance and diagnostic principles, applying physics, thermodynamics, and chemistry to real-world scenarios. Students will study ignition systems, fuel management, emissions control, and computerized engine diagnostics. Emphasis is placed on strategy-based troubleshooting, interpreting diagnostic trouble codes (DTCs), using scan tools and digital multimeters, and accessing electronic service information (ESI). Students will learn to identify vehicle components, adjust ignition timing, and perform inspections to determine and complete necessary repairs.

Initial Creation Date (if applicable) and Revision Dates:

2004

Revision: 2007,2014,2025

Wallenpaupack Area School District Curriculum	
COURSE: Automotive Technology	GRADE: 10
UNIT 1: Orientation	TIMEFRAME: 3 days

PA COMMON CORE/NATIONAL STANDARDS:

ELA:

CC.1.2.11–12.F Evaluate how words and phrases shape meaning and tone in texts.
 CC.1.2.11–12.J Acquire and use accurately general academic and domain specific words and phrases, sufficient for reading, writing, speaking, and listening at the college- and career-readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Math:

CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable.

 CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.

Career Education:

13.2.11.D Analyze, revise, and apply an individualized career portfolio to chosen career path.
 13.3.11.A Evaluate personal attitudes and work habits that support career retention and advancement.

Science:

3.1.12. A. Apply concepts of systems, subsystems, feedback, and control to solve complex technological problems.
 Apply knowledge of control systems concept by designing and modeling control systems that solve specific problems.
 Apply systems analysis to predict results.
 Analyze and describe the function, interaction and relationship among subsystems and the system itself.
 Compare and contrast several systems that could be applied to solve a single problem.
 Evaluate the causes of a system’s inefficiency.

 3.2.12. A. Evaluate the nature of scientific and technological knowledge.
 Know and use the ongoing scientific processes to continually improve and better understand how things work.

Competency Task List:

101 Explain and follow all lab rules.
 104 Demonstrate auto shop safety and hygiene.

UNIT OBJECTIVES (SWBATS):

- Students will be able to:
- Understand course expectations, grading policies, and classroom procedures.
 - Identify career pathways in the automotive industry.

- Demonstrate awareness of professional behavior and workplace ethics.
- Recognize the importance of safety, teamwork, and communication in an automotive setting.
- Navigate course resources including textbooks, online platforms, and reference materials.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Course syllabus review and discussion
- Icebreaker activities and team-building exercises
- Career exploration presentations and videos
- Introduction to shop layout and basic safety rules
- Student interest survey and goal-setting activity

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- Diagnostic: Student interest and prior knowledge survey
- Formative: Participation in discussions and group activities
- Summative: Orientation quiz covering course policies and safety basics
- Benchmark: Completion of student goal sheet and career interest reflection

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

- Students with prior experience may assist in leading shop tours
- Enrichment: Research and present on a specific automotive career
- Visual aids and simplified materials for students with learning needs

RESOURCES (Technology Based Resources, Text Resources, etc.):

- Course syllabus and handbook
- Career exploration websites (e.g., MyCareerTech.con, ASE Education Foundation)
- Introductory automotive videos
- Student goal-setting templates
- Classroom management software (e.g., Apple Classroom, Schoology)

KEY VOCABULARY:

- Automotive Technology
- Career Pathway
- Ethics
- Teamwork
- Safety
- Shop Layout
- ASE (Automotive Service Excellence)
- Expectations

Wallenpaupack Area School District Curriculum	
COURSE: Automotive Technology 1	GRADE: 10
UNIT 2: Auto Shop Safety	TIMEFRAME: 2-3 Weeks

PA COMMON CORE/NATIONAL STANDARDS:

ELA:

CC.1.2.11–12.F Evaluate how words and phrases shape meaning and tone in texts.

CC.1.2.11–12.J Acquire and use accurately general academic and domain specific words and phrases, sufficient for reading, writing, speaking, and listening at the college- and career-readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Math:

CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable.

CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.

Career Education:

13.2.11.D Analyze, revise, and apply an individualized career portfolio to chosen career path.

13.3.11.A Evaluate personal attitudes and work habits that support career retention and advancement.

Science:

3.1.12. A. Apply concepts of systems, subsystems, feedback, and control to solve complex technological problems.

Apply knowledge of control systems concept by designing and modeling control systems that solve specific problems.

Apply systems analysis to predict results.

Analyze and describe the function, interaction and relationship among subsystems and the system itself.

Compare and contrast several systems that could be applied to solve a single problem.

Evaluate the causes of a system’s inefficiency.

