Powersports and Outdoor Power Equipment

Evaluation Form

2025 Curricular Materials Review

# Publisher information

* Publisher Name:
* Title:
* ISBN #:
* Author:
* Copyright:
* Most Recently Published Edition and Website:
* Materials provided for evaluation:
* Intended Teacher Audience(s):
* Intended Student Audience(s):
* Is this curriculum in a digital format, print format, or both?

# Instruction

## Publishing Company

* Complete the curriculum evaluation form below. Please provide written justification as to how the material meets the criterion along with location references. If a justification requires additional space, please submit a response on an additional document.

## Review Team Member:

* Please use information and attachments to complete the curriculum evaluation form.
* Explain any discrepancies between your findings and the provided information.
* Findings, explanations, and comments should directly reflect the rubric.

Scoring for Alignment to Program Standards:

To evaluate each course’s materials for alignment to [**Powersports and Outdoor Power Equipment**](https://cte.idaho.gov/wp-content/uploads/2024/04/powersports-and-outdoor-power-equipment-standards-2024-draft.pdf), analyze the materials against the relevant criteria in the tables below. Instructional materials must meet most criteria and metrics to align with program standards.

| 0 Points  No Alignment | 1 Point  Partial Alignment | 2 Points  High Alignment | NA  Not Applicable |
| --- | --- | --- | --- |
| Standard for Powersports and Outdoor Power Equipment is not evident. | There is some evidence of the Standard for Powersports and Outdoor Power Equipment. | Materials explicitly align to and support the Standard for Powersports and Outdoor Power Equipment through regular and authentic engagement opportunities for students. |  |

# CONTENT STANDARD CTE POPE.1.0: Professional Organizations and Leadership

### Performance Standard CTE POPE.1.1 Student Leadership in Career Technical Student Organizations (CTSO) and Professional Associations

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.1.1.1 Explore the role of professional organizations and/or associations in the powersports and outdoor power equipment industry. | 0 1 2 N/A |  |
| 1. CTE POPE.1.1.2 Define the value, role, and opportunities provided through career technical student organizations. | 0 1 2 N/A |  |
| 1. CTE POPE.1.1.3 Engage in career exploration and leadership development. | 0 1 2 N/A |  |

# CONTENT STANDARD CTE POPE.2.0: basic safety

### Performance Standard CTE POPE.2.1 Workplace Safety

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.2.1.1 Describe general shop safety rules and procedures. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.2 Describe common shop hazards and housekeeping duties. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.3 Handle tools and equipment, observing manufacturer guidelines and safety features. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.4 Demonstrate safe lifting procedures, lift operation, and use of support equipment (e.g., jacks and jack stand placements, lifts, cribbing, hoists, rigging). | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.5 Check for proper ventilation to meet work requirements and procedures within the lab/shop area. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.6 Identify marked safety areas. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.7 Identify the location and the types of fire extinguishers and other fire safety equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.8 Demonstrate procedures for using fire extinguishers and other fire safety equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.9 Identify the location and use of eye wash stations and first aid kits. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.10 Describe the location of and the necessity for posted evacuation routes. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.11 Wear required safety glasses, ear protection, gloves, and shoes during lab/shop activities. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.12 Wear appropriate clothing for lab/shop activities. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.13 Secure hair and jewelry for lab/shop activities. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.14 Describe the information on safety data sheets (SDS) and how to access them. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.15 Handle, store, and dispose of hazardous and flammable waste and materials. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.16 Describe the requirements for reporting workplace safety incidents. | 0 1 2 N/A |  |

# CONTENT STANDARD CTE POPE.3.0: TOOLS, EQUIPMENT, AND FASTENERS

### Performance Standard CTE POPE.3.1 Tools and Equipment

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.3.1.1 Identify basic hand tools and their functions. | 0 1 2 N/A |  |
| 1. CTE POPE.3.1.2 Identify standard and metric tool designations. | 0 1 2 N/A |  |
| 1. CTE POPE.3.1.3 Clean, store, and maintain hand tools. | 0 1 2 N/A |  |
| 1. CTE POPE.3.1.4 Identify handheld power tools (e.g., pneumatic, electric) and their functions. | 0 1 2 N/A |  |
| 1. CTE POPE.3.1.5 Identify shop equipment (e.g., oxy-acetylene torch, arc welding equipment, bench grinder, hydraulic press, parts washers, pressure washers) and their functions. | 0 1 2 N/A |  |
| 1. CTE POPE.3.1.6 Clean, store, and maintain power tools. | 0 1 2 N/A |  |

