



Spokane Public Schools Automotive Technology

Course: Auto Technology		Total Framework Hours up to: 720 Hours
CIP Code: 470604	<input type="checkbox"/> Exploratory <input checked="" type="checkbox"/> Preparatory	Date Last Modified: 3/9/15
Career Cluster: Transportation Distribution and Logistics		Cluster Pathway: Transportation Operation

COMPONENTS AND ASSESSMENTS

Performance Assessments:

Build a portfolio of applied experiences including but not limited to: a profile of progress – a record of career related classes, ongoing high school transcript (including articulated TechPrep credits), ongoing attendance record, safety certifications and trainings, other career-related training (Team Lead training), industry tours, community service, and continuous improvement projects

A tool to build this portfolio, including sample content and forms, is available on the Foundations for Skilled Trades site (Portfolio requirements)

<http://www2.spokaneschools.org/foundations2skilledtrades/portfolio.stm>

Leadership Alignment:

- Reason Effectively
- Communicate Clearly
- Manage Products
- Produce Results

Classroom Focus:

- Given various scenarios, how can problem-solving be applied to projects
- Use media to draw conclusions.

Standards and Competencies

Standard/Unit: C-1 Develop employability skills to secure and keep employment in chosen field.

Competencies

Total Learning Hours for Unit: 40 hours

- C-1.1 Evaluate industries, organizations, and careers based on multiple sources of research and information
- C-1.2 Assess interest areas to determine potential career pathways, including career ladders
- C-1.3 Develop a career plan with alternatives
- C-1.4 Complete job applications and related employment documents (e.g. W-4)
- C-1.5 Create professional cover letters, resumes, and portfolios in a variety of formats (print and electronic)
- C-1.6 Apply job search skills to seek, evaluate, apply for, and accept employment
- C-1.7 Demonstrate good interviewing skills
- C-1.8 Demonstrate employability skills needed to get and keep a job
- C-1.9 Assess alternative occupational choices (e.g. working conditions, benefits, and opportunities to change)

Aligned Washington State Standards	
Arts	
Educational Technology	
Health and Fitness	
Language	
Math	
Reading	RST 11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
Science	
Social Studies	
Speaking and Listening	
Writing	WHST 9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

COMPONENTS AND ASSESSMENTS

Performance Assessments:
 Uses technology to address specific problems associated with a technical field.
 Effectively communicates needs to problem solve.

Leadership Alignment:
 Apply Technology Effectively
 Adapt to Change
 Be Flexible
 Interact Effectively with Others
 Work Effectively in Diverse Teams
 Classroom Focus:
 • Effectively use technology to satisfy a result.

Standards and Competencies

Standard/Unit: C-2 Communicate in multiple modes to address needs within the career and technical field

Competencies	Total Learning Hours for Unit: 40 hours
C-2.1 Apply strategies to enhance effectiveness of all types of communications in the workplace	
C-2.2 Apply reading skills and strategies to work-related documents	
C-2.3 Locate information from books, journals, magazines, and the Internet	
C-2.4 Apply basic writing skills to work-related communication	
C-2.5 Write work-related materials	
C-2.6 Explain information presented graphically	
C-2.7 Apply basic skills for work-related oral communication	
C-2.8 Explain proper telephone etiquette and skills	
C-2.9 Lead formal and informal group discussions	
C-2.10 Demonstrate effective negotiation and conflict management	

C-2.11 Apply active listening skills to obtain and clarify information
 C-2.12 Communicate with others in a diverse workforce

Aligned Washington State Standards

Arts	
Educational Technology	
Health and Fitness	
Language	
Math	
Reading	RST 11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
Science	
Social Studies	
Speaking and Listening	
Writing	WHST 9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

COMPONENTS AND ASSESSMENTS

Performance Assessments:

Uses multiple resources to analyze given problem...ie, social, organizational, and technological issues.

Leadership Alignment:

- Think Creatively
- Work Creatively with Others
- Implement Innovations
- Use Systems Thinking
- Make Judgments and Decisions
- Solve Problems
- Collaborate with Others
- Access and evaluate Information
- Use and Manage Information
- Analyze Media
- Create Media Products

Classroom Focus:

- Group discussion about different ideas
- Students arrange items when working to become more efficient
- How does sample A affect B if A doesn't function
- Diagnose simple problems that cause complex issues in those projects. Use equipment to determine and draw conclusions to problems.
- Use group settings to problem solve.
- Teamwork in small group settings
- Use computers for research. Use tools effectively.
- Analyze ads for content