3.2.12. A. Evaluate the nature of scientific and technological knowledge.

Know and use the ongoing scientific processes to continually improve and better understand how things work.

Competency Task List:

201 Identify and follow all safety rules.

202 Demonstrate the ability to secure vehicles on jack stands and hydraulic lifts.

203 Demonstrate the ability to set-up/shut-down oxygen acetylene welding equipment.

204 Identify chemical safety, Right-To-Know laws and Safety Data Sheets (SDS).

205 Identify and use hand tools.

206 Identify and use power tools.

207 Wear personal protective equipment (PPE).

208 Follow guidelines for use of fire protection equipment.

210 Follow EPA and OSHA regulations.

UNIT OBJECTIVES (SWBATS):

Students will be able to:

- Identify and demonstrate proper use of personal protective equipment (PPE).
- Interpret and apply information from Safety Data Sheets (SDS).
- Recognize and respond to common shop hazards.
- Understand and follow OSHA and school safety regulations.
- Demonstrate safe behavior in the use of tools, equipment, and chemicals.
- Explain emergency procedures including fire safety, first aid, and evacuation protocols.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Safety demonstrations
- SDS analysis and hazard identification exercises
- Shop safety scavenger hunt
- Group discussion on real-world safety incidents and prevention strategies
- Interactive safety quizzes and games

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- Diagnostic: Safety knowledge pre-assessment
- Formative: Daily safety checks and behavior logs
- Summative: Written safety exam and hands-on safety demonstration
- Benchmark: Completion of OSHA 10 Safety Certification

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

- Advanced students lead safety briefings or assist in demonstrations
- Enrichment: Create a safety training video or digital presentation
- Visual aids, simplified instructions, and peer support for students with learning needs

RESOURCES (Technology Based Resources, Text Resources, etc.):

- OSHA website
- *Modern Automotive Technology* textbook
- Safety Data Sheets (SDS)
- Fire extinguisher and first aid kit demonstrations

KEY VOCABULARY:

- PPE (Personal Protective Equipment)
- SDS (Safety Data Sheet)
- OSHA (Occupational Safety and Health Administration)
- Hazard
- Lockout/Tagout
- Evacuation
- First Aid
- Fire Safety
- Chemical Safety

Wallenpaupack Area School District Curriculum	
COURSE: Automotive Technology 1	GRADE: 10
UNIT 3: Basic Hand Tools	TIMEFRAME: 1-2 Weeks

PA COMMON CORE/NATIONAL STANDARDS:

ELA:

CC.1.2.11–12.F Evaluate how words and phrases shape meaning and tone in texts.
 CC.1.2.11–12.J Acquire and use accurately general academic and domain specific words and phrases, sufficient for reading, writing, speaking, and listening at the college- and career-readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Math:

CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable.

 CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.

Career Education:

13.2.11.D Analyze, revise, and apply an individualized career portfolio to chosen career path.
 13.3.11.A Evaluate personal attitudes and work habits that support career retention and advancement.

Science:

3.1.12. A. Apply concepts of systems, subsystems, feedback, and control to solve complex technological problems.
 Apply knowledge of control systems concept by designing and modeling control systems that solve specific problems.
 Apply systems analysis to predict results.
 Analyze and describe the function, interaction and relationship among subsystems and the system itself.
 Compare and contrast several systems that could be applied to solve a single problem.
 Evaluate the causes of a system’s inefficiency.

 3.2.12. A. Evaluate the nature of scientific and technological knowledge.
 Know and use the ongoing scientific processes to continually improve and better understand how things work.

Competency Task List:

301 Identify and use fasteners and bolts.
 304 Identify and use automotive specialty tools.
 305 Perform common fastener and thread repairs, including remove broken bolt, restore internal and external threads, and repair internal threads with a threaded insert

UNIT OBJECTIVES (SWBATS):

- Students will be able to:
- Identify and name common automotive hand tools.
 - Demonstrate proper and safe use of basic hand tools.

- Select appropriate tools for specific automotive tasks.
- Maintain and store tools correctly to prevent damage and ensure safety.
- Understand the importance of tool accountability and organization in a professional shop setting.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Hands-on tool identification and usage labs
- Tool matching and sorting activities
- Demonstrations of proper tool handling techniques
- Group discussions on tool safety and maintenance
- Tool scavenger hunt or station rotations for practice

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- Diagnostic: Tool recognition pre-assessment
- Formative: Daily tool usage logs and peer feedback
- Summative: Practical exam on tool identification and usage
- Benchmark: Completion of tool safety checklist and maintenance routine

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

- Advanced students assist in peer demonstrations or tool setup
- Enrichment: Research and present on specialty tools used in advanced diagnostics
- Visual tool charts and hands-on practice for students with learning needs

