Automotive Technology II
At-A-Glance - Lamar CISD

<table>
<tr><td>Ongoing Skills Imbedded All Year</td><td colspan="3">Professional Standards/Employability Skills/Technical Skills</td></tr>
<tr><td></td><td colspan="3">Safety Regulations & Hazards
ATII 1(A) The student will demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses and other personal protective equipment (PPE) and safety data sheets (SDS).
ATII 4(A) The student will demonstrate the proper and safely use hand and power tools and equipment commonly employed in the maintenance and repair of vehicles.
ATII 4(B) The student will discuss the proper handling and disposal of environmentally hazardous materials used in servicing vehicles.
Tools, Manuals & Diagnosis
ATII 3(C) The student will locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair information and technical bulletins.
ATII 3(G) The student will perform precision measurements and use published specifications to diagnose component wear, and determine necessary repair.
ATII 4(C) The student will demonstrate proper use of diagnostic tools and equipment.
ATII 4(D) The student will locate, read, and interpret service repair information such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair bulletins.</td></tr>
<tr><td>Grading Period</td><td>Unit Name</td><td>Estimated Time Frame</td><td>TEKS</td></tr>
<tr><td rowspan="4">Grading Period 1
29 Days</td><td>Core Academic Skills</td><td>3 Days</td><td>2A, 2B, 2C, 2D</td></tr>
<tr><td colspan="3">ATII 2(A) The student will demonstrate effective written communication skills throughout the course, including documenting on a repair order customer concern/compliant, root cause of the failure, and corrective action to complete the repair.
ATII 2(B) The student will estimate the cost of parts and labor operations on repair orders throughout the course, including the flat rate system.
ATII 2(C) The student will 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.
ATII 2(D) The student will research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins.</td></tr>
<tr><td>Professional Standards/Employability Skills</td><td>5 Days</td><td>1A, 1B, 1C, 1D
NATEF – Ethic Standards</td></tr>
<tr><td colspan="3">ATII 1(B) The student will identify employment opportunities, including entrepreneurship opportunities, and internships and industry-recognized certification requirements for the field of automotive technology.
ATII 1(C) The student will demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation.
ATII 1(D) The student will apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry.
ATII 1(G) The student will identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills.
NATEF Personal Standards (7.10)
1. The student will report to work daily on time; able to take directions and motivated to accomplish the task at hand.
2. The student will dress appropriately and uses language and manners suitable for the workplace.
3. The student will maintain appropriate personal hygiene.
4. The student will meet and maintain employment eligibility criteria, such as drug/alcohol-free status, clean driving record, etc.
5. The student will demonstrate honesty, integrity and reliability.
NATEF Work Habits and Ethics (see Standard 7.10)
1. The student will comply with workplace policies/laws.
2. The student will contribute to the success of the team, assists others and requests help when needed.
3. The student will work well with all customers and coworkers.
4. The student will negotiate solutions to interpersonal and workplace conflicts.
5. The student will contribute ideas and initiative.
6. The student will follow directions.
7. The student will communicate (written and verbal) effectively with customers and coworkers.
8. The student will read and interpret workplace documents; writes clearly and concisely.
9. The student will analyze and resolve problems that arise in completing assigned tasks.
10. The student will organize and implement a productive plan of work.
11. The student will use scientific, technical, engineering and mathematics principles and reasoning to accomplish assigned tasks.
12. The student will identify and address the needs of all customers, providing helpful, courteous and knowledgeable service and advice as needed.</td></tr>
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	Safety Regulations & Hazards	**5 Days**	1A, 4A, 4B NATEF - Safety

ATII 1(A) The student will demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses and other personal protective equipment (PPE) and safety data sheets (SDS).
ATII 4(A) The student will demonstrate the proper and safely use hand and power tools and equipment commonly employed in the maintenance and repair of vehicles.
ATII 4(B) The student will discuss the proper handling and disposal of environmentally hazardous materials used in servicing vehicles.