### Performance Standard CTE POPE.3.2 Precision Measuring Instruments

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.3.2.1 Define measuring terminology (i.e., units of measurement). | 0 1 2 N/A |  |
| 1. CTE POPE.3.2.2 Identify measuring instruments (e.g., micrometers, dial calipers, dial gauges, feeler gauge, torque wrench) and their functions. | 0 1 2 N/A |  |
| 1. CTE POPE.3.2.3 Describe the procedures for yielding accurate readings. | 0 1 2 N/A |  |
| 1. CTE POPE.3.2.4 Store and maintain precision measuring tools. | 0 1 2 N/A |  |

### Performance Standard CTE POPE.3.3 Fasteners

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.3.3.1 Identify types of fasteners and their dimensions. | 0 1 2 N/A |  |
| 1. CTE POPE.3.3.2 Identify thread pitch on fasteners using the thread pitch tool. | 0 1 2 N/A |  |
| 1. CTE POPE.3.3.3 Record bolt grade and tensile strength. | 0 1 2 N/A |  |
| 1. CTE POPE.3.3.4 Re-thread tapped holes. | 0 1 2 N/A |  |
| 1. CTE POPE.3.3.5 Re-thread damaged fasteners. | 0 1 2 N/A |  |
| 1. CTE POPE.3.3.6 Remove seized fasteners. | 0 1 2 N/A |  |
| 1. CTE POPE.3.3.7 Describe the application and installation of thread inserts (e.g., heli-coil, time-sert). | 0 1 2 N/A |  |
| 1. CTE POPE.3.2.8 Demonstrate fastener torque patterns and procedures. | 0 1 2 N/A |  |
| 1. CTE POPE.3.2.9 Demonstrate fastener retention procedures (e.g., Loctite, lock washers, lock nuts, retainers. | 0 1 2 N/A |  |

# CONTENT STANDARD CTE POPE.4.0: identification

### Performance Standard CTE POPE.4.1 Unit, Equipment, and Component Identification

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.4.1.1 Locate equipment VIN, HIN, serial number, production data code, model number, and spec number. | 0 1 2 N/A |  |
| 1. CTE POPE.4.1.2 Identify additional equipment (e.g., tires, emissions, engines, transmissions) information labels. | 0 1 2 N/A |  |
| 1. CTE POPE.4.1.3 Access service and parts identification resources (e.g., service manuals, parts diagrams). | 0 1 2 N/A |  |
| 1. CTE POPE.4.1.4 Identify power and fuel sources (e.g., battery, diesel, gas, propane) and associated hazards. | 0 1 2 N/A |  |
| 1. CTE POPE.4.1.5 Describe the safe operation and use of powersports and outdoor power equipment (e.g., handheld equipment, powersports vehicles, marine applications, lawn care equipment). | 0 1 2 N/A |  |

# CONTENT STANDARD CTE POPE.5.0: ENGINE REPAIR, LUBRICATION, AND COOLING

### Performance Standard CTE POPE.5.1 Engine Principles and Design

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.5.1.1 Describe the theory of operation and functions of two-stroke and four-stroke engines and their relative advantages and disadvantages. | 0 1 2 N/A |  |
| 1. CTE POPE.5.1.2 Describe how engines are rated (e.g., displacement, horsepower, torque). | 0 1 2 N/A |  |
| 1. CTE POPE.5.1.3 Describe the engine configurations found on powersports and outdoor power equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.5.1.4 Identify the component parts used in a four-stroke engine. | 0 1 2 N/A |  |

