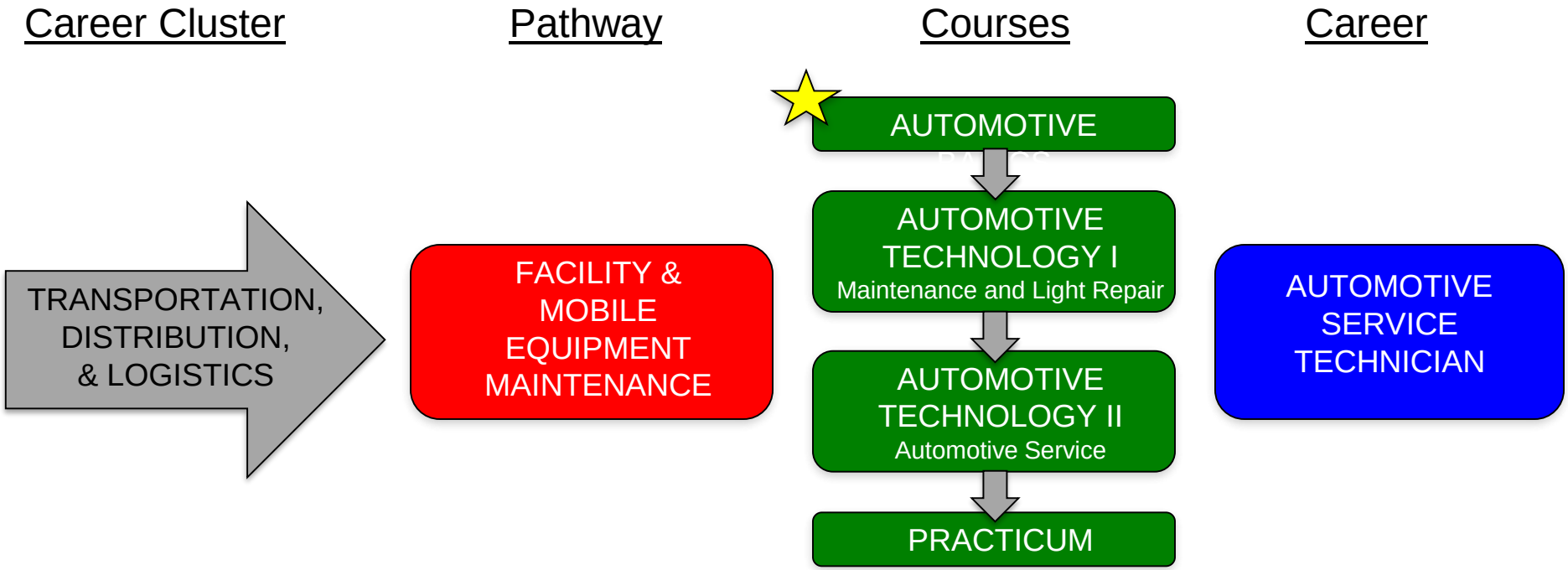
Automotive Basics



Presenter:

Michael Gray, Co-Author of Auto Upkeep

This presentation is available at www.AutoUpkeep.com/presentations.

Download this Presentation

Essential Questions

- What are the requirements for Automotive Basics (Texas §130.447).
- What curricular materials are available?
- How does Automotive Basics fit within a complete Automotive Service Technology training program?
- What are the essential units in Automotive Basics?
- What will each student know and be able to do at the completion of Automotive Basics (Texas Essential Knowledge and Skills - TEKS)?
- How does Automotive Basics fit within the ASE Education Foundation (formerly NATEF) Model?

A Few Questions to Think About…

1. What do your beginning students know when they first enter your program?

2. How do you teach this new generation of students the fundamentals of Automotive Technology?

What does your first course look like now?

- Discussion…

Automotive Basics – Course Description

“Automotive Basics includes knowledge of the basic automotive systems and the theory and principles of the components that make up each system and how to service these systems. Automotive Basics includes applicable safety and environmental rules and regulations. In Automotive Basics, students will gain knowledge and skills in the repair, maintenance, and servicing of vehicle systems. This study allows students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings. The focus of this course is to teach safety, tool identification, proper tool use, and employability.”

