Student's Name/Initial:	/	Date:	Teacher's Initials:	Date:

AUTOMOTIVE TECHNOLOGY 4 STUDENT PROFILE

COURSE CODE: 6033

Directions: Evaluate the student using the applicable rating scales below and check the appropriate box to indicate the degree of competency. The ratings 3, 2, 1, and N are not intended to represent the traditional school grading system of A, B, C, and D. The description associated with each of the ratings focuses on the level of student performance or cognition for each of the competencies listed below.

PERFORMANCE RATING

3 - Skilled--can perform task independently with no supervision
2 - Moderately skilled--can perform task completely with limited supervision
1 - Limitedly skilled--requires instruction and close supervision
N - No exposure--has no experience or knowledge of this task

COGNITIVE RATING

3 - Knowledgeable--can apply the concept to solve problems
2 - Moderately knowledgeable--understands the concept
1 - Limitedly knowledgeable--requires additional instruction
N - No exposure--has not received instruction in this area

A. ENGINE REPAIR

3	2	1	N		
__	__	__	__	1.	Remove and replace timing belt; verify correct camshaft timing.
__	__	__	__	2.	Adjust valves (mechanical or hydraulic lifters).

B. AUTOMATIC TRANSMISSION AND TRANSAXLE

3	2	1	N		
__	__	__	__	1.	Inspect for leakage at external seals, gaskets, and bushings.
__	__	__	__	2.	Inspect, replace, and align power train mounts.
__	__	__	__	3.	Describe the operational characteristics of a continuously variable transmission (CVT).
__	__	__	__	4.	Describe the operational characteristics of a hybrid vehicle drive train.

C. MANUAL DRIVE TRAIN AND AXLES

3	2	1	N		
__	__	__	__	1.	Describe the operational characteristics of an electronically-controlled manual transmission/transaxle.
__	__	__	__	2.	Inspect, remove, and replace front wheel drive (FWD) bearings, hubs, and seals.
__	__	__	__	3.	Inspect, service, and replace shafts, yokes, boots, and universal/CV joints. (Phasing)
__	__	__	__	4.	Inspect and replace drive axle wheel studs.
__	__	__	__	5.	Inspect front-wheel bearings and locking hubs.
__	__	__	__	6.	Check for leaks at drive assembly seals; check vents; check lube level.
__	__	__	__	7.	Road test the vehicle to verify drive train noises and vibration.

D. SUSPENSION AND STEERING

3	2	1	N		
__	__	__	__	1.	Disable and enable supplemental restraint system (SRS).
__	__	__	__	2.	Inspect electric power-assisted steering.
__	__	__	__	3.	Perform prealignment inspection and measure vehicle ride height; determine necessary action.
__	__	__	__	4.	Inspect and replace steering linkage damper(s).
__	__	__	__	5.	Identify alignment-related symptoms such as vehicle wander, drift, and pull.
__	__	__	__	6.	Inspect non-independent front axle assembly for damage.
__	__	__	__	7.	Inspect non-independent rear axle assembly for damage.

E. BRAKES

3	2	1	N		
__	__	__	__	1.	Measure brake pedal height, travel, and free play (as applicable); determine necessary action.
__	__	__	__	2.	Check brake pedal travel with, and without, engine running to verify proper power booster operation.
__	__	__	__	3.	Check vacuum supply (manifold or auxiliary pump) to vacuum-type power booster.
__	__	__	__	4.	Check parking brake cables and

components for wear, binding, and corrosion; clean, lubricate, adjust or replace as needed.

__ __ __ __5. Replace wheel bearing and race.

__ __ __ __6. Inspect and replace wheel studs.

__ __ __ __7. Identify traction control/vehicle stability control system components.

__ __ __ __8. Describe the operation of a regenerative braking system.

__ __ __ __9. Diagnose pressure concerns in the brake system using hydraulic principles (Pascal's Law).

__ __ __ __10. Diagnose poor stopping, pulling, or dragging concerns caused by malfunctions in the hydraulic system; determine necessary action.

__ __ __ __11. Diagnose poor stopping, noise, vibration, pulling, grabbing, dragging or pedal pulsation concerns; determine necessary action.

__ __ __ __12. Remove and reinstall sealed wheel bearing assembly.

__ __ __ __13. Identify and inspect electronic brake control system components; determine necessary action.

__ __ __ __14. Diagnose poor stopping, wheel lock-up, abnormal pedal feel, unwanted application, and noise concerns associated with the electronic brake control system; determine necessary action.

__ __ __ __15. Diagnose electronic brake control system electronic control(s) and components by retrieving diagnostic trouble codes and/or using recommended test equipment; determine necessary action.

__ __ __ __16. Diagnose electronic brake control system braking concerns caused by vehicle modifications (tire size, curb height, final drive ratio, etc.).

__ __ __ __17. Bleed the electronic brake control system hydraulic circuits.

__ __ __ __18. Test, diagnose, and service electronic brake control system speed sensors (digital and analog), toothed ring (tone wheel), and circuits using a graphing multimeter (GMM)/digital storage oscilloscope (DSO) (includes output signal, resistance, shorts to voltage/ground, and frequency data).

F. ELECTRICAL

3 2 1 N

__ __ __ __1. Demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity (Ohm's Law).

__ __ __ __2. Use wiring diagrams to trace electrical/electronic circuits.

__ __ __ __3. Demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow, and resistance.

__ __ __ __4. Demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits.

__ __ __ __5. Check operation of electrical circuits with a test light.

__ __ __ __6. Check operation of electrical circuits with fused jumper wires.

__ __ __ __7. Measure key-off battery drain (parasitic draw).

__ __ __ __8. Identify electronic modules, security systems, radios, and other accessories that require re-initialization or code entry after reconnecting vehicle battery.

__ __ __ __9. Perform starter circuit voltage drop tests; determine necessary action.

__ __ __ __10. Inspect and test starter relays and solenoids; determine necessary action.

__ __ __ __11. Remove, inspect, and re-install generator (alternator).

__ __ __ __12. Perform charging circuit voltage drop tests; determine necessary action.

__ __ __ __13. Disable and enable airbag system for vehicle service; verify indicator lamp operation.

__ __ __ __14. Describe the operation of keyless entry/remote-start systems.

G. HVAC

3 2 1 N

__ __ __ __1. Identify the source of A/C system odors.

H. ENGINE PERFORMANCE

3 2 1 N

__ __ __ __1. Perform engine absolute (vacuum/boost) manifold pressure tests; determine necessary action.

__ __ __ __2. Perform cylinder power balance test; determine necessary action.

__ __ __ __3. Perform cylinder cranking and running compression tests; determine necessary action.

__ __ __ __4. Perform cylinder leakage test; determine necessary action.

__ __ __ __5. Retrieve and record diagnostic trouble codes, OBD monitor status, and freeze frame data; clear codes when applicable.

__ __ __ __6. Describe the importance of operating all OBDII monitors for repair verification.