BD Course Guide

**Course Description:** Auto 1 offers light/initial coverage of all eight ASE areas including: Engine Repair; Automatic Transmission; Manual Drive Train & Axle; suspension & Steering; Brakes; Electrical systems; Heating & air Conditioning; and Engine Performance. This course will provide an excellent introduction to servicing the entire automobile. A hands-on, lab-oriented approach to the automobile makes this an enjoyable class for students.

| Adopted Course Primary Resource | Supplementary Resources |
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| Automotive Upkeep | • SP/2 |

| Standards Addressed In The Course (Note Essential Standards) | | |
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| Standard: CD4: Students will identify and apply employability skills | CD4.a.3.m: | Demonstrate self-discipline, self-worth, positive attitude and integrity |
| | CD4.a.4.m | Demonstrate flexibility and willingness to learn new knowledge and skills |
| | CD4.c.5.h | Maintain appropriate dress and behavior for the job to contribute to a safe and effective workplace/jobsite |
| | CD4.c.4.h | Model behaviors that demonstrate reliability and dependability |
| MNF1.a: Identify, select and safely use tools, machines, products and systems for specific tasks. | MNF1.a.1.e | Discuss health safety in the workplace |
| | MNF1.a.2.e | Recognize tools, machines and materials along with their applications and failures. |
| | MNF1.a.3.e | Recognize the characteristics of length, volume, weight, area and time. |
| MFN1.b: Create and communicate alternative solutions. | MNF.1.b.1.e | Introduce critical thinking skills to make educated decisions and solve problems |
| | MNF.1.b.2.e: | Learn basic methods of verbal, written and graphical communication as it relates to manufacturing |
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| TR1.b Analyze and explain how transportation vehicles and transportation vehicle systems work. | TR1.b.9.h<br>TR1.b.7.h | Explain that all systems demand specific repair procedures in order to achieve highest performance and efficiency<br>Interpret preventive maintenance schedules and recommended service intervals for vehicles. |
| TR1.c Develop the skill set necessary to diagnose, problem solve and repair transportation vehicles. | TR1.c.9.h<br>TR1.c10.h<br>Tr1.C11.h | Develop measurement skills in electrical mechanical and hydraulic applications that are necessary to efficiently repair vehicles.<br>Students will perform tasks related directly to current national standards per transportation area.<br>Demonstrate safe and proficient use of specially tools and equipment related to servicing transportation vehicles |
| NATEF 4.The student understands the technical knowledge and skills of basic automotive systems | TR1.c10.h | describe the eight major vehicle systems |
| | TR1.c10.h | locate, read, and interpret vehicle maintenance and service information |
| | TR1.c10.h | describe the basic and emerging vehicle power systems |
| NATEF 5.The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services | TR1.c10.h | demonstrate the proper way to safely use hand and power tools and equipment commonly employed in the maintenance and repair of vehicles |
| | TR1.c10.h | identify diagnostic tools and equipment identify hand and shop tools and describe their proper usage |
| NATEF 6.The student applies technical knowledge and skills in simulated or actual work situation | TR1.c10.h | identify brake system components, including drum, disc,<br><br>identify air-conditioning, heating, and accessory system components |

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| | | identify cooling and lubrication system components<br><br>identify and interpret tire sidewall data information such as Department of Transportation (DOT) production date information, tire load capacity, inflation pressures, sizing description, and speed rating<br><br>perform a preventative maintenance inspection<br><br>demonstrate an understanding of basic concepts related to hydraulic brakes systems, including Pascal's Theory of Hydraulics<br><br>demonstrate the procedures for ordering and locating parts<br><br>explain and perform a "jump-start" of a vehicle using jumper cables and a booster battery or an auxiliary power supply according to manufacturer recommended procedures |

| Units of Study (Sequenced) | Standards Associated | Key Learning Targets & Essential Vocabulary | Common Assessments. | Pacing |
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| Safety | CD4<br>MNF1.a<br>Mfn1.b | Key Learning Targets:<br>● demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as wearing safety glasses and other personal protective equipment (PPE) and maintaining safety data sheets (SDS);<br>● demonstrate the proper way to safely use hand and power tools and equipment commonly employed in the maintenance and repair of vehicles<br><br>Vocabulary:<br>PPE, MSDS, Lift Plan, Jack Stands, Fire Plan, Fall Risk, | Students will need to complete the Safety Chapters on the SP/2 website. The SP/2 Training goes over safety and environmental standards. | 3<br>Weeks |
| Consumer | MFN1.b | Key Learning Targets:<br><br>● demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation<br>● apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry;<br>● describe, demonstrate, and apply ethical and legal responsibilities for appropriate workplace conduct;<br>● demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate.<br>● identify career and employment | Students will be completing different lab activities that will show their understanding of being an automotive consumer.<br><br>Students will have written assignments that will ask them to calculate insurance and fuel cost of a period of time. | 3 weeks |