Source: http://ritter.tea.state.tx.us/rules/tac/chapter130/ch130p.html

Resources for Automotive Basics

Texas Education Agency – TEKS §130.447. Automotive Basics can be viewed at: http://ritter.tea.state.tx.us/rules/tac/chapter130/ch130p.html

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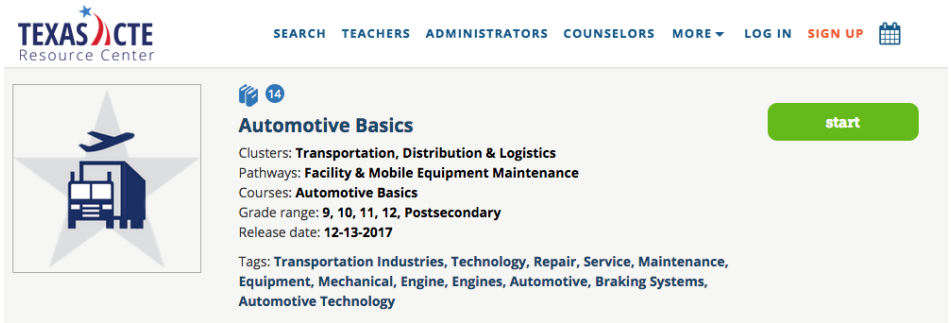

Texas CTE Resource Center including Scope and Sequence and Lesson Plans: https://txcte.org/course-binder/automotive-basics

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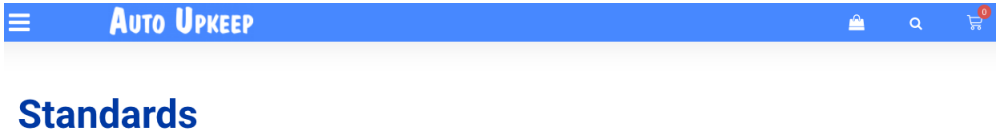
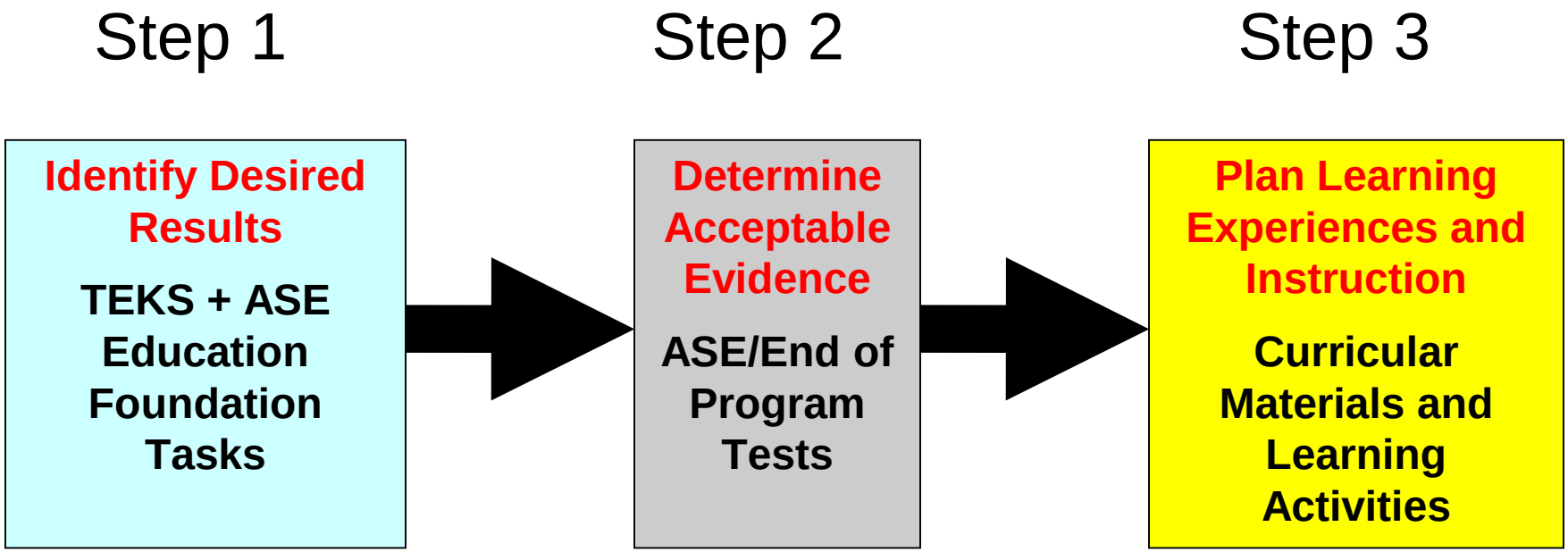


