Two- and Four-Stroke Engines

Two- and Four-Stroke Engines is a course designed to prepare students for entry-level employment or advanced training in the power mechanics field. Topics include career opportunities, safety, tools, four-stroke cycle engines, two-stroke cycle engines, cooling systems, preventive maintenance, engine overhaul, and exhaust systems.

Content standards for this course are not intended to serve as the entire curriculum. Teachers are encouraged to expand the curriculum beyond these minimum required content standards to accommodate specific community interests and utilize local resources. This course encourages critical thinking, use of the scientific method, integration of technology, development of student leadership skills, and application of knowledge and skills related to practical questions and problems. Safety concepts are integrated into instruction to the maximum extent possible.

This course may be taught as a one-credit or half-credit course. For a half-credit course, content standards 1, 2, 3, 4, 5, 8, 9, 14, 15, and 16 must be included.

Career and technical student organizations are integral, cocurricular components of each career and technical education course. These organizations serve as a means to enhance classroom instruction while helping students develop leadership abilities, expand workplace-readiness skills, and broaden opportunities for personal and professional growth.

Career Opportunities

Students will:
1. Compare job characteristics of various career opportunities in the power equipment industry.

Safety

2. Demonstrate safety concepts required for performing maintenance on small engine systems.

Tools

3. Identify specific tools used on small engines.

Four-Stroke Engines

4. Explain the theory of operation for four-stroke engines.

5. Identify parts of a four-stroke engine.
   - Diagnosing mechanical system problems in a four-stroke engine
   - Solving mechanical system problems in a four-stroke engine

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6. Explain how the ignition system works in four-stroke engines.
   - Diagnosing ignition system problems in a four-stroke engine
   - Solving ignition system problems in a four-stroke engine

7. Explain how the fuel system works in four-stroke engines.
   - Diagnosing fuel system problems in a four-stroke engine
   - Solving fuel system problems in a four-stroke engine

**Two-Stroke Engines**

8. Explain the theory of operation for two-stroke engines.

9. Identify parts of a two-stroke engine.
   - Diagnosing mechanical system problems in a two-stroke engine
   - Solving mechanical system problems in a two-stroke engine

10. Explain how the ignition system works in two-stroke engines.
    - Diagnosing ignition system problems in a two-stroke engine
    - Solving ignition system problems in a two-stroke engine

11. Explain how the fuel system works in two-stroke engines.
    - Diagnosing fuel system problems in a two-stroke engine
    - Solving fuel system problems in a two-stroke engine

**Cooling Systems**

12. Identify air and liquid cooling system components and their functions.
    - Explaining the process and need for draining and replacing coolants
    - Diagnosing cooling system problems in small engines
    - Solving cooling system problems in small engines

**Preventive Maintenance**

13. Identify preventive maintenance procedures for servicing small engines.

**Engine Overhaul**

14. Demonstrate procedures for disassembling and cleaning small engines.

15. Demonstrate the procedure for inspecting small engines for wear.
    - Demonstrating the procedure for measuring engine components

16. Demonstrate the procedure for assembling a small engine according to manufacturer’s specifications.
Exhaust Systems

17. Explain the operation of an exhaust system on a four-stroke and a two-stroke engine.