RESOURCES (Technology Based Resources, Text Resources, etc.):

- *Modern Automotive Technology* textbook
- Tool identification apps and virtual simulations
- Manufacturer tool catalogs and videos
- Shop tool boards and labeled storage systems

KEY VOCABULARY:

- Ratchet
- Socket
- Wrench
- Screwdriver
- Pliers
- Torque
- Fastener
- Tool Accountability
- Tool Maintenance
- Safety

Wallenpaupack Area School District Curriculum	
COURSE: Automotive Technology 1	GRADE: 10
UNIT 4: Power Tools and Equipment	TIMEFRAME: 2-3 Weeks

PA COMMON CORE/NATIONAL STANDARDS:

ELA:

CC.1.2.11–12.F Evaluate how words and phrases shape meaning and tone in texts.

CC.1.2.11–12.J Acquire and use accurately general academic and domain specific words and phrases, sufficient for reading, writing, speaking, and listening at the college- and career-readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Math:

CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable.

CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.

Career Education:

13.2.11.D Analyze, revise, and apply an individualized career portfolio to chosen career path.

13.3.11.A Evaluate personal attitudes and work habits that support career retention and advancement.

Science:

3.1.12. A. Apply concepts of systems, subsystems, feedback, and control to solve complex technological problems.

Apply knowledge of control systems concept by designing and modeling control systems that solve specific problems.

Apply systems analysis to predict results.

Analyze and describe the function, interaction and relationship among subsystems and the system itself.

Compare and contrast several systems that could be applied to solve a single problem.

Evaluate the causes of a system’s inefficiency.

3.2.12. A. Evaluate the nature of scientific and technological knowledge.

Know and use the ongoing scientific processes to continually improve and better understand how things work.

Competency Task List:

302 Drill and use re-threading tools.

UNIT OBJECTIVES (SWBATS):

Students will be able to:

- Identify common power tools and shop equipment used in automotive service.
- Demonstrate safe and effective operation of power tools and equipment.
- Understand the function and application of each tool in automotive repair.
- Perform basic maintenance and inspection of power tools and equipment.

- Apply safety protocols and PPE when using powered equipment.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Instructor-led demonstrations of power tool usage
- Hands-on practice with drills, grinders, impact wrenches, and lifts
- Equipment safety walkthroughs and inspection routines
- Group discussions on tool selection for specific tasks
- Maintenance logs and tool care routines

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- Diagnostic: Power tool identification quiz
- Formative: Daily tool usage checklists and peer evaluations
- Summative: Practical exam on safe and correct tool operation
- Benchmark: Completion of equipment safety inspection and maintenance report

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

- Advanced students assist with setup and demonstration of equipment
- Enrichment: Research and present on specialized power tools used in diagnostics or performance tuning
- Visual guides, scaffolded instructions, and peer support for students with learning needs

RESOURCES (Technology Based Resources, Text Resources, etc.):

- *Modern Automotive Technology* textbook
- Manufacturer safety manuals and instructional videos
- OSHA guidelines for powered equipment
- Tool and equipment simulations or virtual labs

KEY VOCABULARY:

- Impact Wrench
- Air Compressor
- Hydraulic Lift
- Grinder
- Drill
- Torque
- RPM (Revolutions Per Minute)
- PPE (Personal Protective Equipment)
- Preventive Maintenance
- Safety Lockout

Wallenpaupack Area School District Curriculum	
COURSE: Automotive Technology 1	GRADE: 10
UNIT 5: Automotive Measurement	TIMEFRAME: 3-4 Weeks

PA COMMON CORE/NATIONAL STANDARDS:

ELA:

CC.1.2.11–12.F Evaluate how words and phrases shape meaning and tone in texts.
 CC.1.2.11–12.J Acquire and use accurately general academic and domain specific words and phrases, sufficient for reading, writing, speaking, and listening at the college- and career-readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Math:

CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable.

 CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.

Career Education:

13.2.11.D Analyze, revise, and apply an individualized career portfolio to chosen career path.
 13.3.11.A Evaluate personal attitudes and work habits that support career retention and advancement.

Science:

3.1.12. A. Apply concepts of systems, subsystems, feedback, and control to solve complex technological problems.
 Apply knowledge of control systems concept by designing and modeling control systems that solve specific problems.
 Apply systems analysis to predict results.
 Analyze and describe the function, interaction and relationship among subsystems and the system itself.
 Compare and contrast several systems that could be applied to solve a single problem.
 Evaluate the causes of a system’s inefficiency.

