

Advanced Auto Mechanics Curriculum Design

Power Standards

Students will be able to:

1. Perform service of major automotive systems.
2. Integrate safety in all facets of the automotive classroom and lab.
3. Assess vehicle condition.
4. Evaluate the need for automotive specialty tools.

Power Benchmarks

Students will be will able to:

1. Use tools and equipment safely while following all safety regulations.
2. Evaluate engine drivability with use of scanner, sensor testers, and fuel service equipment.
3. Incorporate advanced tire service techniques.
4. Perform cooling system services.
5. Service the brakes system.
6. Perform drive train service.
7. Compare suspension, steering, and wheel alignment fundamentals.
8. Evaluate the charging and starting systems.
9. Demonstrate basic auto body techniques.
10. Investigate the need for alternative fuel sources.

Advanced Auto Mechanics Curriculum Design

Students will be able to:

1. Perform service of major automotive systems.
 - Perform cooling system services.
 - Diagnose the brakes system.
 - Perform drive train service.
2. Integrate safety in all facets of the automotive classroom and lab.
 - Use tools and equipment safely while following all safety regulations.
3. Assess vehicle condition.
 - Evaluate engine drivability with use of scanner, sensor testers, and fuel service equipment.
 - Compare suspension, steering, and wheel alignment fundamentals.
 - Evaluate the charging and starting systems.
 - Investigate the need for alternative fuel sources.
4. Evaluate the need for automotive specialty tools.
 - Incorporate advanced tire service techniques.
 - Demonstrate basic auto body techniques.

Advanced Auto Mechanics Curriculum Design

Stage 1 – Desired Results:

<p>Power Standard 2: Integrate safety in all facets of the automotive classroom and lab.</p> <p>Power Benchmark/Competency #1 Use tools and equipment safely while following all safety regulations.</p> <p>Estimated Timeline: 1 day + on going application</p>	<p>Place ‘X’ in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X		Math	Science	Reading	Social Responsibility	Communication			X	X	X
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<p>Understandings (Standards & Benchmarks): Students will understand that:</p> <ul style="list-style-type: none"> ➤ Safety stands are required. ➤ Floor jack handles must remain up when not in use. ➤ Personal Protective Equipment is required. ➤ Cords, hoses, and tools are trip hazards. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ Why are jack stands required? ➤ Why must liquids be removed from the floor? ➤ What is the purpose of floor dry? ➤ What is the proper procedure for using a fire extinguisher? ➤ Where are the fire extinguishers located in the room? ➤ Why is smoking prohibited in the shop area? ➤ Why is eye protection always required in the shop area? ➤ What must be done if an accident occurs? 																				
<p>Students will: (know) ...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Proper use of tools. ➤ Proper use of floor jacks and jack stands. ➤ Proper use of vehicle lifts. <ul style="list-style-type: none"> ○ Fire extinguisher, fire blanket, eye wash station, safety cabinet for flammable materials, floor jack, safety stands, vehicle lift, personal protective equipment. 	<p>Students will be able to: (i.e. do)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Identify safety hazards. ➤ Wear eye protection at all times. ➤ Use safety stands and floor jacks when lifting a vehicle. ➤ Use car lift as safely demonstrated by instructor. ➤ WORK SAFELY and WATCH OUT FOR OTHER’S. 																				
<h3 style="margin: 0;">Stage 2 – Assessment Evidence</h3>																					
<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Apply shop and equipment safety rules including hazmat 	<p>Key Criteria: (Rubric) Students will wear proper safety equipment and use proper safety regulations at all times.</p> <ul style="list-style-type: none"> ➤ Exceeds 90%-100% ➤ Meets 60%-89% ➤ Needs 59% and below 																				

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Stage 1 – Desired Results:

<p>Power Standard 2: Assess vehicle condition</p> <p>Power Benchmark: #2 Evaluate engine drivability with use of a scanner, sensor testers, and fuel service equipment.</p> <p>Estimated Timeline: 1 day + on going application</p>	<p>Place 'X' in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X		Math	Science	Reading	Social Responsibility	Communication			X	X	X
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<p>Understandings: <i>Students will understand that:</i></p> <ul style="list-style-type: none"> ➤ The importance of properly diagnosing vehicle sensor problems. ➤ The use of the different modes for the scanner tool. ➤ How to use a scanner or ALL DATA to diagnosis and repair engine trouble codes. ➤ The purpose of replacing a faulty sensor. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ When does and automobile need to be scanned? ➤ What are the most common sensors in an automobile? ➤ What are the steps in setting up the scanner? ➤ What is the difference between OBD1 and OBD2? ➤ What is the importance of the maintaining engine drivability? ➤ What is the optimum air fuel ratio for emissions, and how does this relate to whether a vehicle is running rich or lean? ➤ How does fuel pump pressure and engine vacuum affect vehicle performance? 																				
<p>Students will: (know) ...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ How to locate defective sensors through the scanner tool. ➤ Identify the different modes used in scanning for vehicle problems. ➤ How to properly connect the scanner to the automobile. ○ TPS sensor, oxygen sensor, IAC sensor, MAP sensor, MAF sensor, crank position sensor, cam position sensor, CTS, EGR, 	<p>Students will be able to: (i.e. do)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Assess and repair engine drivability with use of the scanner tool and sensor testers. ➤ Use the ALL DATA, service manuals, or scanner trouble shooter to diagnosis vehicle trouble codes. 																				

Stage 2 – Assessment Evidence

<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Evaluate Engine Drivability with use of a Scanner and Sensor Testers 	<p>Key Criteria: (Rubric)</p> <p>Students will successfully diagnosis, test, and replace faulty engine drivability components.</p> <ul style="list-style-type: none"> ➤ Exceeds 90% -100% ➤ Meets 60% -89% ➤ Needs 59% and below
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Stage 1 – Desired Results:

<p>Power Standard 4: Evaluate the need for automotive specialty tools.</p> <p>Power Benchmark/Competency: #3 Incorporate advanced tire service techniques.</p> <p>Estimated Timeline: 1 day + on going application.</p>	<p>Place ‘X’ in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X		Math	Science	Reading	Social Responsibility	Communication			X	X	X
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<p>Understandings: <i>Students will understand that:</i></p> <ul style="list-style-type: none"> ➤ The proper procedure of patching. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ What is the proper procedure for patching a tire? ➤ What is the proper technique for removing and installing a new valve stem? ➤ What is the proper technique for fixing a bead leak? ➤ What is a tire with a non-repairable problem? ➤ What is the difference between a patch plug, tire patch, and tire plug? ➤ What is the function of Murphy’s soap? ➤ What are the specialty tools required with tire service? 																				
<p>Students will: (know) ... (Include vocabulary)</p> <ul style="list-style-type: none"> ➤ How to choose the proper tool for the proper job. ➤ Know the limitation of a particular tool. ➤ Tools are an extension of a person’s hand. <ul style="list-style-type: none"> ○ Basic socket sets: ¼, 3/8, ½, and metrics, 4 - way, wrench sets: English/metric, basic hand tools, Impact wrench, electric hand drill, <p>Note: Additional tools as needed are supplied.</p>	<p>Students will be able to: (i.e. do)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Use hand and power tools correctly. ➤ Use all tools safely. ➤ Keep the tools off of the floor when not in use. ➤ Keep your mind on what you are doing. ➤ Safety is number 1. 																				
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<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Demonstrate the Proper Care and Use of Hand Tools and Power Tools 	<p>Key Criteria: (Rubric)</p> <p>Students will use the proper tool for the proper job. Students will also clean and properly replace all tools in the tool cabinet.</p> <ul style="list-style-type: none"> ➤ Exceeds 90% -100% ➤ Meets 60% -89% ➤ Needs 59% and below 																				

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Stage 1 – Desired Results:

<p>Power Standard 1: Perform service of major automotive systems.</p> <p>Power Benchmark/Competency # 4: Perform cooling system services.</p> <p>Estimated Timeline: 1 day + on going application</p>	<p>Place 'X' in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr style="background-color: #ffffcc;"> <th>Career</th> <th>Technology</th> <th>Critical Thinking</th> <th>Personal Responsibility</th> <th>Global & Cultural</th> </tr> <tr> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> </tr> <tr style="background-color: #ffffcc;"> <th>Math</th> <th>Science</th> <th>Reading</th> <th>Social Responsibility</th> <th>Communication</th> </tr> <tr> <td></td> <td></td> <td>X</td> <td>X</td> <td>X</td> </tr> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X		Math	Science	Reading	Social Responsibility	Communication			X	X	X
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<p>Understandings: <i>Students will understand that:</i></p> <ul style="list-style-type: none"> ➤ The importance of reverse flushing the cooling system. ➤ The importance of maintaining the proper mixture ratio of antifreeze and water. ➤ The proper procedure to remove and replace a water pump. ➤ The importance of proper air flow through the radiator. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ What are the proper steps in flushing the coolant system? ➤ What are the proper steps of removing and replacing a water pump? ➤ How does an individual achieve the proper mixture ratio of antifreeze and water? ➤ How does an individual maintain good air flow through the radiator? 																				
<p>Students will: (<i>know</i>) ... (Include vocabulary)</p> <ul style="list-style-type: none"> ➤ 	<p>Students will be able to: (<i>i.e. do</i>)... (Include vocabulary)</p> <ul style="list-style-type: none"> ➤ 																				

Stage 2 – Assessment Evidence

<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Identify & Specify SAE and Metric Fasteners 	<p>Key Criteria: (Rubric)</p> <p>Students will recognize whether a fastener is Metric or SAE.</p> <ul style="list-style-type: none"> ➤ Exceeds 90% -100% ➤ Meets 60% -89% ➤ Needs 59% and below
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Advanced Auto Mechanics Curriculum Design

Stage 1 – Desired Results:

<p>Power Standard 1: Perform service of major automotive systems.</p> <p>Power Benchmark/Competency # 5: Diagnose the Brakes System</p> <p>Estimated Timeline: 1day + on going application</p>	<p>Place 'X' in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X		Math	Science	Reading	Social Responsibility	Communication			X	X	X
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<p>Understandings: <i>Students will understand that:</i></p> <ul style="list-style-type: none"> ➤ The operation of anti-lock brakes. ➤ Servicing the wheel bearings. ➤ Bleeding the brakes system. ➤ Bench bleeding the master cylinders. ➤ The correct set-up and operation of the brake lathe. ➤ Servicing of the rear drum brakes assemblies 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ What percentage of braking is performed by the rear brake assemblies? ➤ What is the importance of bleeding the brake system? ➤ What is the importance of bench bleeding a new master cylinder? ➤ What is the difference between discard and turn to when re-surfacing rotors or drums? ➤ What is the importance of a non directional finish when re-surfacing rotors? ➤ How does the ABS system function? 																				
<p>Students will: (know) ... (Include vocabulary)</p> <ul style="list-style-type: none"> ➤ How to bench bleed a master cylinder. ➤ How to manually bleed a brake system. ➤ How to resurface drums and rotors. ➤ Differentiate between the different valves in the braking system. <ul style="list-style-type: none"> ○ Bleeder valve, brake spring pliers, hold down spring tool, brake spoon, master cylinder power booster, caliper piston parking brake tool, metering valve, proportioning valve, differentiating valve, combination valve, brake grease 	<p>Students will be able to: (i.e. do)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Resurface drums and rotors within specifications. ➤ Diagnosis, inspect, disassemble, clean, re-assemble brake drums and wheel bearings. ➤ Determine specifications for minimum allowable tolerances in drums and rotor thicknesses determined by using ALL DATA. ➤ Manually bleed the brake system. ➤ Determine causes and remedy of different brake lining wear. 																				