NATEF Shop Personal Safety

1. The student will identify general shop safety rules and procedures.
2. The student will utilize safe procedures for handling of tools and equipment.
3. The student will identify and use proper placement of floor jacks and jack stands.
4. The student will identify and use proper procedures for safe lift operation.
5. The student will utilize proper ventilation procedures for working within the lab/shop area.
6. The student will identify marked safety areas.
7. The student will identify the location and the types of fire extinguishers and other fire safety equipment; demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment.
8. The student will identify the location and use of eye wash stations.
9. The student will identify the location of the posted evacuation routes.
10. The student will comply with the required use of safety glasses, ear protection, gloves, and shoes during lab/shop activities.
11. The student will identify and wear appropriate clothing for lab/shop activities.
12. The student will secure hair and jewelry for lab/shop activities.
13. The student will demonstrate awareness of the safety aspects of supplemental restraint systems (SRS), electronic brake control systems, and hybrid vehicle high voltage circuits.
14. The student will demonstrate awareness of the safety aspects of high voltage circuits (such as high intensity discharge (HID) lamps, ignition systems, injection systems, etc.).
15. The student will locate and demonstrate knowledge of material safety data sheets (MSDS).

Tools, Manuals & Diagnosis	**5 Days**	3C, 3G, 4C, 4D; NATEF – Tools

ATII 3(C) The student will locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair information and technical bulletins.
ATII 3(G) The student will perform precision measurements and use published specifications to diagnose component wear, and determine necessary repair.
ATII 4(C) The student will demonstrate proper use of diagnostic tools and equipment.
ATII 4(D) The student will locate, read, and interpret service repair information such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair bulletins.

NATEF Tools and Equipment

1. The student will identify tools and their usage in automotive applications.
2. The student will identify standard and metric designation.
3. The student will demonstrate safe handling and use of appropriate tools.
4. The student will demonstrate proper cleaning, storage, and maintenance of tools and equipment.
5. The student will demonstrate proper use of precision measuring tools (i.e. micrometer, dial-indicator, dial-caliper).

Accessory Systems: Lights & Signals, Cruise, Wipers, and Horn	**5 Days**	4C, 3H; NATEF IV.E

Accessory Systems: Lights & Signals, Cruise, Wipers, and Horn
ATII 4(C) The student will demonstrate proper use of diagnostic tools and equipment.
ATII 3(H) The student will employ critical-thinking skills and structured problem-solving skills to diagnose vehicle malfunctions, solve problems, and make decisions.

NATEF VI. Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information, and Body Electrical Systems

NATEF VI. Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information, and Body Electrical Systems 1. The student will inspect interior and exterior lamps and sockets including headlights and auxiliary lights (fog lights/driving lights); replace as needed.
NATEF VI. Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information, and Body Electrical Systems 2. The student will aim headlights.
NATEF VI. Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information, and Body Electrical Systems 3. The student will identify system voltage and safety precautions associated with high-intensity discharge headlights.
NATEF VI. Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information, and Body Electrical Systems 4. The student will disable and enable supplemental restraint system (SRS); verify indicator lamp operation.