 3.2.12. A. Evaluate the nature of scientific and technological knowledge.
 Know and use the ongoing scientific processes to continually improve and better understand how things work.

Competency Task List:

303 Read and interpret precision automotive measuring tools.

UNIT OBJECTIVES (SWBATS):

- Students will be able to:
- Identify and use common automotive measuring tools (e.g., tape measure, micrometer, caliper, feeler gauge).
 - Convert between standard and metric units of measurement.
 - Read and interpret measurements accurately.

- Apply measurement techniques to inspect and diagnose automotive components.
- Understand tolerances and specifications in automotive systems.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Hands-on practice with measuring tools
- Measurement conversion exercises
- Demonstrations of precision measurement techniques
- Lab activities measuring brake rotors, tire tread depth, and engine components
- Worksheets and guided notes on measurement systems and tolerances

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- Diagnostic: Measurement knowledge pre-assessment
- Formative: Daily tool usage logs and measurement practice sheets
- Summative: Practical exam using measuring tools on automotive components
- Benchmark: Completion of measurement lab report with analysis

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

- Advanced students assist with precision measurement demonstrations
- Enrichment: Research and present on digital measuring tools and their applications
- Scaffolded worksheets and visual aids for students with learning needs

RESOURCES (Technology Based Resources, Text Resources, etc.):

- *Modern Automotive Technology* textbook
- Digital and analog measuring tools
- Online tutorials and simulations for micrometer and caliper use
- Conversion charts and reference materials

KEY VOCABULARY:

- Caliper
- Micrometer
- Feeler Gauge
- Dial Indicator
- Tolerance
- Specification
- Standard vs. Metric
- Measurement System
- Precision
- Conversion

Wallenpaupack Area School District Curriculum	
COURSE: Automotive Technology 1	GRADE: 10
UNIT 6: Service Information	TIMEFRAME: 2-3 Weeks

PA COMMON CORE/NATIONAL STANDARDS:

ELA:

CC.1.2.11–12.F Evaluate how words and phrases shape meaning and tone in texts.

CC.1.2.11–12.J Acquire and use accurately general academic and domain specific words and phrases, sufficient for reading, writing, speaking, and listening at the college- and career-readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Math:

CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable.

CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.

Career Education:

13.2.11.D Analyze, revise, and apply an individualized career portfolio to chosen career path.

13.3.11.A Evaluate personal attitudes and work habits that support career retention and advancement.

Science:

3.1.12. A. Apply concepts of systems, subsystems, feedback, and control to solve complex technological problems.

Apply knowledge of control systems concept by designing and modeling control systems that solve specific problems.

Apply systems analysis to predict results.

Analyze and describe the function, interaction and relationship among subsystems and the system itself.

Compare and contrast several systems that could be applied to solve a single problem.

Evaluate the causes of a system’s inefficiency.

3.2.12. A. Evaluate the nature of scientific and technological knowledge.

Know and use the ongoing scientific processes to continually improve and better understand how things work.

Competency Task List:

102 Participate in shop management.

103 Participate in parts ordering.

106 Provide customer service and communicate technical and service information to clients.

107 Identify a vehicle by sight, vehicle identification number (VIN) and ID tag.

109 Complete a work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.

110 Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins.

111 Locate and interpret vehicle and major component identification numbers.

UNIT OBJECTIVES (SWBATS):

Students will be able to:

- Access and interpret service information using electronic and printed resources.
- Understand the structure and purpose of work orders in automotive service.
- Accurately document customer concerns, vehicle information, and technician findings.
- Use service information to identify specifications, procedures, and diagnostic steps.
- Demonstrate professionalism in written communication and customer documentation.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Guided practice using electronic service information systems (ESI)
- Sample work order completion exercises
- Role-playing customer intake and documentation scenarios
- Reading and interpreting repair manuals and technical bulletins
- Group discussions on the importance of accurate documentation

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- Diagnostic: Pre-assessment on service information familiarity
- Formative: Daily work order practice and peer review
- Summative: Completed work order based on a mock service scenario
- Benchmark: Service information scavenger hunt using ESI platforms

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

- Advanced students assist peers in navigating ESI systems
- Enrichment: Research and present on OEM vs. aftermarket service information
- Visual templates and guided notes for students with learning needs

RESOURCES (Technology Based Resources, Text Resources, etc.):

- Electronic Service Information (ESI) platforms (e.g., ALLDATA, ShopKey Pro)
- Sample work orders and repair documentation forms
- *Modern Automotive Technology* textbook
- OEM service manuals and technical bulletins

KEY VOCABULARY:

- Work Order
- Customer Concern
- Technician Notes
- Service Information
- OEM (Original Equipment Manufacturer)
- ESI (Electronic Service Information)
- Repair Procedure
- Technical Bulletin
- VIN (Vehicle Identification Number)
- Documentation

Wallenpaupack Area School District Curriculum	
COURSE: Automotive Technology 1	GRADE: 10
UNIT 7: Vehicle Maintenance	TIMEFRAME: 4-5 Weeks

PA COMMON CORE/NATIONAL STANDARDS:

ELA:

CC.1.2.11–12.F Evaluate how words and phrases shape meaning and tone in texts.