### Performance Standard CTE POPE.5.2 Lubrication and Cooling Systems

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.5.2.1 Define the four key purposes of lubrication. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.2 Describe the types of oil and how oil is classified. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.3 Describe the lubrication systems used in two-stroke and four-stroke engines. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.4 Perform engine oil and filter change using proper fluid type per manufacturer specification. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.5 Describe the function of cooling systems and their operation. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.6 Describe the types of coolants and how coolants are classified. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.7 Describe the cooling systems (e.g., air, oil, water) and components used on powersports, marine, and outdoor power equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.8 Perform a cooling system pressure test. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.9 Identify causes of engine overheating. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.10 Inspect and/or test coolant. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.11 Drain and recover coolant, flush and refill the cooling system, use the proper fluid type per manufacturer specification, and blow air as required. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.12 Describe the operation of marine cooling system components (e.g., circulation and raw water pumps, thermostats, heat exchangers). | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.13 Inspect the radiator for damage and proper function. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.14 Remove, inspect, and replace the thermostat and gasket/seal. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.15 Inspect and test the electrical or mechanical fan, fan shroud, and air dams, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.16 Inspect auxiliary coolers, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.17 Inspect and test cooling system electrical components (e.g., temperature sensor, fan switch, oil temperature sensor). | 0 1 2 N/A |  |

### Performance Standard CTE POPE.5.3 Two-Stroke and Four-Stroke Engine Inspection and Repair

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.5.3.1 Access and interpret vehicle service information. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.2 Verify customer complaints (e.g., lack of power, hard starting, oil leak, oil consumption, overheating) to determine the course of action. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.3 Inspect engine assembly for fuel, oil, coolant, and other leaks, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.4 Inspect the bearings, bushings, and seals used in an engine. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.5 Verify engine mechanical timing. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.6 Inspect engine mounts and alignment procedures. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.7 Remove, disassemble, and inspect the cylinder head according to the manufacturer's specifications and procedures. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.8 Inspect and adjust valve train components according to manufacturer’s specifications. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.9 Inspect and measure cylinder walls/sleeves for damage, wear, and ridges, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.10 Inspect and measure piston skirts and ring lands, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.11 Identify piston-to-bore clearance. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.12 Inspect, measure, and install piston rings. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.13 Disassemble and inspect the engine block, cleaning and preparing components for reassembly. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.14 Inspect and measure the crankshaft, connecting rods, and bearings for reuse according to the manufacturer’s specifications. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.15 Inspect the auxiliary shaft and support bearings (e.g., balance shaft, intermediate shaft, idler shaft, counterbalance shaft/gear) for damage and wear. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.16 Reassemble the complete engine according to the manufacturer’s specifications. | 0 1 2 N/A |  |

# CONTENT STANDARD CTE POPE.6.0: ELECTRICAL/ELECTRONIC SYSTEMS

### Performance Standard CTE POPE.6.1 Electricity Fundamentals

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.6.1.1 Describe the importance of safety procedures when working with electrical systems. | 0 1 2 N/A |  |
| 1. CTE POPE.6.1.2 List electrical circuits' types and basic components (e.g., source, conductor, load, protection devices, switches). | 0 1 2 N/A |  |
| 1. CTE POPE.6.1.3 Define the terms voltage, current, and resistance. | 0 1 2 N/A |  |
| 1. CTE POPE.6.1.4 Describe the principles of magnetism and magnetic fields. | 0 1 2 N/A |  |
| 1. CTE POPE.6.1.5 Calculate voltage, current, and resistance for series and parallel circuits using Ohm's law. | 0 1 2 N/A |  |
| 1. CTE POPE.6.1.6 Identify electrical and electronic components (e.g., conductors, fuses, circuit breakers, resistors, diodes). | 0 1 2 N/A |  |
| 1. CTE POPE.6.1.7 Describe schematics, their purpose, and how to read a wiring diagram. | 0 1 2 N/A |  |

### Performance Standard CTE POPE.6.2 Battery Charging and Starting

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.6.2.1 Describe the various types of batteries used in powersports, marine, and outdoor power equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.2 Verify battery capacity for the vehicle application by performing state of charge and battery capacity and load tests and determining the needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.3 Service battery (i.e., fill battery cells, check battery cables, connectors, clamps, hold-downs, charge battery), according to manufacturer’s recommendations. | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.4 Jump-start vehicle, using jumper cables and a booster battery or an auxiliary power supply. | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.5 Describe the theory of charging systems and types of charging systems (e.g., permanent magnet, electromagnet). | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.6 Identify the components in a charging system (e.g., source, alternator, regulator, rectifier) and their functions. | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.7 Perform a charging system output test to determine the needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.8 Diagnose (troubleshoot) the charging system for undercharge, no-charge, or overcharge conditions. | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.9 Remove, inspect, and/or replace the alternator. | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.10 Identify the components of manual start systems (e.g., kick start, pull start, crank start). | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.11 Describe the components and operation of an electric start system. | 0 1 2 N/A |  |

