Small Engines and Powertrains I

UNIT 1: Safe Working Practices

ESSENTIAL QUESTION	BIG IDEAS
What are the practices to create a safe working environment with the tools and machines used to repair engines and powertrains?	Students will: • Learn and demonstrate safe working practices with tools and machines • Identify and learn the safe use of tools and machines associated with engine and powertrain work • Learn and follow the safety procedures outlined in OSHA guidelines

GUIDING QUESTIONS

- Content
  - What are the tools and machines most commonly used to work on engines and powertrains?
  - What are the safety procedures outlined by OSHA guidelines that should be applied in an engine and powertrain workshop?
- Process
  - What does the safe use of the tools and machines most commonly used to work on engines and powertrains look like?

FOCUS STANDARDS

- 1.1 Demonstrate and apply safe working practices with tools and machines.
- 1.2 Identify and follow safety procedures as outlined in OSHA guidelines.

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UNIT 2: Parts of Engines and Powertrains

ESSENTIAL QUESTION	BIG IDEAS
What are the parts associated with 2 and 4 stroke cycle engines and drive mechanisms?	Students will: • Demonstrate a working knowledge of the working parts of 2 and 4 stroke cycle engines • Demonstrate an understanding of primary drive mechanisms • Compare and contrast different types of transmissions and drive systems • Learn the principles of electricity as they pertain to small engines and powertrains

GUIDING QUESTIONS

- Content
  - What are the various parts of a 2 and 4 stroke cycle engine?
  - How do various primary drive mechanisms function?
  - How do the electrical systems associated with machines that function with small engines and powertrains function?
- Process
  - What are the common similarities and differences associated with drive mechanisms?

FOCUS STANDARDS

- 1.3 Identify service needs, and maintain the working parts of 2- and 4-stroke cycle engines.
- 1.4 Explain and demonstrate a working knowledge of engine systems on 2- and 4-stroke cycle engines.
- 1.7 Demonstrate an understanding of primary drive mechanisms.
- 1.11 Compare and contrast various types of transmissions and drive systems.
- 1.12 Explain the principles of electricity as they pertain to small engines and powertrains.

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UNIT 3: Engine and Powertrain Operation and Repair

ESSENTIAL QUESTION	BIG IDEAS
How are small engines and powertrains built, serviced and repaired?	Students will: ● Utilize service literature and manuals diagnose issues and perform maintenance and service on engines and powertrains. ● Remove and install a small engine

GUIDING QUESTIONS

- Content
  - How do you properly use and implement service literature?
  - What components of service are associated with the maintenance of small engines and powertrains?
- Process
  - How do you remove and reinstall a small engine?

FOCUS STANDARDS

- 1.5 Utilize precision measuring equipment.
- 1.6 Use and interpret service literature.
- 1.8 Demonstrate the ability to perform a leak inspection.
- 1.9 Demonstrate the ability to disassemble and reassemble an engine.
- 1.10 Remove and install an engine.
- 1.13 Interpret and follow reference manuals, schematics, diagrams, flow charts, symbols, and technical procedures.