

MODULE MEC3040: ENGINE TUNE-UP**Level:** Advanced**Theme:** Propulsion Systems**Prerequisite:** MEC3030 Engine Diagnosis**Module Description:** Students diagnose, service and repair engine, fuel, ignition, charging and starting systems.**Module Parameters:** Access to engine diagnostic equipment and supporting resources.

Supporting Modules: MEC2030 Lubrication & Cooling
 MEC2040 Fuel & Exhaust Systems
 MEC2060 Ignition Systems
 MEC2070 Emission Controls
 MEC2090 Electrical Components
 MEC3030 Engine Diagnosis

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate safe work practices while performing an engine tune-up determine the mechanical condition of an engine 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> observed performance in: <ul style="list-style-type: none"> following shop/lab established procedures recognizing and observing aspects that protect equipment and the vehicle. <p><i>Assessment Tool</i> <i>Assessment Checklist: Health and Safety, MECH&S</i></p> <p><i>Standard</i> <i>Performance rating of 3 on each criteria</i></p>	10
	<ul style="list-style-type: none"> observed performance in the use of equipment and results obtained in determining mechanical condition of an engine. <p><i>Assessment Tool</i> <i>Task Assessment Checklist: Engine Tune-up, Part 1, MEC3040-1</i> <i>Illustrative Example: Engine Tune-up Part 1 MEC3040-2</i></p> <p><i>Standard</i> <i>Performance rating of 3 on each criteria</i></p>	15

MODULE MEC3040: ENGINE TUNE-UP (continued)

Concept	Specific Learner Expectations	Notes
Identify/Analyze	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • show how to: <ul style="list-style-type: none"> – perform a static and dynamic compression test to determine mechanical condition of an engine – do a leak down test • record and analyze results. 	
Inspect/Service and Repair	<ul style="list-style-type: none"> • identify whether a carburetor problem exists and document specific faults • demonstrate how to: <ul style="list-style-type: none"> – remove, clean and adjust a carburetor – check and/or replace filters – test fuel pump pressure and capacity – clean fuel injectors – use diagnostic equipment to diagnose ignition system – service spark plugs, wires, distributor cap, rotor, points, pick-up coil, spark advance – check and adjust ignition timing – operate starter and determine if problem exists (noises, drive engagement, speed, etc.) – check starter amperage draw and correct – check starter circuit voltage drops and correct – check battery condition, and service – do a visual check; i.e., wires, connections, belt condition/tension – check alternator for noise, vibration – check alternator output and voltage regulation and correct – check charging circuit voltage drops and correct faults – diagnose computer controlled systems and document faults 	<p>Diagnostic equipment required.</p>

MODULE MEC3040: ENGINE TUNE-UP (continued)

Concept	Specific Learner Expectations	Notes
Inspect/Service and Repair (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> – identify which emissions are being controlled – identify what emission control devices exist on vehicle – identify to what standards these devices control emissions – check if vehicle meets standards and correct – road test vehicle to determine engine performance and driveability – compile a report outlining test results, work done and present condition of engine and related parts/systems. 	<p>If equipment is available.</p> <p>Diagnostic printout.</p>
Careers	<ul style="list-style-type: none"> • identify further education and work opportunities related to engine tune-ups. 	