### Performance Standard CTE POPE.6.3 Electrical/Electronic Systems Diagnosis and Repair

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.6.3.1 Determine and verify proper operation of system/circuit according to manufacturer’s specifications. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.2 Measure source voltage, voltage drop, current flow, and resistance using a multimeter. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.3 Describe shorts, grounds, opens, and resistance problems in electrical/electronic circuits. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.4 Test an electrical circuit using a test light. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.5 Perform starter current draw tests, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.6 Compare electrical and engine mechanical problems resulting in slow or no-crank conditions. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.7 Check the operation of electrical circuits using fused jumper wires. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.8 Diagnose (troubleshoot) electrical/electronic circuit problems using wiring diagrams. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.9 Diagnose the cause(s) of excessive key-off battery drain (e.g., parasitic draw) and determine the needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.10 Inspect and test fusible links, circuit breakers, and fuses, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.11 Inspect, test, repair, and/or replace components, connectors, terminals, harnesses, switches, and wiring in electrical/electronic systems, including necessary solder repairs. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.12 Inspect and test gauges and gauge sending units (e.g., speedometers, fuel gauges, voltmeter) for causes of abnormal readings, determining needed action. | 0 1 2 N/A |  |

# CONTENT STANDARD CTE POPE.7.0: FUEL, IGNITION, AND ENGINE MANAGEMENT SYSTEMS

### Performance Standard CTE POPE.7.1 Fuel Systems

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.7.1.1 Describe fuel requirements by type (e.g., octane ratings and factors that affect these ratings, additives, and ethanol percentage). | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.2 Describe the operation of a fuel system. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.3 Describe the theory and operation of a carburetor and its circuits. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.4 Identify components/circuits of a carbureted fuel system. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.5 Perform carburetor repair and adjustment. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.6 Describe the theory and operation of electronic fuel injection. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.7 Identify the components of electronic fuel injection. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.8 Inspect and test the fuel pump(s) and pump control system for pressure, regulation, and volume, determining what action is needed. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.9 Replace fuel filter(s) where applicable. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.10 Inspect, service, or replace air filters, filter housings, and intake ductwork | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.11 Inspect the throttle body, air induction system, intake manifold, and gaskets for vacuum leaks and/or unmetered air. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.12 Inspect, test, service, and/or replace the positive crankcase ventilation (PCV) filter/breather, valve, tubes, orifices, and hoses, determining the needed action. | 0 1 2 N/A |  |

### Performance Standard CTE POPE.7.2 Ignition Systems

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.7.2.1 Describe the common components found in all types of ignition systems. | 0 1 2 N/A |  |
| 1. CTE POPE.7.2.2 Describe the operation of battery-powered, magneto-powered, and electronic ignition systems. | 0 1 2 N/A |  |
| 1. CTE POPE.7.2.3 Diagnose (troubleshoot) ignition system-related problems such as no-starting, hard starting, engine misfire, poor drivability, spark knock, power loss, poor mileage, and emissions concerns, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.7.2.4 Remove and replace spark plugs, inspecting secondary ignition components for wear and damage. | 0 1 2 N/A |  |

### Performance Standard CTE POPE.7.3 Exhaust, Emissions and Computer Controls

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.7.3.1 Describe the functions of exhaust system components. | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.2 Describe procedures for inspecting and servicing exhaust systems. | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.3 Describe the function of a turbocharger. | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.4 Describe the different types of emission control systems (e.g., catalytic converter). | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.5 Identify the types of pollutants that engines create. | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.6 Describe the various sensors and components used in computer-controlled engines. | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.7 Interpret diagnostic trouble codes (DTC). | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.8 Access service information to perform step-by-step (troubleshooting) diagnosis. | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.9 Inspect integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shields, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.10 Describe the operation of turbocharger/supercharger systems. | 0 1 2 N/A |  |