- Understand media messages.
- Community Focus:
- Create media document

Standards and Competencies

Standard/Unit: C-3 Solve problems using critical thinking

Competencies

Total Learning Hours for Unit: 40 Hours

- C-3.1 Demonstrate skills used to define and analyze a given problem
- C-3.2 Explain the importance and dynamics of individual and teamwork approaches of problem solving
- C-3.3 Describe methods of researching and validating reliable information relevant to the problem
- C-3.4 Explain strategies used to formulate ideas, proposals and solutions to problems
- C-3.5 Select potential solutions based on reasoned criteria
- C-3.6 Implement and evaluate solution(s)

Aligned Washington State Standards

Arts	
Educational Technology	
Health and Fitness	
Language	
Math	
Reading	RST 11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
Science	
Social Studies	
Speaking and Listening	
Writing	WHST 9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

COMPONENTS AND ASSESSMENTS

Performance Assessments:

Uses work ethic skills to project a positive work environment with peers.
 Demonstrates ability to use different techniques in handling difficult situations in work settings.
 Shows up on time, shows ability to show up on time.

Leadership Alignment:

- Communicate Clearly
- Interact Effectively with Others
- Work Effectively with Others
- Manage Products
- Produce Results

Classroom Focus:

- Use PowerPoints to articulate methods.

Standards and Competencies

Standard/Unit: C-4 Demonstrate positive work behavior

Competencies

Total Learning Hours for Unit: 40 hours

- C-4.1 Identify time management and task prioritization skills
- C-4.2 Explain the importance of following workplace etiquette/protocol
- C-4.3 Demonstrate willingness to learn and further develop skills
- C-4.4 Demonstrate self-management skills
- C-4.5 List causes of stress and effective stress management techniques
- C-4.6 Describe the importance of having a positive attitude and techniques that boost morale
- C-4.7 Show initiative by coming up with unique solutions and taking on extra responsibilities
- C-4.8 Explain the importance of setting goals and demonstrate the ability to set, reach, and evaluate goals
- C-4.9 Explain the importance of taking pride in work accomplished and extrinsic and intrinsic motivators that can be used to increase pride
- C-4.10 Value the importance of professionalism, including reliability, honesty, responsibility, and ethics
- C-4.11 Demonstrate a respect for diversity and its benefit to the workplace

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Social Studies	
Speaking and Listening	
Writing	

COMPONENTS AND ASSESSMENTS

Performance Assessments:

Understanding acceptable dress code for the work place. Understanding proper shop safety aspects to avoid injury.
 Students will evaluate M.S.D.S. work sheets for chemical use and safety aspects.
 Using shop management equipment for its intended purpose, electronic and paper as necessary
 Use of vehicle history, vin's, and related customer service protocol for the repair technician.

Leadership Alignment:

- Manage Goals and Time
- Work Independently
- Be Self-Directed Learners
- Work Effectively in Diverse Teams
- Manage Projects

Produce Results
 Guide and Lead Others
 Be Responsible to Others

Classroom Focus:

- Start and stop in a timely, programmed manner -- set goals for pieces of projects for completion.
- Following directions
- Maintain an effective work environment that has continuous improvement.
- Task lists implemented in timely manner
- Firm due dates done sequentially
- Group setting using 5s systems
- Acquire work-based skills in group settings. Interaction with others to complete work-based projects showing and demonstrating leadership within group settings.
- Conduct self -responsible within the classroom
- Conduct self- responsibility within the classroom
- In class extra credit

Community Focus:

- Small after school project

Standards and Competencies

Standard/Unit: C-5 General Automotive Shop Procedures and Personal Safety

Competencies

Total Learning Hours for Unit: 40 hours

- C-5.1 Identify and wear appropriate clothing for lab/shop activities. Comply with industry standards for appearance and public presentation.
- C-5.2 Identify, safely use and maintain general automotive hand and power tools and shop equipment.
- C-5.3 Understand safety aspects of supplemental restraint systems (SRS) and antilock brake systems (ABS).
- C-5.4 Locate and demonstrate knowledge of material safety data sheets (MSDS).
- C-5.5 Locate and use paper and electronic Service Manuals, Service Bulletins, and Technical Publications.
- C-5.6 Understand the purpose, use, and location of VINs, engine numbers, date codes, etc.
- C-5.7 Write and understand a repair order including use of 3-C's (complaint-cause-correction). Review vehicle service history.
- C-5.8 Return vehicle to customer in as good or better condition than when received.

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Math	
Reading	RST 11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
Science	
Social Studies	
Speaking and Listening	
Writing	

COMPONENTS AND ASSESSMENTS

Performance Assessments:

Use specialized tools to measure, determine and analyze engine issues.
 Students will draw conclusions based of specific data in power systems.
 Student will analyze powertrain function and perform necessary inspection.
 Student will use professional techniques in the repair of failed components using updated techniques.
 Students will use repair manuals, computer programs.
 Students will fill out proper task sheets using proper terminology using specific details.
 Students will use proper repair equipment and attach equipment in a professional and safe manner.

