











Automotive Maintenance and Light Repair, 1ST Edition

Chapter 1 Automotive Background and Overview

Opening Your Class

KEY ELEMENT	EXAMPLES
Introduce Content	This course or class covers Automotive Maintenance and Light Repair . It correlates material to task lists specified by ASE and NATEF.
Motivate Learners	Explain how the knowledge of how something works translates into the ability to use that knowledge to figure why the engine does not work correctly and how this saves diagnosis time, which translates into more money.
State the learning objectives for the chapter or course you are about to cover and explain this is what they should be able to do as a result of attending this session or class.	Explain the chapter learning objectives to the students. <ul style="list-style-type: none">• Explain the evolution of the automobile.• Discuss the major components of a vehicle.• Describe the evolution of engines.• List the common components of most vehicles.• List the eight areas of automotive service according to ASE/NATEF.
Establish the Mood or Climate	Provide a <i>WELCOME</i> , Avoid put downs and bad jokes.
Complete Essentials	Restrooms, breaks, registration, tests, etc.
Clarify and Establish Knowledge Base	Do a round robin of the class by going around the room and having each student give their backgrounds, years of experience, family, hobbies, career goals, or anything they want to share.

ICONS	Ch01 Automotive Background and Overview
  	<p>1. SLIDE 1 CH01 Automotive Background and Overview</p> <p>2. SLIDES 2 EXPLAIN OBJECTIVES</p> <p>Check for ADDITIONAL VIDEOS & ANIMATIONS @ http://www.jameshalderman.com/ WEB SITE REGULARLY UPDATED</p>
      	<p>3. SLIDES 3-9 Read & Describe Historical Background</p> <p>10. SLIDES 10-11 Read & Describe BODIES</p> <p>12. SLIDE 12 EXPLAIN CHASSIS SYSTEMS OVERVIEW</p> <p>Check for ADDITIONAL VIDEOS & ANIMATIONS @ http://www.jameshalderman.com/ WEB SITE IS CONSTANTLY UPDATED</p> <p>13. SLIDE 13 EXPLAIN FIGURE 1–1 shows Ford Quadricycle built by Henry Ford.</p> <p>14. SLIDE 14 EXPLAIN FIGURE 1–2 vehicle bodies were constructed with wood framework until 1920s. Early Motor Vehicles Evolved from horse-drawn carriages. Engine and power train attached To modified carriage leading to term “Horseless Carriage”</p> <p>Karl Benz built first actual car in 1885. Regarded as inventor of gasoline-powered car. 1st automobile entirely designed as such to generate its own power, not simply a motorized stage coach or horse carriage</p> <p>SHOW VIDEO FROM MYAUTOMOTIVELAB.COM WELCOME TO AUTOMOTIVE INDUSTRY VIDEO http://media.pearsoncmg.com/ph/chet/chet_mymlabs/akamai/template/video640x480.php?title=Welcome&clip=pandc/chet/2012/automotive/Auto_Parts_Specialist/P2_Welcome.mov&caption=chet/chet_mymlabs/akamai/2012/automotive/Auto_Parts_Specialist/xml/P2_Welcome.xml</p> <p>15. SLIDE 15 EXPLAIN FIGURE 1–3 chassis of 1950s era vehicle showing engine, drivetrain, frame, and suspension.</p> <p>16. SLIDE 16 EXPLAIN FIGURE 1–4 Body and terms.</p>

ICONS



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SHOW ANIMATION: BODY TERMS

HAVE A TEAM DISCUSSION ON BODY PARTS: MATCHES SLIDE 13 FIGURE 1-4

[HTTP://MEDIA.PEARSONCMG.COM/PH/CHET/CHET_MYAUTOMOTIVELAB_2/ANIMATIONS/AO_ANIMATION/CHAPTER1_FIG_1_4/INDEX.HTM](http://media.pearsoncmg.com/ph/chet/chet_myautomotivelab_2/animations/ao_animation/chapter1_fig_1_4/index.htm)

HANDS-ON TASK: Break Students Into 2 Teams. Use Masking Tape To ID Car Body Terms On Lab Vehicle Like Those In Slide 33. Write Name Of Part On Tape & Place It Next To Part. Use Vocabulary Scavenger Hunt Task Sheet to identify parts on vehicle related to charging system that correspond with letter on task sheet & describe purpose of each part.