# CONTENT STANDARD CTE POPE.8.0: DRIVES, CLUTCHES, AXLES, AND TRANSMISSION SYSTEMS

### Performance Standard CTE POPE.8.1 Drives, Clutches, Axles, and Transmissions Components and Repair

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.8.1.1 Identify the components and their functions within the primary drive system of powersports, marine, and outdoor power equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.2 Describe the types of clutches used in powersports and outdoor power equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.3 Describe the types of final drive systems. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.4 Identify the major parts of a primary drive, transmission, and final drive assembly. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.5 Describe the operating principles of a primary drive, clutch, transmission, and final drive. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.6 Trace power flow through a primary drive, transmission, and final drive. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.7 Check fluid level in a transmission equipped with/without a dip-stick. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.8 Inspect and adjust external shift linkage/cable and transmission range sensor/switch (e.g., neutral, park, gear position sensor). | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.9 Inspect for leakage, replacing external seals, gaskets, and bushings as needed. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.10 Drain and replace fluid and filter(s), using proper fluid type, per manufacturer specification. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.11 Inspect powertrain mounts. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.12 Describe the operational characteristics of a continuously variable transmission (CVT). | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.13 Drain and refill manual transmission/transaxle and final drive unit, using proper fluid type, per manufacturer specification. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.14 Diagnose clutch noise, binding, slippage, pulsation, and chatter, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.15 Inspect clutch linkage, cables, automatic adjuster mechanisms, brackets, bushings, pivots, and springs, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.16 Inspect and/or replace clutch pressure plate assembly, clutch disc, release (throw-out) bearing, and linkage. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.17 Check for leaks, adjust, and bleed clutch master cylinder, refilling with proper fluid type, per manufacturer specification, as needed. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.18 Diagnose constant-velocity (CV) and universal joint noise and vibration concerns, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.19 Check and adjust differential case fluid level, checking for leaks, inspecting housing vent, and using proper fluid type, per manufacturer specification. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.20 Drain and refill differential case, using proper fluid type, per manufacturer specification. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.21 Inspect and replace drive axle wheel studs. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.22 Remove and replace drive axle shafts. | 0 1 2 N/A |  |

### CONTENT STANDARD CTE POPE.9.0: WHEELS, TIRES, AND BRAKE SYSTEMS

### Performance Standard CTE POPE.9.1 Wheels and Tires

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.9.1.1 Describe the operating principles of mechanical, electrical, and hydraulic brake systems. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.2 Identify the brake system components used on powersports vehicles. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.3 Describe ABS and linked systems. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.4 Describe the types of wheels used on modern powersports vehicles. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.5 Identify the types of tire construction used on powersports and outdoor power equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.6 Inspect tire condition; identify tire wear patterns; check for the correct tire size, application (e.g., load ratings, speed ratings), and air pressure, as listed on the tire information placard/label. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.7 Diagnose wheel/tire vibration, shimmy, air loss, pull, and noise, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.8 Rotate tires according to the manufacturer’s recommendation. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.9 Measure wheel, tire, axle flange, and hub runout, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.10 Dismount, inspect, and remount the tire on the wheel, balancing wheel, and tire assembly. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.11 Install wheel and torque lug nuts. | 0 1 2 N/A |  |

### Performance Standard CTE POPE.9.2 Brake Systems

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.9.2.1 Describe the operating principles of mechanical, electrical, and hydraulic brake systems. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.2 Identify the brake system components used on powersports vehicles. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.3 Describe ABS and linked systems. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.4 Describe the types of wheels used on modern powersports vehicles. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.5 Identify the types of tire construction used on powersports and outdoor power equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.6 Inspect tire condition; identify tire wear patterns; check for the correct tire size, application (e.g., load ratings, speed ratings), and air pressure, as listed on the tire information placard/label. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.7 Diagnose wheel/tire vibration, shimmy, air loss, pull, and noise, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.8 Rotate tires according to the manufacturer’s recommendation. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.9 Measure wheel, tire, axle flange, and hub runout, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.10 Dismount, inspect, and remount the tire on the wheel, balancing wheel, and tire assembly. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.11 Install wheel and torque lug nuts. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.12 Clean and inspect the rotor and mounting surface, measuring the rotor thickness, thickness variation, and lateral runout and determining the needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.13 Remove and reinstall/replace the rotor. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.14 Describe the importance of operating the vehicle to burnish/break-in replacement brake pads, per the manufacturer’s recommendations. | 0 1 2 N/A |  |