CC.1.2.11–12.J Acquire and use accurately general academic and domain specific words and phrases, sufficient for reading, writing, speaking, and listening at the college- and career-readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Math:

CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable.

CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.

Career Education:

13.2.11.D Analyze, revise, and apply an individualized career portfolio to chosen career path.

13.3.11.A Evaluate personal attitudes and work habits that support career retention and advancement.

Science:

3.1.12. A. Apply concepts of systems, subsystems, feedback, and control to solve complex technological problems.

Apply knowledge of control systems concept by designing and modeling control systems that solve specific problems.

Apply systems analysis to predict results.

Analyze and describe the function, interaction and relationship among subsystems and the system itself.

Compare and contrast several systems that could be applied to solve a single problem.

Evaluate the causes of a system’s inefficiency.

3.2.12. A. Evaluate the nature of scientific and technological knowledge.

Know and use the ongoing scientific processes to continually improve and better understand how things work.

Competency Task List:

401 Prepare to obtain PA Safety Inspection Certification.

403 Prepare to obtain Emission Inspection Certification.

1002 Check fluid level and fluid condition in a transmission or a transaxle equipped with a dipstick.

1003 Check fluid level and fluid condition in a transmission or a transaxle not equipped with a dipstick.

1004 Drain, replace, and exchange fluid and filter(s).

1005 Identify drivetrain components and configuration.

1006 Inspect, adjust, and replace external manual valve shift linkage, transmission range sensor/switch, and park/neutral switch.

1007 Inspect for leakage at external seals, gaskets, and bushings.
1008 Inspect, replace, and align powertrain mounts.
1102 Drain and refill manual transmission/transaxle and final drive unit.
1103 Check and adjust clutch master cylinder fluid level.
1104 Check for system leaks.
1105 Check and adjust differential housing fluid level.
1106 Drain and refill differential housing.
1107 Identify, inspect, and replace manual drivetrain and axle components and configuration

UNIT OBJECTIVES (SWBATS):

Students will be able to:

- Identify and perform basic vehicle maintenance procedures (e.g., oil changes, fluid checks, filter replacements).
- Recognize different types of automotive fluids and their functions.
- Safely handle, store, and dispose of automotive fluids and materials.
- Understand environmental regulations and best practices for recycling and waste management.
- Document maintenance procedures and service intervals accurately.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Hands-on labs performing oil changes, coolant checks, and fluid top-offs
- Fluid identification and matching exercises
- Demonstrations of proper disposal and recycling procedures
- Group discussions on environmental impact and sustainability in automotive service
- Maintenance schedule planning and service documentation practice

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- Diagnostic: Fluid identification quiz
- Formative: Daily maintenance logs and lab reflections
- Summative: Practical exam performing a complete fluid service
- Benchmark: Completion of a mock vehicle maintenance plan and recycling checklist

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

- Advanced students assist with multi-point inspections or lead fluid service labs
- Enrichment: Research and present on alternative fluids (e.g., synthetic oils, eco-friendly coolants)
- Visual guides, simplified instructions, and peer support for students with learning needs

RESOURCES (Technology Based Resources, Text Resources, etc.):

- *Modern Automotive Technology* textbook
- Manufacturer service manuals and fluid charts
- EPA and DEP websites for recycling guidelines
- Fluid service videos and simulations
- Maintenance tracking software or templates

KEY VOCABULARY:

- Preventive Maintenance

- Engine Oil
- Coolant
- Transmission Fluid
- Brake Fluid
- Power Steering Fluid
- Recycling
- Disposal
- Service Interval
- Environmental Impact

Wallenpaupack Area School District Curriculum	
COURSE: Automotive Technology 1	GRADE: 10
UNIT 8: Welding Fundamentals	TIMEFRAME: 3-4 Weeks

PA COMMON CORE/NATIONAL STANDARDS:

ELA:

CC.1.2.11–12.F Evaluate how words and phrases shape meaning and tone in texts.
 CC.1.2.11–12.J Acquire and use accurately general academic and domain specific words and phrases, sufficient for reading, writing, speaking, and listening at the college- and career-readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Math:

CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable.

 CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.

Career Education:

13.2.11.D Analyze, revise, and apply an individualized career portfolio to chosen career path.
 13.3.11.A Evaluate personal attitudes and work habits that support career retention and advancement.

Science:

3.1.12. A. Apply concepts of systems, subsystems, feedback, and control to solve complex technological problems.
 Apply knowledge of control systems concept by designing and modeling control systems that solve specific problems.
 Apply systems analysis to predict results.
 Analyze and describe the function, interaction and relationship among subsystems and the system itself.
 Compare and contrast several systems that could be applied to solve a single problem.
 Evaluate the causes of a system’s inefficiency.

 3.2.12. A. Evaluate the nature of scientific and technological knowledge.
 Know and use the ongoing scientific processes to continually improve and better understand how things work.

Competency Task List:

203 Demonstrate the ability to set-up/shut-down oxygen acetylene welding equipment.

UNIT OBJECTIVES (SWBATS):

Students will be able to:

- Identify basic welding equipment and safety gear.
- Demonstrate proper setup and shutdown procedures for welding equipment.
- Understand and apply safety protocols in welding environments.
- Perform basic welds using ARC, MIG and/or oxy-acetylene processes.
- Inspect welds for quality and identify common defects.

- Understand the role of welding in automotive repair and fabrication.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Safety demonstrations and PPE training
- Hands-on welding practice with MIG and/or oxy-acetylene equipment
- Welding technique demonstrations and guided practice
- Weld inspection and defect identification exercises
- Group discussions on welding applications in automotive repair

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- Diagnostic: Welding safety and equipment quiz
- Formative: Daily welding logs and peer feedback
- Summative: Practical welding assessment (bead quality, safety, technique)
- Benchmark: Completion of a basic weld project and inspection checklist

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

- Advanced students assist with equipment setup or lead technique demonstrations
- Enrichment: Research and present on welding certifications or career paths
- Visual guides, scaffolded instructions, and peer support for students with learning needs

RESOURCES (Technology Based Resources, Text Resources, etc.):

- AWS welding safety and technique manuals
- Welding simulators or virtual training platforms
- *Modern Automotive Technology* textbook
- Manufacturer equipment guides and instructional videos

KEY VOCABULARY:

- MIG Welding (GMAW)
- Oxy-Acetylene Welding
- PPE (Personal Protective Equipment)
- Weld Bead
- Tack Weld
- Porosity
- Spatter
- Ground Clamp
- Shielding Gas
- Weld Defect

Wallenpaupack Area School District Curriculum	
COURSE: Automotive Technology 1	GRADE: 10
UNIT 9: Engine Technology	TIMEFRAME: 6-7 Weeks

PA COMMON CORE/NATIONAL STANDARDS:

ELA:

CC.1.2.11–12.F Evaluate how words and phrases shape meaning and tone in texts.

CC.1.2.11–12.J Acquire and use accurately general academic and domain specific words and phrases, sufficient for reading, writing, speaking, and listening at the college- and career-readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Math:

CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable.

CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.

Career Education:

13.2.11.D Analyze, revise, and apply an individualized career portfolio to chosen career path.

13.3.11.A Evaluate personal attitudes and work habits that support career retention and advancement.

Science:

3.1.12. A. Apply concepts of systems, subsystems, feedback, and control to solve complex technological problems.

Apply knowledge of control systems concept by designing and modeling control systems that solve specific problems.

Apply systems analysis to predict results.

Analyze and describe the function, interaction and relationship among subsystems and the system itself.

Compare and contrast several systems that could be applied to solve a single problem.

Evaluate the causes of a system’s inefficiency.

3.2.12. A. Evaluate the nature of scientific and technological knowledge.

Know and use the ongoing scientific processes to continually improve and better understand how things work.

Competency Task List:

808 Perform engine absolute (vacuum/boost) manifold pressure tests.

809 Perform cylinder power balance test.

810 Perform cylinder cranking and running compression tests.

811 Perform cylinder leakage test.

813 Verify engine operating temperature.

830 Verify idle control operation.

831 Inspect the integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shield(s).

833 Inspect, test, and service positive crankcase ventilation (PCV) filter/breather cap, valve, tubes, orifices, and hoses.