Stage 2 – Assessment Evidence

<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Brakes System Service 	<p>Key Criteria: (Rubric)</p> <p>Students will perform rear brake, wheel bearing, and brake system components repair.</p> <ul style="list-style-type: none"> ➤ Exceeds 90%-100% ➤ Meets 60%-89% ➤ Needs 59% and below
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Advanced Auto Mechanics Curriculum Design

Stage 1 – Desired Results:

<p>Power Standard 1: Perform service of major automotive systems.</p> <p>Power Benchmark/Competency #6: Perform drive train service.</p> <p>Estimated Timeline: 1 day + on going application</p>	<p>Place 'X' in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #ffffcc;"> <th>Career</th> <th>Technology</th> <th>Critical Thinking</th> <th>Personal Responsibility</th> <th>Global & Cultural</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> </tr> <tr style="background-color: #ffffcc;"> <th>Math</th> <th>Science</th> <th>Reading</th> <th>Social Responsibility</th> <th>Communication</th> </tr> <tr> <td></td> <td></td> <td>X</td> <td>X</td> <td>X</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X		Math	Science	Reading	Social Responsibility	Communication			X	X	X
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<p>Understandings: <i>Students will understand that:</i></p> <ul style="list-style-type: none"> ➤ The difference between an automatic and manual transmission. ➤ The proper mileage interval to service the automatic transmission. ➤ To differentiate between the transaxle and the rear wheel drive transmissions. ➤ The location of the transmission pan under the vehicle. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ What are the proper steps in performing a transmission fluid change? ➤ What is the proper mileage for changing the automatic transmission fluid and filter for the different types of vehicles? ➤ How are the U-joints determined to be satisfactory? ➤ How are the CV boots and joints examined?
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<p>Students will: (<i>know</i>) ... (Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Know how to differentiate between the transmission pan and the oil pan. ➤ How to check the gasket to ensure the proper size and shape. ➤ Identify metal shavings in the transmission pan. ➤ Identify burnt transmission fluid. ➤ Identify where the re-fill transmission tube is located. ➤ Determine the correct type & amount of ATF. <ul style="list-style-type: none"> ○ Automatic transmission, manual transmission, transaxle, variety of transmission fluids, gasket, transmission pan, transmission dip-stick, 	<p>Students will be able to: (<i>i.e. do</i>)... (Include vocabulary).</p> <ul style="list-style-type: none"> ➤ Change transmission fluid and filter. ➤ Select the correct fluids for the transmission. ➤ Determine whether the manual transmission requires ATF.
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Stage 2 – Assessment Evidence

<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Perform Automatic & Manual Transmission Service 	<p>Key Criteria: (Rubric)</p> <p>Students will change automatic transmission fluid, filter, and gasket. Students will understand the operation of the transmission system.</p> <ul style="list-style-type: none"> ➤ Exceeds 90%-100% ➤ Meets 60%-89% ➤ Needs 59% and below
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Advanced Auto Mechanics Curriculum Design

Stage 1 – Desired Results:

<p>Power Standard 3: Assess vehicle condition.</p> <p>Power Benchmark/Competency #7: Compare suspension, steering, and wheel alignment fundamentals.</p> <p>Estimated Timeline: 4 days + on going application</p>	<p>Place ‘X’ in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X		Math	Science	Reading	Social Responsibility	Communication			X	X	X
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<p>Understandings: <i>Students will understand that:</i></p> <ul style="list-style-type: none"> ➤ The importance of performing a valve job ➤ What are the precision machines required for machining valves and seats? ➤ What are the factors that determine the usefulness of valve springs. ➤ When a cylinder head cannot be salvaged. ➤ What “Magnafluxing a head” means. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ What are the indications that a valve job is required ➤ What tools are required when doing a valve job ➤ How are valve seals determined to be in satisfactory condition 																				
<p>Students will: (know)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Know how to find defective valves ➤ How to operate seat grinder and valve grinder ➤ Identify defective valves ➤ Differentiate weak springs vs. acceptable springs <ul style="list-style-type: none"> ○ Valves, springs, push rods, cylinder heads, seats, guides, oil seals, tappets, fulcrums, head gaskets as specified by the manufacturer, torque wrench, indexing of head bolts, pilots, seat stones, valve grinding machine, seat grinder, dressing stand. 	<p>Students will be able to: (i.e. do)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Disassemble a cylinder head ➤ Grind valves to manufacturer’s specs ➤ Locate any defective valve related parts (valves, seats, push rod, pilots, cylinder head) ➤ Reassemble cylinder head with all necessary components 																				
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<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Evaluate, Disassemble/assemble Cylinder Heads, and Grind Associated Valves & Their Seats. 	<p>Key Criteria: (Rubric)</p> <ul style="list-style-type: none"> ➤ Student’s will grind seat and valve, knurlize guide. ➤ Exceeds 90%-100% ➤ Meets 60%-89% ➤ Needs 59% and below 																				

Advanced Auto Mechanics Curriculum Design

Stage 1 – Desired Results:

<p>Power Standard 3: Assess vehicle condition.</p> <p>Power Benchmark/Competency: #8 Evaluate the charging and starting systems.</p> <p>Estimated Timeline: 1 day + on going application</p>	<p>Place ‘X’ in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X		Math	Science	Reading	Social Responsibility	Communication			X	X	X
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<p>Understandings: <i>Students will understand that:</i></p> <ul style="list-style-type: none"> ➤ The importance the alternator plays in recharging the battery. ➤ The importance the starter plays in turning the vehicle’s engine over to start. ➤ The importance the solenoid play in actuating the starter motor. ➤ When an alternator or starter need to be rebuilt or replaced. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ What are the related components for the starting and charging systems? ➤ How is magnetism involved with the starter and alternator? ➤ What are the purpose of the brushes in the starter and alternator? ➤ What four components are needed in a functional electric motor? ➤ What is the difference between a solenoid and a relay? 																				
<p>Students will: (know) ... (Include vocabulary)</p> <ul style="list-style-type: none"> ➤ How to differentiate between functioning or faulty starters. ➤ How to differentiate between functioning or faulty alternators. ➤ Compare alternating current to direct current. ➤ Distinguish between a functioning or faulty solenoid. <ul style="list-style-type: none"> ○ Ohm’s Law, direct current electricity, VAT-40, resistance, amps (current), Voltage, primary circuits, diodes, battery, battery cables, wiring, fuses, fuse links, fuse box, alternator, starter, solenoid, relay, ignition switch, voltage regulator, bridge, diode trio, brushes, H2SO4, armature, field, commentator. 	<p>Students will be able to: (i.e. do)... (Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Trouble shooting the charging system. ➤ Disassemble, clean, inspect, test, and re-assemble an alternator. ➤ Test the rebuilt alternator. ➤ Disassemble, clean, inspect, test, and re-assemble a starter. ➤ Test the rebuilt starter. ➤ Test a solenoid. 																				

Stage 2 – Assessment Evidence

<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency) Rebuild and Test a Starter and an Alternator</p>	<p>Key Criteria: (Rubric) Students will disassemble, clean, inspect, test, and re-assemble an alternator and a starter.</p> <ul style="list-style-type: none"> ➤ Exceeds 90%-100% ➤ Meets 60%-89% ➤ Needs 59% and below
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Advanced Auto Mechanics Curriculum Design

Stage 1 – Desired Results:

<p>Power Standard 4: Evaluate the need for automotive specialty tools.</p> <p>Power Benchmark/Competency: #9 Demonstrate Basic Auto Body Techniques</p> <p>Estimated Timeline: 1 day + on going application</p>	<p>Place ‘X’ in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X		Math	Science	Reading	Social Responsibility	Communication			X	X	X
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<p>Understandings: <i>Students will understand:</i></p> <ul style="list-style-type: none"> ➤ The importance of performing auto body techniques to maintain a visually appealing vehicle. ➤ The varying degrees of auto body rusting and accidental damage. ➤ Auto-body filler, sanding, and feathering techniques. ➤ Auto-body taping, priming, and painting techniques. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ What is the difference between surface rust and rust that is completely through the auto-body? ➤ When should a body panel be repaired or replaced? ➤ What are the proper steps in preparing the rusting auto-body panel for body filling or sheet metal? ➤ What are the proper steps in preparing the rusting auto-body panel for priming or painting? 																				
<p>Students will: (know) ... (Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Identify the different stages of rusting. ➤ Differentiate between hand sanding and power tool sanding per job. ➤ Differentiate the proper times to use body filler or sheet metal to repair an auto-body area. ➤ Differentiate between panel repair and panel replacement. <ul style="list-style-type: none"> ○ Feathering, hand sanding, DA sander, body filler, sand paper, sanding block, taping, primer, paint, backing screens, sheet metal, tack cloth, respirator, putty knife, spreader/applicator. 	<p>Students will be able to: (i.e. do)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Demonstrate proper auto-body repairing techniques. ➤ Demonstrate proper taping, priming, and painting techniques. ➤ Identify different stages of vehicle rust. ➤ Cite the different times for power tool sanding compared to hand sanding. 																				
Stage 2 – Assessment Evidence																					
<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Demonstrate Basic Auto Body Techniques 	<p>Key Criteria: (Rubric)</p> <p>Students will sand, tape, and prime vehicle body areas that require repair.</p> <ul style="list-style-type: none"> ➤ Exceeds 90%-100% ➤ Meets 60%-89% ➤ Needs 59% and below 																				

Advanced Auto Mechanics Curriculum Design

Stage 1 – Desired Results:

<p>Power Standard 3: Assess vehicle condition.</p> <p>Power Benchmark/Competency: #10 Investigate the need for alternative fuel sources.</p> <p>Estimated Timeline: 1 day + on going application</p>	<p>Place 'X' in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X		Math	Science	Reading	Social Responsibility	Communication			X	X	X
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X	X	X	X																		
Math	Science	Reading	Social Responsibility	Communication																	
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<p>Understandings: <i>Students will understand that:</i></p> <ul style="list-style-type: none"> ➤ The importance of a properly maintained automobile. ➤ How to check the vehicle condition in a safe manner. ➤ Operation of an automotive hoist or lift. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ What is the condition of ALL the vehicles fluids? ➤ What is the condition of the vehicles tires? ➤ What is the condition of the vehicles body? ➤ What is the condition of the vehicles interior dash components? ➤ What is the condition of the vehicles lighting and accessory systems? ➤ What is the condition of the vehicle under the hood? 																				
<p>Students will: (know) ...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ The location of various engine, interior, and exterior automobile components. ➤ How to implement ALL DATA to find specifications for different automobiles. ➤ How to safely set and operate the engine hoist or lift. <ul style="list-style-type: none"> ○ Oil, coolant, transmission fluid, power steering fluid, brake fluid, air filter, shop ticket, VIN number, tire tread indicator, lift points, safety latch, safety stands 	<p>Students will be able to: (i.e. do)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Safely set and lift a vehicle on the hoist. ➤ Examine condition of a automobile and determine if or where repairs are needed. ➤ Work independently or in groups while inspecting an automobile. ➤ Determine number of working hours and price for automobile repairs using ALL DATA. 																				

Stage 2 – Assessment Evidence

<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Assess Overall Vehicle Condition 	<p>Key Criteria: (Rubric)</p> <p>Students will examine under the hood, interior dash controls, and exterior/ under body to determine whether repairs are needed.</p> <ul style="list-style-type: none"> ➤ Exceeds 90%-100% ➤ Meets 60%-89% ➤ Needs 59% and below
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