### CONTENT STANDARD CTE POPE.10.0: CHASSIS, SUSPENSION, AND STEERING SYSTEMS

### Performance Standard CTE POPE.10.1 Chassis, Suspension, and Steering Components and Repair

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.10.1.1 Describe the types, functions, and components of front and rear suspension systems. | 0 1 2 N/A |  |
| 1. CTE POPE.10.1.2 Inspect suspension components for leaks, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.10.1.3 Inspect chassis bearings (e.g., steering head, swing arm, wheel) for wear and play. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.4 Describe the procedures for rebuilding a front fork assembly and shock absorber. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.5 Interpret suspension and steering system concerns (e.g., ride height, sway, noises) to determine the needed action. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.6 Inspect upper and lower control arms, bushings, shafts, and rebound bumpers. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.7 Inspect upper and/or lower ball joints with or without wear indicators. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.8 Inspect steering knuckle assemblies. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.9 Inspect, remove, and/or replace shock absorbers, inspecting mounts and bushings. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.10 Remove, inspect, service, and/or replace front and rear wheel bearings. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.11 Inspect steering alignment per manufacturer’s specification. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.12 Describe the effects of camber, caster, and toe on handling, performance, and ride quality. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.13 Inspect steering systems and components (e.g., electric assist, hydraulic assist, hydrostatic, cable, rack, and pinion). | 0 1 2 N/A |  |

### CONTENT STANDARD CTE POPE.11.0: HYDRAULIC SYSTEMS

### Performance Standard CTE POPE.11.1 Hydraulics Components and Repair

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.11.1.1 Describe fundamental features and principles of hydraulics using hydraulics terminology. | 0 1 2 N/A |  |
| 1. CTE POPE.11.1.2 Identify safety concerns and procedures specific to hydraulic systems. | 0 1 2 N/A |  |
| 1. CTE POPE.11.1.3 Describe the function of the primary hydraulic system components. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.4 Describe open-center and closed-center hydraulic systems and their operating principles. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.5 Describe the types and functions of hydraulic fluid. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.6 Describe the types and functions of hydraulic reservoirs and cooling systems. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.7 Describe the types of hydraulic pumps and their principles of operation. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.8 Describe the types and functions of hydraulic control valves and valve actuating systems. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.9 Describe the types and functions of hydraulic actuators. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.10 Describe the types and applications of hydraulic fittings, hoses, and lines. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.11 Interpret hydraulic symbols from a hydraulic schematic. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.12 Compare a hydraulic drive system and a hydrostatic drive system. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.13 Calculate hydraulic cylinder force and cycle times based on pump pressure and flow using Pascal’s law. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.14 Disassemble, inspect and repair hydraulic control valves. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.15 Disassemble, inspect and repair hydraulic pumps. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.16 Disassemble, inspect and repair hydraulic actuators. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.17 Describe the operation of a hydrostatic transmission. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.18 Replace hydraulic hose, line, and seal. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.19 Perform hydraulic system pressure and flow tests. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.20 Diagnose and suggest solutions for hydraulic system problems. | 0 1 2 N/A |  |

# INDICATORS OF QUALITY RUBRIC:

**Access and Equity:**

| **Standards** | **Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions, not just page numbers.** | **Rating (Reviewer Only):** |
| --- | --- | --- |
| 1. Materials are provided in a way that ensures all students have the opportunity to achieve success in the program of study, including by meeting Title IX, Americans with Disabilities Act and other accessibility requirements. |  |  |
| 1. Materials and assessments are free from bias, inclusive and non-discriminatory, and offered in a way that ensures all students have the opportunity to achieve success in the program of study. |  |  |
| 1. Contains guidance to support differentiated and culturally responsive (i.e., purposefully represents diverse cultures, linguistic backgrounds, learning styles and interests) instruction in the classroom so that every student’s need are addressed by including:    1. Suggestions for how to promote equitable instruction by making connections to culture, home, neighborhood, and community as appropriate.    2. Appropriate scaffolding, interventions, and supports, including integrated and appropriate reading, writing, listening, and speaking alternatives (e.g., translations, picture support, graphic organizers) that neither sacrifice content nor avoid language development for English language learners, special needs, or below grade level readers.    3. Digital and print resources that provide various levels of readability.    4. Modifications and extensions for all students, including those performing above their grade level, to deepen understanding of the content.    5. Materials in multiple language formats. |  |  |