Leadership Alignment:

Make Judgments and Decisions
 Solve Problems
 Use and Manage Information

Standards and Competencies

Standard/Unit: C-6 Automotive Engines

Competencies

Total Learning Hours for Unit: 200 Hours

- C-6.1 Check and adjust fluid levels of most vehicle components.
- C-6.2 Inspect, replace, adjust and align drive belts, tensioners, and pulleys.
- C-6.3 Replace filters
- C-6.4 Understand manifold relationships
- C-6.5 Explain the 4 stroke cycle
- C-6.6 Change/flush engine oil and coolant.
- C-6.7 Explain the basic engine terminology
- C-6.8 Understand different cylinder head designs and structures, features

Aligned Washington State Standards

Arts	
Educational Technology	
Health and Fitness	
Language	
Math	
Reading	RST 11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. RST 11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
Science	HS-PS2-3 Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.
Social Studies	
Speaking and Listening	
Writing	WHST 9-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

COMPONENTS AND ASSESSMENTS

Performance Assessments:

Students will draw conclusions based of specific data in electrical systems.
 Student will analyze electrical function and perform necessary inspection.
 Student will use professional techniques in the repair of failed components using schematics.
 Students will use organizational skills in the use of repair manuals, computer programs,
 Students will fill out proper task sheets using proper terminology using specific details
 Students will use proper repair equipment and attach equipment in a professional and safe manner.

Leadership Alignment:

Make Judgments and Decisions
 Solve Problems
 Use and Manage Information

Standards and Competencies

Standard/Unit: C-7 Electrical Systems

Competencies

Total Learning Hours for Unit: 160 Hours

- C-7.1 Diagnose electrical/electronic circuits and components using wiring diagrams, DVOM's, and the principles of Ohm's Law.
- C-7.2 Measure parasitic draw, repair wiring harnesses and connectors.
- C-7.3 Inspect-clean-test-recharge-replace battery & cables.
- C-7.4 Inspect/diagnose starting and systems.
- C-7.5 Differentiate between electrical and mechanical problems that cause a slow-crank or no-crank conditions.
- C-7.6 Inspect, replace headlamp bulbs.
- C-7.7 Interpret wiring schematics of various types

Aligned Washington State Standards

Arts	
Educational Technology	
Health and Fitness	
Language	
Math	
Reading	
Science	HS-PS2-1 Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.
Social Studies	
Speaking and Listening	
Writing	WHST 9-12.9 Draw evidence from informational texts to support analysis, reflection, and research.

COMPONENTS AND ASSESSMENTS

Performance Assessments:

Student will analyze suspension function and perform necessary inspection.
 Student will use professional techniques in the repair of failed components
 Students will use organizational skills in the use of repair manuals

Students will use proper repair equipment and attach equipment in a professional and safe.

Leadership Alignment:

- Make Judgments and Decisions
- Solve Problems
- Use and Manage Information

Standards and Competencies

Standard/Unit: C-8 Steering and Suspension Systems

Competencies

Total Learning Hours for Unit: 40 Hours

- C-8.1 Identify and interpret suspension problems and determine necessary action.
- C-8.2 Use suspension tools correctly and safely
- C-8.3 Lubricate suspension systems
- C-8.4 Inspect/replace shocks, struts, and stabilizers
- C-8.5 Differentiate between steering and suspension concerns using principles of steering geometry (caster, camber, toe, etc).
- C-8.6 Diagnose wheel/tire wear patterns, vibration, shimmy, and noise.
- C-8.7 Mount/dismount, balance and rotate tires

Aligned Washington State Standards

Arts	
Educational Technology	
Health and Fitness	
Language	
Math	
Reading	RST 11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
Science	
Social Studies	
Speaking and Listening	
Writing	

COMPONENTS AND ASSESSMENTS

Performance Assessments:

- Student will analyze braking function and perform necessary inspection.
- Student will use professional techniques in the repair of failed components
- Students will use organizational skills in the use of repair manuals
- Students will fill out proper task sheets using proper terminology using specific details.

