Power Sports
Subject Code: 010240
Course & Unit Descriptions

Course Description:
In the *Power Sports* course, students will learn the theories of operating systems and the maintenance practices for power sport vehicles used off road or on the water. Students will learn principles of power sports vehicles including diagnosis, service, and repair. This courses covers core information on power sport internal combustion engines, primary drive operation, transmission power flow, fuel system operation, and electrical and suspension systems.

Unit: Safety

Students will demonstrate their knowledge of safety rules and regulations, safety signs and signals. Students will describe health practices, safety practices and demonstrate the appropriate responses for major types of hazardous materials disasters. Students will identify potential hazards and their prevention.

Benchmark: 4.1 Safety Procedures
Level 2: Follow safety procedures in specific situations with specialized tools and equipment, evaluate situation and take corrective action

Indicators
4.1.03 Model safe attitudes and behaviors (e.g., lifting, climbing)

Academic Standards
English: Demonstrate comprehension of print and electronic text by responding to questions (e.g., literal, inferential, evaluative and synthesizing). (Reading Process B, 8-10; Reading Process B, 11-12)

Benchmark: 4.3 Equipment Operation
Level 2: Inspect and safely operate specialized equipment with some limitations to adjustments and functions

Indicators
4.3.04 Perform appropriate start-up, operating and shut-down procedures

Academic Standards
English: Demonstrate comprehension of print and electronic text by responding to questions (e.g., literal, inferential, evaluative and synthesizing). (Reading Process B, 8-10; Reading Process B, 11-12)
Math: Apply mathematical knowledge and skills routinely in other content areas and practical situations. (Mathematical Processes B, 8-10)

Unit: Engine Theory

Students learn the general theories of systems and maintenance of motorsports engines including motorcycles, snowmobiles, ATV's and personal watercraft.

Benchmark: 4.4 Engines
Level 2: Diagnose and repair components of both small and large internal combustion engines

Indicators
4.4.04 Describe features, benefits and applications of engine types
4.4.06 Classify and select engine lubricants, cooling agents and fuels

Academic Standards
English: Use appropriate self-monitoring strategies for comprehension. (Reading Process C, 8-10; Reading Process C, 11-12)
Math: Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision. (Measurement E, 8-10)
Science: Explain the movement of objects by applying Newton's three laws of motion. (Physical Sciences D, 9-10)

Unit: Internal Engine Components

Students will identify, evaluate, troubleshoot and repair internal combustion engines used for outdoor power sports activities.

Benchmark: 4.4 Engines
Level 2: Diagnose and repair components of both small and large internal combustion engines

Indicators
4.4.13 Repair/replace basic internal engine components

Academic Standards
English: Use appropriate self-monitoring strategies for comprehension. (Reading Process C, 8-10; Reading Process C, 11-12)
Math: Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision. (Measurement E, 8-10)
Science: Explain the movement of objects by applying Newton's three laws of motion. (Physical Sciences D, 9-10)

Unit: Lubricants and Coolants

Students will learn the functions and characteristics of lubricants, factors in selection of lubricants, and the effects of additives. Oils, greases, and other compounds used for lubrication are taught, as well as their applications.

Benchmark: 4.4 Engines
Level 2: Diagnose and repair components of both small and large internal combustion engines

Indicators
4.4.06 Classify and select engine lubricants, cooling agents and fuels
4.4.09 Identify and service/repair cooling system components
4.4.10 Identify and service/repair lubrication system components

Academic Standards
English: Use appropriate self-monitoring strategies for comprehension. (Reading Process C, 8-10; Reading Process C, 11-12)
Math: Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision. (Measurement E, 8-10)
Science: Explain the movement of objects by applying Newton's three laws of motion. (Physical Sciences D, 9-10)

Unit: Fuel and Air

Students will learn the principles of fuel, ignition, and exhaust systems theory, diagnosis, repair, and service for vehicles with carburetion and fuel injection systems. Students will demonstrate air induction theories and exhaust systems diagnosis and repair.

