

Existing LHS course, previously approved
Amended for PRIDE/CDS to reflect no Shop/Lab

Course Title: Small Engines – Theory of Maintenance & Repair

Graduation: Elective credits only

Duration: 2 Quarters

Credit: 10 credits – Grade of “C” or higher

Course Description: Each student enrolled in the course will learn the theory of engines and be able to disassemble, evaluate, identify, and reassemble a variety of different engines in theory. The focus of the class is to mirror those job entry skills needed to enter the job market.

Standards: Based on California Agriculture Education State Standards

C1.0 Students understand the value and necessity of practicing personal and occupational safety and protecting the environment by using materials and processes in accordance with manufacturer and industry standards

C2.0 Students understand the safe and appropriate use of tools, equipment, and work processes

C3.0 Students understand scientific principles in relation to chemical, mechanical, and physical functions for various engine and vehicle systems

C6.0 Students understand the application, operation, maintenance, and diagnosis of engines, including but not limited to two- and four-stroke and supporting subsystems

C7.0 Students understand the function, principles, and operation of electrical and electronic systems using manufacturer and industry standards

C8.0 Students understand the function and principles of automotive drive train, steering and suspension, brake, and tire and wheel components and systems in accordance with portable national industry standards, such as the National Automotive Technicians Education Foundation.

Course Outline:

- I. Theory of Shop Safety
 - Proper tool usage
 - Fire

- General rules and concerns
- Precautions related to the shop environment
- II. Introduction to the single cylinder engine
 - The basic engine
 - Principles of combustion
 - Four stroke theory
 - Two stroke theory
- III. Engine testing
 - compression, spark
- IV. Understanding systems
 - Lubrication
 - Cooling
 - Ignition
 - Fuel and carburetion
 - Exhaust
- V. Electrical Fundamentals and Ignition systems
 - Terms
 - Ignition Circuits
 - Ignition timing
- VI. Fuel, Carburetion, and speed control
 - Air-fuel mixture
 - Fuel pumps
 - Speed control systems
 - Carburetor and air cleaner service
- VII. Engine measurement and disassembly
 - Measuring devices
 - Precautions of disassembly

- VIII. Engine overhaul
- Combustion chamber and head service
 - Crankshaft checks
 - Piston, pin, and connection rod check
 - Bearings, camshaft, and valve check
 - Reassembly

IX. Understanding the following:

- Magnets
- current flow
- Diodes

ESLRS:

Personal Responsibility

- Develop personal integrity
- Possess a high degree of self-esteem
- Express confidence in ability to succeed
- Accept personal and community responsibility
- Set career goals based on personality, strengths, and interests

Rigorous Curriculum

- Maintain self discipline and be prepared to work
- Apply time management skills

- Challenge one's self
- Put forth one's best effort and work
- Demonstrates sensitivity to various viewpoints, belief systems, and cultures

Individualized Education

- Understand that not all people learn the same way
- Adjust curriculum to meet student's needs
- Students understand individuality and its value
- Maintain exceptional work habits
- Combine all aspects of learning to see and understand the interconnectedness of all learning

Directions

- Students know where they are going when they leave PRIDE; college, trade school, tech school, work force job market
- Students understand "EFFORT=PROGRESS=SUCCESS" in all aspects of life
- Learn to lead through example
- Develop a habit of always moving forward
- Students understand the value of helping each other to achieve goals

Expectations

- Use complex reasoning to problem solve such as comparison, classification, induction analysis, synthesis, investigation, and inquiry
- Collect, evaluate, and use information from a variety of sources
- Become and remain life long learners
- Use multiple modalities to demonstrate competence as active listeners, speakers, and readers
- Graduate with PRIDE and integrity knowing self-worthy and purpose in society

Assessments:

Each assessment **MUST** be passed with a minimum of 70% or 70 points, or repeat assessments will be assigned until 70% is achieved. All bookwork **Must** be passed with a minimum of 70% or 70 points or it will need to be done over.

Grading Scale:

A-90%-100%

B-80%-89%

C-70%-79%

D-60%-69%

F-59% and below

Textbook: •*Small Engines fundamental*