Arkansas CTE

Small Engine Technology: Grades 10, 11, 12

Adopted 2002

Small Engines in Agriculture

1.1 Define terms

1.2 Identify uses of small gas engines in the agricultural industry

1.3 List safety precautions that should be taken when working with small engines

1. View a video showing the proper use of small engines and safety precautions that should be followed 1.3.1

1.4 Discuss careers in agriculture that require knowledge of small engines

1. Research a career in small engines to determine the education requirements, working conditions, and salary 1.4.1

1.5 Identify FFA opportunities for students interested in small engines

Small Engine Tools

2.1 Define terms

2.2 Explain why special tools are needed when working on small engines

2.3 Identify small engine measuring tools and their uses

1. Demonstrate the ability to use an inside micrometer 2.3.1

2.4 Describe tools used in the operation, maintenance, and repair of small engines

1. Demonstrate the ability to fit tools associated with small engines 2.4.1

Engine Identification & Inspection

3.1 Define terms

3.2 Compare the characteristics of two-cycle and four-cycle engines

3.3 Explain the types of information found on the small engine nameplate

1. Locate model, type, code, and specification information on a nameplate 3.3.1

3.4 Identify crankshaft operating position

Principles of Operation of Four-Cycle Engines

4.1 Define terms

4.2 Identify the major engine components and their functions

4.3 Analyze the strokes of a four-cycle engine

4.4 Distinguish between valve arrangement patterns

1. Analyze valve timing with respect to crankshaft rotation `4.4.1`

Small Engine Systems

5.1 Define terms

5.2 Compare breaker points and electronic ignition systems

1. Demonstrate the ability to service applicable ignition systems `5.2.1`

5.3 Identify engine components associated with lubrication

5.4 Describe various types of lubrication systems

1. Demonstrate the ability to check level of lubricant and add lubricant if needed `5.4.1`
2. Demonstrate the ability to change engine oil and filter `5.4.2`
3. Demonstrate the ability to service the crankcase breather `5.4.3`

5.5 Identify types of starting systems

5.6 List parts of a recoil starter system and their functions

1. Demonstrate the ability to serve the recoil starting system `5.6.1`

5.7 Identify the components of a charging system and their functions

1. Demonstrate the ability to service the charging system `5.7.1`

5.8 List the types of cooling systems

5.9 Identify the components of an air-cooled system and their functions

1. Demonstrate the ability to service an air-cooled system `5.9.1`

5.10 Identify the different types of carburetors used on small gas engines

1. Demonstrate the ability to rebuild a carburetor `5.10.1`

5.11 List the components of a fuel system and their functions

1. Demonstrate the ability to service the fuel system `5.11.1`

5.12 List the types of governor systems

1. Demonstrate the ability to service the governor system `5.12.1`

5.13 Identify the components of governor systems and their functions

5.14 Explain the function of the exhaust system

5.15 Discuss hazards associated with exhaust systems

1. Demonstrate the ability to service an exhaust system `5.15.1`

Troubleshooting

6.1 Define terms

6.2 List the steps in troubleshooting an engine

1. Demonstrate the ability to troubleshoot an engine `6.2.1`

Overhauling & Rebuilding the Four-Cycle Engine

7.1 Define terms

7.2 List the major steps in disassembly of four-cycle engines

7.3 List the major steps in reassembly of four-cycle engines

1. Demonstrate the ability to overhaul a four-cycle engine, including the following activities: cylinder resizing, valve grinding, valve seat refacing, and valve guide rebushing `7.3.1`