**Advanced Engine Performance Diagnosis 7th Edition**

**Chapter 7 –** **Valve Train and Variable Valve Timing Diagnosis**

**Lesson Plan**

**CHAPTER SUMMARY:**

1. Engine Valvetrain, Valve Train Problem Diagnosis, and Variable Valve Timing

2. OHV Variable Valve Timing, Atkinson Cycle Valve Timing, and Fiat-Chrysler Multiair

3. PCM Control of Variable Valve Timing and Diagnosis of Variable Valve Timing Systems

4. Variable Displacement Systems and Variable Displacement System Diagnosis

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**OBJECTIVES:**

1. Describe the purpose and function of the camshaft and camshaft design.

2. Explain how to diagnose valve train faults.

3. Explain the operation of the variable valve timing and variable lift

4. Explain how to diagnose faults with the variable valve timing system.

5. Describe the Atkinson cycle and why it is used on many hybrid electric vehicles.

6. Explain the operation of cylinder deactivation systems.

7. Explain how to diagnose faults with cylinder deactivation systems.

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**RESOURCES:** [(All resources may be found at jameshalderman.com)](https://jameshalderman.com/)

1. Task Sheet: Variable Valve Timing Identification

2. Task Sheet: Variable Valve Timing System Diagnosis

3. Chapter PowerPoint

4. [Crossword and Word Search Puzzles (A1)](https://jameshalderman.com/a1_puzzles_lib_page/)

5. [Videos: (A1) Engine Repair](https://jameshalderman.com/a1_vid_lib_page/)

6. [Videos: (A8) Engine Performance](https://jameshalderman.com/a8_vid_lib_page/)

7. [Animations: (A1) Engine Repair](https://jameshalderman.com/a1_anim_lib_page/)

8. [Animations: (A8) Engine Performance](https://jameshalderman.com/a8_anim_lib_page/)

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**ACTIVITIES:**

1. Task Sheet: Variable Valve Timing Identification

2. Task Sheet: Variable Valve Timing System Diagnosis

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**ASSIGNMENTS:**

1. Chapter crossword and word search puzzles from the website.

2. Complete end of chapter quiz from the textbook.

3. Complete multiple choice and short answer quizzes downloaded from the website.

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**CLASS DISCUSSION:**

1. Review and group discussion chapter Frequently Asked Questions and Tech Tips sections.

2. Review and group discussion of the five (5) chapter Review Questions.

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**NOTES AND EVALUATION:**

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