	NATEF VI. Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information, and Body Electrical Systems 5. The student will remove and reinstall door panel. *NATEF VI. Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information, and Body Electrical Systems 6. The student will describe the operation of keyless entry/remote-start systems.* *NATEF VI. Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information, and Body Electrical Systems 7. The student will verify operation of instrument panel gauges and warning/indicator lights; reset maintenance indicators.* *NATEF VI. Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information, and Body Electrical Systems.8. The student will verify windshield wiper and washer operation; replace wiper blades.*		
	Electrical System	**6 Days**	6A, 6B, 6C, 6D, 6E, 6F, 6G, 6H, 6I, 6J, 6K, 6L, 6M, 6N, 6O; NATEF – VI
	ATII 6(A) The student will demonstrate knowledge of the causes and effects from shorts, opens, and resistance in electrical/electronic circuits. ATII 6(B) The student will measure key-off battery drain/parasitic draw. ATII 6(C) The student will perform solder repair of electrical wiring. ATII 6(D) The student will replace electrical connectors and terminal ends. ATII 6(E) The student will demonstrate the ability to maintain or restore electronic memory functions. ATII 6(F) The student will perform slow and fast battery charges according to manufacturer recommendations. ATII 6(G) The student will identify electronic modules, security systems, radios, and other accessories that require re-initialization or code entry after reconnecting a vehicle battery. ATII 6(H) The student will perform starter current draw test and starter circuit voltage drop tests and inspect and test starter relays and solenoids. ATII 6(I) The student will remove and install starter in a vehicle. ATII 6(J) The student will inspect and test switches, connectors, and wires of starter control circuits. ATII 6(K) The student will perform charging system output test. ATII 6(L) The student will remove, inspect, and re-install alternator. ATII 6(M) The student will identify system voltage and safety precautions associated with high-intensity discharge headlights. ATII 6(N) The student will disable and enable airbag system for vehicle service and verify indicator lamp operation. ATII 6(O) The student will remove and reinstall a door panel. ATII 6(P) The student will describe the operation of keyless entry and remote-start systems. ***NATEF VI. Electrical/Electronic Systems A. General*** *NATEF VI. Electrical/Electronic Systems A. General 1. The student will research vehicle service information including vehicle service history, service precautions, and technical service bulletins.* *NATEF VI. Electrical/Electronic Systems A. General 2. The student will demonstrate knowledge of electrical/electronic series, parallel, and series parallel circuits using principles of electricity (Ohm's Law).* *NATEF VI. Electrical/Electronic Systems A. General 3. The student will use wiring diagrams to trace electrical/electronic circuits.* *NATEF VI. Electrical/Electronic Systems A. General 4. The student will demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow, and resistance.* *NATEF VI. Electrical/Electronic Systems A. General 5. The student will demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits.* *NATEF VI. Electrical/Electronic Systems A. General 6. The student will use a test light to check operation of electrical circuits.* *NATEF VI. Electrical/Electronic Systems A. General 7. The student will use fused jumper wires to check operation of electrical circuits.* *NATEF VI. Electrical/Electronic Systems A. General 8. The student will measure key-off battery drain (parasitic draw).* *NATEF VI. Electrical/Electronic Systems A. General 9. The student will inspect and test fusible links, circuit breakers, and fuses; determine necessary action.* *NATEF VI. Electrical/Electronic Systems A. General 10. The student will repair and/or replace connectors, terminal ends, and wiring of electrical/electronic systems (including solder repair)* *NATEF VI. Electrical/Electronic Systems A. General 11. The student will identify electrical/electronic system components and configuration.*		
Grading Period 2 **27 Days**	**Accessory Systems: Restraint**	**7 Days**	3D, 3E, 3F, 3H, 4C; NATEF VI.E
	ATII 3(D) The student will locate the manufacturer recommended preventative maintenance schedule. ATII 3(E) The student will perform a preventative maintenance inspection. ATII 3(F) The student will perform common fastener and thread repair, including removing broken bolt, restoring internal and external threads, and repairing internal threads with thread insert. ATII 3(H) The student will employ critical-thinking skills and structured problem-solving skills to diagnose vehicle malfunctions, solve problems, and make decisions. ATII 4(C) The student will demonstrate proper use of diagnostic tools and equipment. ***NATEF VI Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information and Body Electrical*** *NATEF VI Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information and Body Electrical 1. The student will inspect interior and exterior lamps and sockets including headlights and auxiliary lights (fog lights/driving lights); replace as needed.* *NATEF VI Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information and Body Electrical 2. The student will aim headlights.*		