Leadership Alignment:

- Make Judgments and Decisions
- Solve Problems
- Use and Manage Information

Standards and Competencies	
Standard/Unit: C-9 Brakes	
Competencies	Total Learning Hours for Unit: 40 Hours
C-9.1 Inspect/diagnose brake components and concerns C-9.2 Flush-fill-bleed hydraulic brake systems C-9.3 Remove-inspect-replace-adjust brake shoes/pads and related components C-9.4 Remove-inspect-replace brake cylinders and calipers C-9.5 Diagnose, measure, refinish and replace brake rotors and drums C-9.6 Inspect and replace wheel bearings, , and parking brake components	
Aligned Washington State Standards	
Arts	
Educational Technology	
Health and Fitness	
Language	
Math	
Reading	RST 11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
Science	HS-PS2-1 Analyze data to support the claim that Newton’s second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration
Social Studies	
Speaking and Listening	
Writing	WHST 9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
COMPONENTS AND ASSESSMENTS	
Performance Assessments: Student will analyze manual transmission function and perform necessary inspection. Student will analyze rear axles for function and perform necessary action. Student will use professional techniques in the repair of failed components Students will use organizational skills in the use of repair manuals, computer programs, Students will fill out proper task sheets using proper terminology using specific details.	
Leadership Alignment: Make Judgments and Decisions Solve Problems Use and Manage Information	
Standards and Competencies	
Standard/Unit: C-10 Manual Drive Train and Axles	
Competencies	Total Learning Hours for Unit: 40 Hours
C-10.1 General Drive Train Diagnosis (A1-A5)	

- C-10.2 Clutch Diagnosis and Repair (B1-B10)
- C-10.3 Transmission/Transaxle Diagnosis and Repair (C1-C16)
- C-10.4 Drive Shaft and Half Shaft, Universal and Constant-Velocity (CV) Joint Diagnosis and Repair (D1-D6)
- C-10.5 Drive Axle Diagnosis and Repair (E1-E3)
- C-10.6 Four-wheel Drive/All-wheel Drive Component Diagnosis and Repair (F1-F7)

Aligned Washington State Standards

Arts	
Educational Technology	
Health and Fitness	
Language	
Math	
Reading	RST 11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
Science	
Social Studies	
Speaking and Listening	
Writing	WHST 9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

COMPONENTS AND ASSESSMENTS

Performance Assessments:
 Student will disassemble automatic transmission function and perform necessary inspection.
 Student will analyze transaxles for function and perform necessary action.
 Student will use professional techniques in the repair of failed components
 Students will use organizational skills in the use of repair manuals
 Students will fill out proper task sheets using proper terminology using specific details.
 Use hydraulic schematics to diagnosis performance problems.

Leadership Alignment:
 Make Judgments and Decisions
 Solve Problems
 Use and Manage Information

Standards and Competencies

Standard/Unit: C-11 Automatic Transmission and Transaxle

Competencies	Total Learning Hours for Unit: 40 Hours
C-11.1 General Transmission and Transaxle Diagnosis C-11.2 Transmission and Transaxle Maintenance and Adjustment C-11.3 In-Vehicle Transmission and Transaxle Repair C-11.4 Off-Vehicle Transmission and Transaxle Repair: Removal, Disassembly, and Reinstallation C-11.5 Off-Vehicle Transmission and Transaxle Repair: Oil Pump and Converter C-11.6 Off-Vehicle Transmission and Transaxle Repair: Gear Train, Shafts, Bushings and Case C-11.7 Off-Vehicle Transmission and Transaxle Repair: Friction and Reaction Units	

Aligned Washington State Standards

Arts	
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Language	
Math	
Reading	RST 11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
Science	
Social Studies	
Speaking and Listening	
Writing	WHST 9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

21st Century Skills

Check those that students will demonstrate in this course:

<p>LEARNING & INNOVATION</p> <p>Creativity and Innovation</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Think Creatively <input checked="" type="checkbox"/> Work Creatively with Others <input checked="" type="checkbox"/> Implement Innovations <p>Critical Thinking and Problem Solving</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Reason Effectively <input checked="" type="checkbox"/> Use Systems Thinking <input checked="" type="checkbox"/> Make Judgments and Decisions <input checked="" type="checkbox"/> Solve Problems <p>Communication and Collaboration</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Communicate Clearly <input checked="" type="checkbox"/> Collaborate with Others 	<p>INFORMATION, MEDIA & TECHNOLOGY SKILLS</p> <p>Information Literacy</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Access and /evaluate Information <input checked="" type="checkbox"/> Use and Manage Information <p>Media Literacy</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Analyze Media <input checked="" type="checkbox"/> Create Media Products <p>Information, Communications and Technology (ICT Literacy)</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Apply Technology Effectively 	<p>LIFE & CAREER SKILLS</p> <p>Flexibility and Adaptability</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Adapt to Change <input checked="" type="checkbox"/> Be Flexible <p>Initiative and Self-Direction</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Manage Goals and Time <input checked="" type="checkbox"/> Work Independently <input checked="" type="checkbox"/> Be Self-Directed Learners <p>Social and Cross-Cultural</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Interact Effectively with Others <input checked="" type="checkbox"/> Work Effectively in Diverse Teams <p>Productivity and Accountability</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Manage Projects <input checked="" type="checkbox"/> Produce Results <p>Leadership and Responsibility</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Guide and Lead Others <input checked="" type="checkbox"/> Be Responsible to Others
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