847 Remove, inspect and Install spark plugs. Measure spark plug gap

902 Verify operation of the instrument panel engine warning indicators.

903 Install engine covers using gaskets, seals, and sealers.

905 Identify valve adjustment procedures.

906 Inspect, replace, and adjust drive belts, tensioners, and pulleys and check pulley and belt alignment.

909 Identify components and inspect engine assembly for fuel, oil, coolant, and other leaks.

910 Remove and replace timing belt or chain and verify correct camshaft timing.

911 Remove and replace thermostat and gasket/seal.

912 Inspect and test mechanical/electrical fans, fan clutch, fan shroud/ducting, air dams, and fan control devices.

913 Perform engine oil and filter change.

UNIT OBJECTIVES (SWBATS):

Students will be able to:

- Explain the basic principles of internal combustion engine operation.
- Identify and classify engine designs (inline, V-type, boxer, rotary).
- Describe the components and function of the engine top end (cylinder head, valves, camshaft).
- Describe the components and function of the engine bottom end (crankshaft, pistons, connecting rods).
- Describe the components and function of the engine front end (timing components, belts, chains).
- Calculate and interpret engine size (displacement) and performance metrics (horsepower, torque).
- Understand how engine design affects performance, efficiency, and emissions.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Engine model demonstrations and component identification labs
- Interactive diagrams and animations of engine operation
- Group activities comparing engine types and configurations
- Hands-on disassembly and inspection of engine components
- Performance calculations using engine specifications

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- Diagnostic: Engine knowledge pre-assessment
- Formative: Component identification worksheets and quizzes
- Summative: Written exam and hands-on engine component identification
- Benchmark: Engine design comparison project and performance calculation assignment

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

- Advanced students assist with engine teardown or lead design comparison presentations
- Enrichment: Research and present on alternative engine technologies (e.g., hybrid, electric, rotary)
- Visual aids, labeled diagrams, and simplified notes for students with learning needs

RESOURCES (Technology Based Resources, Text Resources, etc.):

- *Modern Automotive Technology* textbook
- *Small Gas Engines* Textbook
- Engine cutaway models and animations
- Manufacturer engine specification sheets
- Online simulations and videos (e.g., how engines work)
- Performance calculators and conversion charts

KEY VOCABULARY:

- Internal Combustion
- Displacement
- Horsepower
- Torque
- Cylinder Head
- Camshaft
- Crankshaft
- Timing Belt/Chain
- Engine Block
- Engine Configuration (Inline, V-type, Boxer)

Wallenpaupack Area School District Curriculum	
COURSE: Automotive Technology 1	GRADE: 10
UNIT 10: Fuel, Exhaust, and Induction	TIMEFRAME: 2-3 Weeks

PA COMMON CORE/NATIONAL STANDARDS:

ELA:

CC.1.2.11–12.F Evaluate how words and phrases shape meaning and tone in texts.
 CC.1.2.11–12.J Acquire and use accurately general academic and domain specific words and phrases, sufficient for reading, writing, speaking, and listening at the college- and career-readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Math:

CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable.

 CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.

Career Education:

13.2.11.D Analyze, revise, and apply an individualized career portfolio to chosen career path.
 13.3.11.A Evaluate personal attitudes and work habits that support career retention and advancement.

Science:

3.1.12. A. Apply concepts of systems, subsystems, feedback, and control to solve complex technological problems.
 Apply knowledge of control systems concept by designing and modeling control systems that solve specific problems.
 Apply systems analysis to predict results.
 Analyze and describe the function, interaction and relationship among subsystems and the system itself.
 Compare and contrast several systems that could be applied to solve a single problem.
 Evaluate the causes of a system’s inefficiency.

 3.2.12. A. Evaluate the nature of scientific and technological knowledge.
 Know and use the ongoing scientific processes to continually improve and better understand how things work.

Competency Task List:

826 Inspect and test fuel pumps and pump control systems for pressure, regulation, and volume.
 827 Replace fuel filters.
 828 Inspect throttle body, air induction system, intake manifold, and gaskets for vacuum leaks and unmetered air.
 829 Inspect and test fuel injectors.

UNIT OBJECTIVES (SWBATS):

Students will be able to:

- Identify types of automotive fuels and explain their properties.
- Describe the combustion process and factors affecting combustion efficiency.
- Inspect and service fuel tanks, pumps, lines, and filters.
- Explain the fundamentals of gasoline fuel injection systems.
- Diagnose and repair common issues in gasoline injection systems.
- Understand diesel injection system operation and components.
- Diagnose, service, and repair diesel injection systems.
- Identify components and functions of exhaust systems.
- Perform basic exhaust system inspections and repairs.
- Explain the construction, operation, and service of turbochargers and superchargers.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Fuel system component identification labs
- Combustion efficiency demonstrations and calculations
- Hands-on service of fuel filters, pumps, and lines
- Diagnostic exercises using scan tools and pressure gauges
- Diesel system comparison and troubleshooting activities
- Exhaust system inspection and repair simulations
- Turbocharger/supercharger cutaway analysis and performance discussions