17. SLIDE 17 EXPLAIN FRAMES

Many expensive automakers in 1920s & 1930s had bodies built by another company. Eventually, most bodies were constructed of steel and many without the need for a frame to support drivetrain and suspension.

18. SLIDE 18 EXPLAIN FIGURE 1-5 Note ribbing and the many different pieces of sheet metal used in the construction of this body.

19. SLIDE 19 EXPLAIN FIGURE 1-6: Corvette without a body. Notice that the vehicle is complete enough to be driven. This photo was taken at the Corvette Museum in Bowling Green, Kentucky.


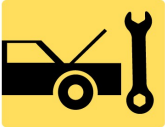






20. SLIDE 20 EXPLAIN Engine Design Evolution

21. SLIDE 21 READ FIGURE 1-7 Ford flathead V-8 engine. This engine design was used by Ford Motor Company from 1932 through 1953. In a flathead design, valves located next to cylinders.

22. SLIDE 22 EXPLAIN FIGURE 1-8 A Monroney label as shown on the side window of a new vehicle.

23. SLIDES 23-24 EXPLAIN ENGINE SYSTEMS OVERVIEW

25. SLIDE 25 EXPLAIN POWERTRAIN OVERVIEW

ICONS	Ch01 Automotive Background and Overview
	<p>DEMONSTRATION: IGNITION COMPONENTS & OPERATION. USE A SIMULATOR OR AN OLD DISTRIBUTOR, COIL AND ST125</p>
	<p>HANDS-ON TASK: USE VOCABULARY SCAVENGER HUNT TASK SHEET to identify parts on vehicle related to emission control system that correspond with letter on task sheet & describe purpose of each part.</p>
	<p>DISCUSSION: DISCUSS DIFFERENCES BETWEEN RWD & FWD POWERTRAINS. WHAT ADVANTAGES AND DISADVANTAGES OF EACH?</p>
	<p>OPTIONAL DEMO: Show Students Universal Joints & Describe Their Purpose. Show students some different types of CV Joints used on FWD vehicles.</p>
	<p>26. SLIDE 26 EXPLAIN FIGURE 1-9 CAPTION dash control panel used by driver to control FWD system.</p>
	<p>27. SLIDES 27-28 Read & Discuss Electrical/Electronic Systems Overview</p>
	<p>29. SLIDE 29 EXPLAIN FIGURE 1-10 Alternator is heart of electrical system</p>
	<p>30. SLIDE 30 Read & Discuss Heating, Ventilation, & Air Conditioning Overview</p>
	<p>Early Vehicles did not have electrical system & used magneto to create a spark. First components were battery-powered lights. Only after 1912 did the self-starter & battery become commonplace.</p>
	<p>ü Charles F. Kettering (at DELCO, Dayton Electronic Laboratory Company) also invented point-type ignition system Early Batteries called SLI batteries (Starting, Lighting, Ignition)</p> <p>OPTIONAL DEMO: IF YOU HAVE A SIMULATOR DEMO ALTERNATOR OPERATION. HOOK-UP AVR/CAB TESTER & DEMO ON VEHICLE. HAVE THIS SET-UP BEFORE CLASS.</p>

ICONS



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The National Institute for Automotive Service Excellence (NIASE), now using the abbreviated acronym ASE (Automotive Service Excellence) created the 8 automotive certifications tests. You can link to www.ase.com for more information on ASE and over 45 different auto, truck, & bus exams they offer. Test registration booklet that includes details on all vehicle-related certification tests given by ASE.

31. SLIDES 31-32 EXPLAIN ASE/NATEF Repair Areas

Engine repair (A1) www.ase.com

Automatic transmission (A2) www.ase.com

Manual drive train and axles (A3) www.ase.com

Suspension and steering (A4) www.ase.com

Brakes (A5) www.ase.com

Electrical/electronic systems (A6) www.ase.com

Heating and air conditioning (A7) www.ase.com

Engine Performance (A8) www.ase.com

33. SLIDE 33 EXPLAIN FIGURE 1.11 Test registration booklet that includes details on all vehicle-related certification tests given by ASE