**Student Focus:**

| **Standards** | **Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions, not just page numbers.** | **Rating (Reviewer Only):** |
| --- | --- | --- |
| 1. The material supports the sequential and cumulative development of foundational skills and progresses in specificity to build students’ depth of knowledge and skills. Those skills are necessary for a student’s independent comprehension of grade-level complex texts and mastery of tasks called for by the standards. |  |  |
| 1. Content and standards within the program of study are non-duplicative and vertically aligned to prepare students to transition seamlessly to the next level of education. |  |  |
| 1. The material provides many and varied opportunities for students to work with each standard within the grade level. |  |  |
| 1. The material cross-references and integrates other content areas. |  |  |
| 1. The material has a balance of text types and lengths that encourage close, in-depth reading and rereading, analysis, comparison, and synthesis of texts. |  |  |
| 1. The material includes sufficient supplementary activities or assignments that are appropriately integrated into the text. |  |  |
| 1. The material has activities and assignments that develop problem-solving skills and foster synthesis and inquiry at both an individual and group level. |  |  |
| 1. The material has activities and assignments that reflect varied learning styles of students. |  |  |
| 1. The material includes appropriate instructional strategies. |  |  |
| 1. Project-based learning and related instructional approaches, such as problem-based, inquiry-based and challenge-based learning, are fully integrated into the material. |  |  |

**Pedagogical Approach:**

| **Standards** | **Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions, not just page numbers.** | **Rating (Reviewer Only):** |
| --- | --- | --- |
| 1. Provides guidance for teachers throughout for how learning experiences build on each other to support students in developing a deep understanding of the content. |  |  |
| 1. Provides scaffolded supports for teachers to facilitate learning of the content so that students are increasingly responsible for making sense of the content. |  |  |
| 1. The material provides opportunities for supporting English language learners to regularly and actively participate with grade-level text. |  |  |
| 1. The material gives clear and concise instruction to teachers and students. It is easy to navigate and understand. |  |  |
| 1. Includes appropriate academic and content-specific vocabulary in the context of the learning experience that is accessible, introduced, reinforced, reviewed, and augmented with visual representations when appropriate. |  |  |
| 1. Allows teachers to access, revise, and print form digital resources (e.g., readings, labs, assessments, rubrics). |  |  |
| 1. Uses varied modes (selected, constructed, project-based, extended response, and performance tasks) of instruction-embedded pre-, formative, summative, peer, and self-assessment measures of learning. |  |  |
| 1. Includes editable and aligned rubrics, scoring guidelines, and exemplars that provide guidance for assessing student performance and to support teachers in planning instruction and providing ongoing feedback to students. |  |  |
| 1. Provides multiple opportunities for students to demonstrate and receive feedback on performance of practices connected with their understanding of concepts. |  |  |

**Presentation and Design:**

| **Standards** | **Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions, not just page numbers.** | **Rating (Reviewer Only):** |
| --- | --- | --- |
| 1. The material has an aesthetically appealing appearance. |  |  |
| 1. Digital and print materials are consistently formatted, visually focused, and uncluttered for efficient use. |  |  |
| 1. The material has a reasonable and appropriate balance between text and illustration. The material has grade-appropriate font size. |  |  |
| 1. The illustrations clearly cross-reference the text, are directly relevant to the content (not simply decorative), and promote thinking, discussion, and problem solving. |  |  |
| 1. Non-text content (performance clips, images, maps, globes, graphs, pictures, charts, databases, and models) is accurate and well-integrated into the text. |  |  |

**Technology:**

| **Standards** | **Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions, not just page numbers.** | **Rating (Reviewer Only):** |
| --- | --- | --- |
| 1. Technology and digital media support, extend, and enhance learning experiences. |  |  |
| 1. The material has “platform neutral” technology (i.e., cloud based) and availability for networking. |  |  |
| 1. The material has a user-friendly and interactive interface allowing the user to control (shift among activities). |  |  |

For Questions Contact

Content & Curriculum – Curricular Materials

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