

# Four-Stroke Engine: Overview

**Media Type:** Microsoft® PowerPoint® Presentation

**Duration:** 29 slides

**Goal:** To understand the fundamentals of four-stroke engines.

**Description:** The basics of four-stroke engines are reviewed in this presentation. Engine operation and engine combustion are discussed, including intake, compression, power and exhaust. Reasons for abnormal combustion are also included.

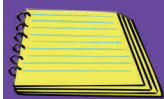
**Objectives:**

1. To understand four-stroke engine operation.
2. To define normal combustion.

## Horizontal Alignment

Core-Subject Area	Foundation Concept	Basic Understanding
Language Arts	<i>Application of Writing Skills</i>	<ul style="list-style-type: none"><li>• Composition mechanics</li><li>• Descriptive, informative, creative and persuasive writing</li><li>• Utilizing reference materials</li><li>• Vocabulary enhancement</li></ul>
	<i>Analysis of Text &amp; Information</i>	<ul style="list-style-type: none"><li>• Drawing inferences and generalizations</li><li>• Reading/content literacy</li><li>• Communication skills</li><li>• Developing listening and comprehension skills</li><li>• Literary interpretation</li><li>• Creating visual representations</li></ul>
	<i>Technology Applications in Literature</i>	<ul style="list-style-type: none"><li>• Utilizing document processing software</li><li>• Utilizing presentation processing software</li><li>• Internet-based research</li></ul>

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## Lesson Plan

Student and Teacher Notes are available to print in outline format. You can access these documents under the “Printable Resources” section. If student licenses have been purchased, an interactive version of the Student Notes is available in the “Interactive Activities” section. If printing the full PowerPoint® is desired, you may download the file and print the handouts as needed.

**Class 1:** Begin class by distributing the *Four-Stroke Engine: Overview Vocabulary Handout* for students to reference throughout the presentation. Show the *Four-Stroke Engine Operation* segment. Follow the segment with its *Assessment*. Discuss the *Four-Stroke Operation Project* and allow students to begin.

**Class 2:** Allow students to complete and present their *Four-Stroke Operation Project*.

**Class 3:** Remind students to continue using their *Vocabulary Handout* during the presentation. Show the *Combustion* segment. Follow the segment with its *Assessment*. Distribute the *Compare & Contrast Activity* for students to complete.

**Class 4:** Distribute the *Four-Stroke Engine: Overview Final Assessment* and allow time for students to complete. Review all questions and answers to the *Assessment*.



## Career Connections

Using the *Career Connections Activity*, allow students to explore the various careers associated with this lesson. See the *Activity* for more details. *If student licenses have been purchased:* Students will select the interviews to watch based on your directions. *If only a teacher license is purchased:* Show students all the career interviews and instruct them to only complete the interview form for the required number of interviews.

- iCEV50589 Darell Truett, Head Mechanic/Shop Foreman, Patrick Tractor Company
- iCEV50660 Kevin O'Donnell, Chief Mechanic, Chip Ganassi Racing
- iCEV50461 Travis Walker Gerron, Motorcycle Technician, W.G. Custom Cycles



## Lab Activities

### Compare & Contrast

#### Directions:

Students will compare and contrast pre-ignition and detonation in a provided Venn diagram.



## Projects

### Four-Stroke Operation

#### Directions:

Split students into four groups and assign each group a stroke from the presentation (intake, compression, power, exhaust). Students will create a poster outlining the process of the assigned strokes. Posters should include a large diagram with all important components labeled. Groups will present their posters and come together as a class to discuss how all four strokes work together.



## Lesson Links

### Briggs & Stratton

- [briggsandstratton.com](http://briggsandstratton.com)

### Animated Engines

- [animatedengines.com/otto.html](http://animatedengines.com/otto.html)



## Career & Technical Student Organizations

### SkillsUSA

- Automotive Service Technician