	NATEF VI Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information and Body Electrical 3. The student will identify system voltage and safety precautions associated with high-intensity discharge headlights. *NATEF VI Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information and Body Electrical 4. The student will disable and enable supplemental restraint system (SRS); verify indicator lamp operation.* *NATEF VI Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information and Body Electrical 5. The student will remove and reinstall door panel.* *NATEF VI Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information and Body Electrical 6. The student will describe the operation of keyless entry/remote-start systems.* *NATEF VI Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information and Body Electrical 7. The student will verify operation of instrument panel gauges and warning/indicator lights; reset maintenance indicators.* *NATEF VI Electrical/Electronic Systems E. Lighting, Instrument Cluster, Driver Information and Body Electrical 8. The student will verify windshield wiper and washer operation; replace wiper blades.*		
	Vehicle Malfunctions	**10 Days**	3H, 4C
	ATII 3(H) The student will employ critical-thinking skills and structured problem-solving skills to diagnose vehicle malfunctions, solve problems, and make decisions. ATII 4(C) The student will demonstrate proper use of diagnostic tools and equipment.		
	Air Conditioning	**10 Days**	4C, 3H, 10A, 10B, 10C, 10D; NATEF VII.B
	ATII 4(C) The student will demonstrate proper use of diagnostic tools and equipment. ATII 3(H) The student will employ critical-thinking skills and structured problem-solving skills to diagnose vehicle malfunctions, solve problems, and make decisions. ATII 10(A) The student will identify, locate, and replace cabin air filter. ATII 10(B) The student will inspect air conditioning (A/C) condenser for airflow restrictions. ATII 10(C) The student will identify the source of A/C system odors. ATII 10(D) The student will identify hybrid vehicle A/C system electrical circuits and safety precautions. ***NATEF VII. Heating, Ventilation, and Air Conditioning (HVAC) B. Refrigeration System Components*** *NATEF VII. Heating, Ventilation, and Air Conditioning (HVAC) B. Refrigeration System Components 1. The student will inspect and replace A/C compressor drive belts, pulleys, and tensioners; visually inspect A/C components for signs of leaks; determine necessary action.* *NATEF VII. Heating, Ventilation, and Air Conditioning (HVAC) B. Refrigeration System Components 2. The student will identify hybrid vehicle A/C system electrical circuits and the service/safety precautions.* *NATEF VII. Heating, Ventilation, and Air Conditioning (HVAC) B. Refrigeration System Components 3. The student will inspect A/C condenser for airflow restrictions; determine necessary action.*		
Grading Period 3 **28 Days**	**Repair Brakes** **Repair Suspension Front** **Repair Suspension Rear**	**8 Days** **5 Days**	3G, 3H, 4A, 7A, 7B, 7C, 7D, 7E, 7F
	ATII 3(G) The student will perform precision measurements and use published specifications to diagnose component wear, and determine necessary repair. ATII 3(H) The student will employ critical-thinking skills and structured problem-solving skills to diagnose vehicle malfunctions, solve problems, and make decisions. ATII 4(A) The student will demonstrate the proper and safely use hand and power tools and equipment commonly employed in the maintenance and repair of vehicles. ATII 7(A) The student will describe procedure for performing a road test to check brake system operation, including an anti-lock brake system (ABS). ATII 7(B) The student will measure brake pedal height, reserve distance, travel, and free play. ATII 7(C) The student will identify components of brake warning light system. ATII 7(D) The student will bleed and flush brake system. ATII 7(E) The student will identify and check the operation of brake stop light system. ATII 7(F) The student will identify traction control and vehicle stability control system components.		
	NATEF V. Brakes: C. Drum Brakes	**5 Days**	NATEF V.C
	NATEF V. Brakes: C. Drum Brakes 1. The student will remove, clean, and inspect brake drum; measure brake drum diameter; determine serviceability. *NATEF V. Brakes: C. Drum Brakes 2. The student will refinish brake drum and measure final drum diameter; compare with specification.* *NATEF V. Brakes: C. Drum Brakes 3. The student will remove, clean, inspect, and/or replace brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble.* *NATEF V. Brakes: C. Drum Brakes 4. The student will inspect wheel cylinders for leaks and proper operation; remove and replace as needed.* *NATEF V. Brakes: C. Drum Brakes 5. The student will pre-adjust brake shoes and parking brake; install brake drums or drum/hub assemblies and wheel bearings; make final checks and adjustments.*		