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- Diagnostic: Fuel system knowledge quiz
- Formative: Daily lab logs and troubleshooting worksheets
- Summative: Written exam and hands-on fuel system service assessment
- Benchmark: Completion of a fuel/exhaust/induction system inspection report

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

- Advanced students assist with scan tool diagnostics or lead system walkthroughs
- Enrichment: Research and present on alternative fuels or forced induction performance tuning
- Visual diagrams, simplified notes, and peer support for students with learning needs

RESOURCES (Technology Based Resources, Text Resources, etc.):

- *Modern Automotive Technology* textbook
- Manufacturer service manuals and fuel system schematics
- Scan tools and diagnostic software
- EPA and CARB resources on emissions and fuel systems
- Turbocharger and supercharger training videos

KEY VOCABULARY:

- Combustion
- Fuel Tank
- Fuel Pump
- Fuel Filter
- Gasoline Injection
- Diesel Injection
- DTC (Diagnostic Trouble Code)

- Exhaust Manifold
- Catalytic Converter
- Turbocharger
- Supercharger
- Boost
- Induction

Wallenpaupack Area School District Curriculum	
COURSE: Automotive Technology 1	GRADE: 10
UNIT 11: Cooling and Lubrication Systems	TIMEFRAME: 2-3 weeks

<p>PA COMMON CORE/NATIONAL STANDARDS:</p> <p>ELA: CC.1.2.11–12.F Evaluate how words and phrases shape meaning and tone in texts. CC.1.2.11–12.J Acquire and use accurately general academic and domain specific words and phrases, sufficient for reading, writing, speaking, and listening at the college- and career-readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p> <p>Math: CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable. CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.</p> <p>Career Education: 13.2.11.D Analyze, revise, and apply an individualized career portfolio to chosen career path. 13.3.11.A Evaluate personal attitudes and work habits that support career retention and advancement.</p> <p>Science: 3.1.12. A. Apply concepts of systems, subsystems, feedback, and control to solve complex technological problems. Apply knowledge of control systems concept by designing and modeling control systems that solve specific problems. Apply systems analysis to predict results. Analyze and describe the function, interaction and relationship among subsystems and the system itself. Compare and contrast several systems that could be applied to solve a single problem. Evaluate the causes of a system’s inefficiency.</p> <p>3.2.12. A. Evaluate the nature of scientific and technological knowledge. Know and use the ongoing scientific processes to continually improve and better understand how things work.</p> <p>Competency Task List: 907 Inspect and test coolant, drain and recover coolant, and flush and refill cooling system with recommended coolant. 908 Perform cooling system pressure tests; check coolant condition; inspect and test radiator, pressure cap, coolant recovery tank, and hoses.</p>
<p>UNIT OBJECTIVES (SWBATS): Students will be able to:</p>

- Explain the purpose and function of the automotive cooling system.
- Identify components of the cooling system and describe their operation.
- Perform cooling system testing, maintenance, and repair procedures.
- Understand the fundamentals of automotive lubrication systems.
- Identify lubrication system components and describe their functions.
- Diagnose, test, and repair lubrication system issues.
- Recognize the importance of proper fluid selection and maintenance for engine longevity.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Hands-on labs inspecting and servicing radiators, thermostats, and water pumps
- Coolant pressure testing and flush procedures
- Lubrication system walkthroughs using engine models and diagrams
- Oil pressure testing and filter replacement exercises
- Group discussions on fluid types and maintenance intervals
- Case studies of overheating and lubrication failure scenarios

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- Diagnostic: Cooling and lubrication system pre-assessment quiz
- Formative: Daily lab logs and component identification worksheets
- Summative: Practical exam on cooling and lubrication system service
- Benchmark: Completion of a cooling/lubrication system inspection and service report

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

- Advanced students assist with pressure testing or lead fluid service demonstrations
- Enrichment: Research and present on synthetic vs. conventional fluids and their performance
- Visual diagrams, simplified notes, and peer support for students with learning needs

RESOURCES (Technology Based Resources, Text Resources, etc.):

- *Modern Automotive Technology* textbook
- Manufacturer service manuals and fluid charts
- Coolant and oil testing kits
- Online tutorials and animations of system operation
- EPA guidelines for fluid disposal and recycling

KEY VOCABULARY:

- Radiator
- Thermostat
- Water Pump
- Coolant
- Pressure Tester
- Oil Pump
- Oil Filter
- Viscosity
- Lubrication
- Heat Transfer
- Overheating
- Synthetic Oil

