**Advanced Engine Performance Diagnosis 8th Edition**

**Chapter 13 – Ignition System Operation, Diagnosis, and Service**

**Lesson Plan**

**CHAPTER SUMMARY:**

1. Ignition System, Ignition Switching and Triggering, Distributor Ignition, and Waste-Spark Ignition Systems

2. Coil-On-Plug Ignition, Knock Sensors, Ignition System Diagnosis, and Current Ramping Ignition Coils

3. Spark Plug Wire Inspection, Spark Plugs, Ignition Timing, and Ignition Scope Testing

4. Scope-Testing a Waste-Spark System and Scope-Testing A COP System

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**OBJECTIVES:**

1. Describe the purpose and function of the ignition system.

2. Discuss ignition switching and triggering.

3. Explain the purpose and function of distributor ignition systems.

4. Discuss waste-spark ignition systems and coil-on-plug ignition systems.

5. Describe the advantages of coil-on-plug ignition systems.

6. Discuss the purpose and function of knock sensors.

7. Explain ignition system diagnosis.

8. List the steps to perform a current ramp test of the ignition coils.

9. Explain spark plug construction, service, and how to conduct a spark plug wire inspection.

10. Describe the different types of spark plugs.

11. Explain ignition timing

12. Explain how to test an ignition system using a scope.

13. Explain how to scope test a waste-spark ignition system.

14. Explain how to scope test a coil-on-plug ignition system.

15. Describe the possible causes and solutions for ignition system problems. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**RESOURCES:** (All resources may be found at jameshalderman.com)

1. Task Sheet: Ignition System Identification

2. Task Sheet: Spark Plug Specifications

3. Task Sheet: Ignition Timing

4. Task Sheet: Electronic Ignition Diagnosis

5. Task Sheet: Scan Tool Testing of the Ignition System

6. Task Sheet: Ignition Scope Analysis

7. Task Sheet: Ignition Inspection and Testing

8. Task Sheet: Spark Plug Inspection

9. Task Sheet: Ignition Coil Testing

10. Chapter PowerPoint

11. Crossword and Word Search Puzzles

12. Videos: (A8) Computerized Engine Controls Diagnosis and Repair

13. Animations: (A8) Computerized Engine Controls Diagnosis and Repair

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**ACTIVITIES:**

1. Task Sheet: Ignition System Identification

2. Task Sheet: Spark Plug Specifications

3. Task Sheet: Ignition Timing

4. Task Sheet: Electronic Ignition Diagnosis

5. Task Sheet: Scan Tool Testing of the Ignition System

6. Task Sheet: Ignition Scope Analysis

7. Task Sheet: Ignition Inspection and Testing

8. Task Sheet: Spark Plug Inspection

9. Task Sheet: Ignition Coil Testing

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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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