	NATEF V. Brakes D. Disc Brakes	**9 Days**	NATEF V.D
	NATEF V. Brakes D. Disc Brakes 1. The student will remove and clean caliper assembly; inspect for leaks and damage/wear; determine necessary action. *NATEF V. Brakes D. Disc Brakes 2. The student will inspect caliper mounting and slides/pins for proper operation, wear, and damage; determine necessary action.* *NATEF V. Brakes D. Disc Brakes 3. The student will remove, inspect, and/or replace brake pads and retaining hardware; determine necessary action.* *NATEF V. Brakes D. Disc Brakes 4. The student will lubricate and reinstall caliper, brake pads, and related hardware; seat brake pads and inspect for leaks.* *NATEF V. Brakes D. Disc Brakes 5. The student will clean and inspect rotor and mounting surface, measure rotor thickness, thickness variation, and lateral runout; determine necessary action.* *NATEF V. Brakes D. Disc Brakes 6. The student will remove and reinstall/replace rotor.* *NATEF V. Brakes D. Disc Brakes 7. The student will refinish rotor on vehicle; measure final rotor thickness and compare with specification.* *NATEF V. Brakes D. Disc Brakes 8. The student will refinish rotor off vehicle; measure final rotor thickness and compare with specification.* *NATEF V. Brakes D. Disc Brakes 9. The student will retract and re-adjust caliper piston on an integral parking brake system.* *NATEF V. Brakes D. Disc Brakes 10. The student will check brake pad wear indicator; determine necessary action.* *NATEF V. Brakes D. Disc Brakes 11. The student will describe importance of operating vehicle to burnish/break-in replacement brake pads according to manufacturer's recommendation.*		
	ASE Testing	**1 Day**	
Grading Period 4 **31 Days**	**Steering & Suspension Systems**	**10 Days**	3G, 5A, 5B, 5C, 5D, 5E, 5F, 5G, 5H, 5I, 5J, 5K, 5L, 5M
	ATII 3(G) The student will employ critical-thinking skills and structured problem-solving skills to diagnose vehicle malfunctions, solve problems, and make decisions. ATII 5(A) The student will inspect and replace power steering hoses and fittings. ATII 5(B) The student will remove, clean, inspect, repack, and install wheel bearings; replace seals; install hubs; and adjust bearings. ATII 5(C) The student will replace wheel bearing and race. ATII 5(D) The student will disable and enable supplemental restraint system (SRS). ATII 5(E) The student will inspect, remove, and replace shock absorbers and struts and inspect mounts and bushings. ATII 5(F) The student will dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system (TPMS). ATII 5(G) The student will inspect rear suspension system lateral links/arms, trailing arms, leaf springs, spring insulators, shackles, brackets, center pins, and mounting bolts. ATII 5(H) The student will inspect tire condition and wear patterns, check For correct size and application based on load and speed rating and adjust air pressure. ATII 5(I) The student will perform pre-alignment inspection and measure vehicle ride height. ATII 5(J) The student will inspect tire and wheel assembly for air loss. ATII 5(K) The student will identify and test indirect and direct TPMSs and operation of the instrument panel lamps. ATII 5(L) The student will demonstrate knowledge of steps required to remove and replace sensors in a TPMS. ATII 5(M) The student will inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints.		
	NATEF IV. Suspension and Steering B. Related Suspension and Steering Service	**11 Days**	NATEF IV.B
	NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 1. The student will inspect rack and pinion steering gear inner tie rod ends (sockets) and bellows boots. *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 2. The student will inspect power steering fluid level and condition.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 3. The student will flush, fill, and bleed power steering system; use proper fluid type per manufacturer specification.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 4. The student will inspect for power steering fluid leakage.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 5. Remove, inspect, replace, and/or adjust power steering pump drive belt.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 6. The student will inspect and replace power steering hoses and fittings.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 7. The student will inspect pitman arm, relay (centerlink/intermediate) rod, idler arm, mountings, and steering linkage damper.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 8. The student will inspect tie rod ends (sockets), tie rod sleeves, and clamps.*		

	NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 9. The student will inspect upper and lower control arms, bushings, and shafts. *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 10. The student will inspect and replace rebound bumpers.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 11. The student will inspect track bar, strut rods/radius arms, and related mounts and bushings.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 12. The student will inspect upper and lower ball joints (with or without wear indicators).* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 13. The student will inspect suspension system coil springs and spring insulators (silencers).* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 14. The student will inspect suspension system torsion bars and mounts.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 15. The student will inspect and replace front stabilizer bar (sway bar) bushings, brackets, and links.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 16. The student will inspect strut cartridge or assembly.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 17. The student will inspect front strut bearing and mount.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 18. The student will inspect rear suspension system lateral links/arms (track bars), control (trailing) arms.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 19. The student will inspect rear suspension system leaf spring(s), spring insulators (silencers), shackles, brackets, bushings, center pins/bolts, and mounts.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 20. The student will inspect, remove, and replace shock absorbers; inspect mounts and bushings.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 21. The student will inspect electric power-assisted steering.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 22. The student will identify hybrid vehicle power steering system electrical circuits and safety precautions.* *NATEF IV. Suspension and Steering B. Related Suspension and Steering Service 23. The student will describe the function of the power steering pressure switch.*		
	Electrical/Electronic Systems	**10 Days**	3G, 4G, NATEF VI.A
	Electrical & Electronic Systems ATII 3(G) The student will employ critical-thinking skills and structured problem-solving skills to diagnose vehicle malfunctions, solve problems, and make decisions. ATII 4(C) The student will demonstrate proper use of diagnostic tools and equipment. ***NATEF VI. Electrical/Electronic Systems A. General*** *NATEF VI. Electrical/Electronic Systems A. General 1. The student will research vehicle service information including vehicle service history, service precautions, and technical service bulletins.* *NATEF VI. Electrical/Electronic Systems A. General 2. The student will demonstrate knowledge of electrical/electronic series, parallel, and series parallel circuits using principles of electricity (Ohm's Law).* *NATEF VI. Electrical/Electronic Systems A. General 3. The student will use wiring diagrams to trace electrical/electronic circuits.* *NATEF VI. Electrical/Electronic Systems A. General 4. The student will demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow, and resistance.* *NATEF VI. Electrical/Electronic Systems A. General 5. The student will demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits.* *NATEF VI. Electrical/Electronic Systems A. General 6. The student will use a test light to check operation of electrical circuits.* *NATEF VI. Electrical/Electronic Systems A. General 7. The student will use fused jumper wires to check operation of electrical circuits.* *NATEF VI. Electrical/Electronic Systems A. General 8. The student will measure key-off battery drain (parasitic draw).* *NATEF VI. Electrical/Electronic Systems A. General 9. The student will inspect and test fusible links, circuit breakers, and fuses; determine necessary action.*		
Grading Period 5 **30 Days**	**Repair Chassis**	**15 Days**	3B, 3C
	ATII 3(B) The student will diagnose automotive chassis and driveline components. ATII 3(C) The student will locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair information and technical bulletins.		

