**Electric & Hybrid Electric Vehicles 1st Edition**

**Chapter 11 – EV and HEV Motors, Converters, and Inverters**

**Lesson Plan**

**CHAPTER SUMMARY:**

1. Electromagnetism, Electromagnetic Induction, Electric Motors, and Brushless Motors

2. Electric Motor Control, Capacitors in Converters, and Converters and Inverters

3. Electronic System Cooling System and Motor-Converter-Inverter Diagnostics

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**OBJECTIVES:**

1. Describe the operation of DC and AC electric motors.

2. Explain how a brushless DC motor works.

3. Discuss the advantages and disadvantages of using electric motors in hybrid electric vehicles.

4. Describe how a DC-to-DC converter works.

5. Discuss how a DC-to-AC inverter works.

6. Prepare for the ASE L3 certification text area “D” (Power Electronics).

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

1. Task Sheet: Hybrid Traction Motor Identification

2. Task Sheet: Inverter and Electric Motor Scan Tool Diagnosis

3. Chapter PowerPoint

4. [Crossword Puzzle and Word Search (L3)](https://jameshalderman.com/l3_puzzles_lib_page/)

5. [Videos: (L3) Light Duty Hybrid Electric](https://jameshalderman.com/l3_vid_lib_page/)

6. [Animations: (L3) Light Duty Hybrid Electric](https://jameshalderman.com/l3_anim_lib_page/)

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**ACTIVITIES:**

1. Task Sheet: Hybrid Traction Motor Identification

2. Task Sheet: Inverter and Electric Motor Scan Tool 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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