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| | | opportunities, including entrepreneurship opportunities, internships, and industry-recognized certification requirements for the field of automotive technology;<br>Vocabulary: MPG, Insurance, prorated, maintenance schedule, maintenance intervals, MSRP, depreciation, interest rate, | | |
| Auto Maintenance | ASE and NAFTA Standards | Key Learning Targets:<br>● demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as wearing safety glasses and other personal protective equipment (PPE) and maintaining safety data sheets (SDS);<br>● demonstrate the procedures for ordering and locating parts<br>● describe the eight major vehicle systems<br>● locate, read, and interpret vehicle maintenance and service information<br>● describe the basic and emerging vehicle power systems<br>● identify diagnostic tools and equipment identify hand and shop tools and describe their proper usage<br>● identify and interpret tire sidewall data information such as Department of Transportation (DOT) production date information, tire load capacity, inflation pressures, sizing description, and speed rating<br>Vocabulary. TPMS, Wheel Weight, Valve stem, schroeder valve, Rim, Bead, Drop Center, service manual, wheel balancer, lug nut, wheel stud, bead, tread, tread pattern, asymmetrical, | Students will be able to look up service information and be able to find parts that are needed to fix a vehicle.<br><br>Students will be able to pick out the correct tools to be able to complete a simple maintenance job.<br><br>Students will be able to mount and dismount tires.<br><br>Students will be able to locate a maintenance schedule for their vehicle. | 4 week |

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| | | symmetrical, DOT #, speed rating, Load rating, Tire size, pias ply, radial ply, | | |
| Lubrication, Fuel system, Cooling | ASE and NAFTA Standards | Key Learning Targets:<br>● demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as wearing safety glasses and other personal protective equipment (PPE) and maintaining safety data sheets (SDS);<br>● identify diagnostic tools and equipment identify hand and shop tools and describe their proper usage<br>● identify air-conditioning, heating, and accessory system components<br>● identify cooling and lubrication system component<br>Vocabulary,<br>Filter, thermostat, cooling fan, cooling fins, radiator, water pump, positive displacement pump, injectors, carburetor, fuel rail, fuel pump, oil pump, oil cooler | Students will be able to change oil and a filter on a vehicle.<br><br>Students will be able to identify and explain the cooling system and fuel system on a vehicle.<br><br>Students will be able to flush a cooling system | 4 weeks |
| Ignition, Suspension, brakes, Drivetrain. | ASE and NAFTA Standards | Key Learning Targets:<br>● demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as wearing safety glasses and other personal protective equipment (PPE) and maintaining safety data sheets (SDS);<br>● demonstrate an understanding of basic concepts related to hydraulic brakes systems, including Pascal's Theory of Hydraulics<br>● identify diagnostic tools and equipment identify hand and shop tools and describe their proper usage<br>● identify brake system components, | Students will be able to identify parts of a braking system and be able to explain how to change brake pads.<br><br>Students will be able to explain Pascal's Law and how it affects braking of a vehicle.<br><br>Students will be able to identify parts of a suspension system and be able to change a tie rod. | 4 weeks |

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| | | including drum, disc, power assist, and anti-lock braking system (ABS);<br><br>● Vocabulary:<br>drum , disc, pads, caliper, piston, slide pins, return springs, DOT 3, Dot 4, parking brake, service brakes, caliper bracket, rotor, ABS, Tie rod, power steering, EBS, Rack, Shock, Strut, Ball Joint, Steering Knuckle, | | |
| Small Engines | 6 | Key Learning Targets:<br><br>● Disassemble and reassemble a small internal combustion engine.<br>● Demonstrate ability to measure engine components to a thousandth of an inch.<br>● demonstrate an understanding of the operation theory of internal combustion engines<br>● Identify and describe the parts of an internal combustion engine.<br><br>Vocabulary:<br>Crankshaft, Camshaft, Connecting rod, Piston, Piston Rings, cylinder bore, skirt, wrist pin, needle bearings, Connecting rod cap, tappet valves, cams, push rods, rocker arms, valves, valve springs, valve guides, cylinder head, spark plugs, armature, flywheel, magneto, block, valve lash, compression test, cylinder lead test, spark test, carburetor, fuel bowl, float, needle, seat, jet, pick up tube, throttle, choke, transitional valve, idle valve, splash oil, gaskets, seals, | Students will be able to measure engine components.<br><br>Students will be able to identify and describe all engine components when disassembling their engine.<br><br>Students will be able to explain the operation of a carburetor. | 18 weeks |