	NATEF III. Manual Drive Train and Axles A. General	**15 Days**	NATEF III.A
	NATEF III. Manual Drive Train and Axles A. General 1. The student will research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins. *NATEF III. Manual Drive Train and Axles A. General 2. The student will drain and refill manual transmission/transaxle and final drive unit; use proper fluid type per manufacturer specification.* *NATEF III. Manual Drive Train and Axles A. General 3. The student will check fluid condition; check for leaks.* *NATEF III. Manual Drive Train and Axles A. General 4. The student will identify manual drive train and axle components and configuration.*		
Grading Period 6 27 Days	**Clutch, Manual & Automatic**	**9 Days**	3A, 4C; NATEF III.B; NATEFIII.E
	ATII 3(A) The student will diagnose the major components of powered vehicles. ATII 4(C) The student will demonstrate proper use of diagnostic tools and equipment. ***NATEF III. Manual Drive Train and Axles B. Clutch*** *NATEF III. Manual Drive Train and Axles B. Clutch 1. The student will check and adjust clutch master cylinder fluid level; use proper fluid type per manufacturer specification.* *NATEF III. Manual Drive Train and Axles B. Clutch 2. The student will check for hydraulic system leaks.* ***NATEF III. Manual Drive Train and Axles E. Differential Case Assembly*** *NATEF III. Manual Drive Train and Axles E. Differential Case Assembly 1. The student will clean and inspect differential case; check for leaks; inspect housing vent.* *NATEF III. Manual Drive Train and Axles E. Differential Case Assembly 2. The student will check and adjust differential case fluid level; use proper fluid type per manufacturer specification.* *NATEF III. Manual Drive Train and Axles E. Differential Case Assembly 3. The student will drain and refill differential housing.* *NATEF III. Manual Drive Train and Axles E. Differential Case Assembly 4. The student will inspect and replace drive axle wheel studs.*		
	Engine Diagnostics	**9 Days**	8A, 8B, 8C, 8D, 8E, 8F, 8G; NATEF VIII.A
	ATII 8(A) The student will describe the importance of operating all on board diagnostics II (OBDII) monitors for repair verification. ATII 8(B) The student will perform cylinder power balance test. ATII 8(C) The student will perform cylinder cranking and running compression tests. ATII 8(D) The student will perform cylinder leakage test. ATII 8(E) The student will verify engine operating temperature. ATII 8(F) The student will remove and replace spark plugs and inspect secondary ignition components for wear and damage. ATII 8(G) The student will retrieve and record diagnostic trouble codes and OBD II monitor status, freeze frame data, and clear trouble codes when applicable. ***NATEF VIII. Engine Performance A. General*** *NATEF VIII. Engine Performance A. General 1. The student will research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins.* *NATEF VIII. Engine Performance A. General 2. The student will perform engine absolute manifold pressure tests (vacuum/boost); document results.* *NATEF VIII. Engine Performance A. General 3. The student will perform cylinder power balance test; document results.* *NATEF VIII. Engine Performance A. General 4. The student will perform cylinder cranking and running compression tests; document results.* *NATEF VIII. Engine Performance A. General 5. The student will perform cylinder leakage test; document results.* *NATEF VIII. Engine Performance A. General 6. The student will verify engine operating temperature.* *NATEF VIII. Engine Performance A. General 7. The student will remove and replace spark plugs; inspect secondary ignition components for wear and damage.*		
	Ignition and Emissions and Automatic Transmissions	**8 Days**	4C, 3A, NATEF III.D; 9A, 9B, 9C, 9D; NATEF III.A
	ATII 4(C) The student will demonstrate proper use of diagnostic tools and equipment. ATII 3(A) The student will diagnose the major components of powered vehicles. **NATEF VIII. Engine Performance D. Emissions Control Systems** NATEF VIII. Engine Performance D. Emissions Control Systems 1. Inspect, test, and service positive crankcase ventilation (PCV) filter/breather, valve, tubes, orifices, and hoses; perform necessary action. **Engines in Simulated or Actual Work Situations** ATII 9(A) The student will install engine covers using gaskets, seals, and sealers as required. ATII 9(B) The student will remove and replace timing belt and verify correct camshaft timing. ATII 9(C) The student will perform cooling system pressure and dye tests to identify leaks, check coolant condition and level, and inspect and test radiator, pressure cap, coolant recovery tank, and heater core. ATII 9(D) The student will remove, inspect, and replace thermostat and gasket or seal.		

	Automatic Transmissions ATII 3(A) The student will diagnose the major components of powered vehicles. ATII 4(C) The student will demonstrate proper use of diagnostic tools and equipment. ***NATEF III. Manual Drive Train and Axles A. General*** *NATEF III. Manual Drive Train and Axles A. General 1. The student will research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins.* *NATEF III. Manual Drive Train and Axles A. General 2. The student will check fluid level in a transmission or a transaxle equipped with a dip-stick.* *NATEF III. Manual Drive Train and Axles A. General 3. The student will check fluid level in a transmission or a transaxle not equipped with a dipstick.* *NATEF III. Manual Drive Train and Axles A. General 4. The student will check transmission fluid condition; check for leaks.* *NATEF III. Manual Drive Train and Axles A. General 5. The student will identify drive train components and configuration.*		
	ASE Testing	**1 Day**	