Benchmark: 4.4 Engines
Level 2: Diagnose and repair components of both small and large internal combustion engines

Indicators
4.4.07 Identify and service/repair fuel/air system components

Academic Standards
English: Use appropriate self-monitoring strategies for comprehension. (Reading Process C, 8-10; Reading Process C, 11-12)
Math: Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision. (Measurement E, 8-10)
Science: Explain the movement of objects by applying Newton's three laws of motion. (Physical Sciences D, 9-10)

Unit: Electrical

Students will identify, evaluate and repair electrical systems found in motorsport engines.

Benchmark: 4.4 Engines
Level 2: Diagnose and repair components of both small and large internal combustion engines

Indicators
4.4.08 Identify and service/repair ignition, starting and charging system components
4.4.10 Identify and service/repair lubrication system components

Academic Standards
English: Use appropriate self-monitoring strategies for comprehension. (Reading Process C, 8-10; Reading Process C, 11-12)
Math: Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision. (Measurement E, 8-10)
Science: Explain the movement of objects by applying Newton's three laws of motion. (Physical Sciences D, 9-10)

Unit: Troubleshooting

Students will learn the skills needed to identify, evaluate, and repair engine issues.

Benchmark: 4.4 Engines
Level 2: Diagnose and repair components of both small and large internal combustion engines

Indicators
4.4.02 Analyze and troubleshoot engine

Academic Standards
English: Use appropriate self-monitoring strategies for comprehension. (Reading Process C, 8-10; Reading Process C, 11-12)

Math: Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision. (Measurement E, 8-10)
Science: Explain the movement of objects by applying Newton's three laws of motion. (Physical Sciences D, 9-10)

Unit: Suspension

Students learn the theory, diagnostic and service procedures used in suspension and frame systems unique to motorsports.

Benchmark: 4.9 Steering, Suspension, and Traction
Level 2: Diagnose and repair steering, braking and suspension systems

Indicators
4.9.02 Evaluate vehicle stability (i.e., automatic leveling device, center of gravity, roll-over and wheel base)
4.9.03 Analyze, diagnose and test suspension systems
4.9.04 Remove, inspect and replace/repair suspension components
4.9.06 Remove, inspect, replace/repair and align steering components including tires and tracks
4.9.08 Remove, inspect and replace/repair braking system components

Academic Standards
Math: Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision. (Measurement E, 8-10)
Science: Explain the movement of objects by applying Newton’s three laws of motion. (Physical Sciences D, 9-10)

Unit: Transmissions and Power Train

Students will inspect, repair and reassemble modern power train assemblies used in power sports.

Benchmark: 4.5 Transmission of Power
Level 2: Diagnose and repair power train components

Indicators
4.5.03 Analyze, diagnose and test differentials and final drives
4.5.04 Analyze, diagnose and test clutches and brakes
4.5.05 Analyze, diagnose and test gear-type transmissions (i.e., power shift, synchronized and sliding gear)
4.5.09 Describe features, benefits and applications of mechanical power transmission components (e.g., belts, chains, gears, bearings, seals, universals)
4.5.12 Remove, inspect and replace/repair power train components

Academic Standards
English: Apply knowledge of roots, affixes and phrases to aid understanding of content area vocabulary. (Vocabulary D, 11-12)
Math: Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions. (Number G, 8-10)
Science: Explain the movement of objects by applying Newton's three laws of motion. (Physical Sciences D, 9-10)

Unit: Hydraulics, Brake, and Clutch Systems

Students learn the skills needed to identify, describe, and explain hydraulics. Students will learn the different types of brake systems and clutches.

Benchmark: 4.6 Hydraulic Systems
Level 2: Diagnose, repair, and rebuild hydraulic components

Indicators
4.6.01 Describe physical and mechanical principles of hydraulics
4.6.05 Analyze, diagnose and test operating systems
4.6.06 Analyze, diagnose, test and repair/replace fluid conveyance components (e.g., hoses, lines, fittings)
4.6.08 Evaluate system cleanliness
4.6.09 Identify hydraulic fittings and ports

Academic Standards

English:	Apply knowledge of roots, affixes and phrases to aid understanding of content area vocabulary. (Vocabulary D, 11-12)
Math:	Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions. (Number G, 8-10)
Science:	Explain the movement of objects by applying Newton's three laws of motion. (Physical Sciences D, 9-10)