TEKS – Auto Upkeep Correlation Matrix: http://www.autoupkeep.com/standards

Curriculum Design



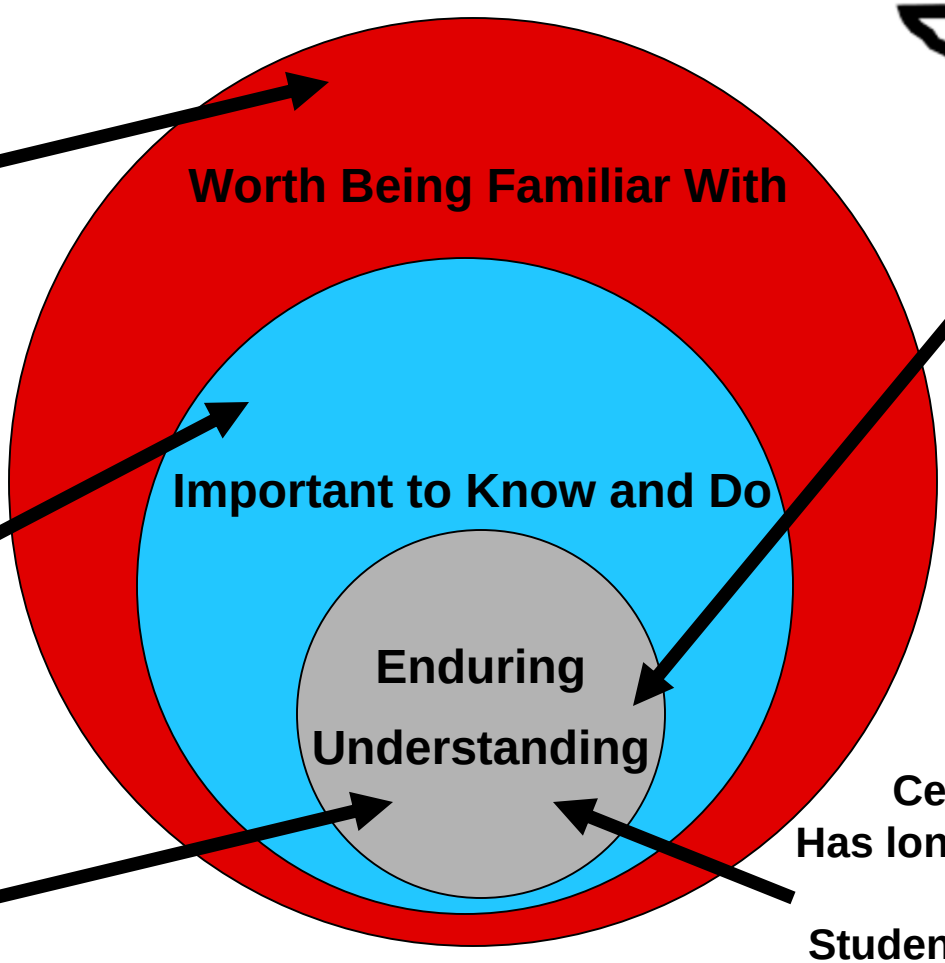
Adapted from Wiggins and McTighe - *Understanding by Design* framework.

Enduring Understandings

Priority 3

Priority 2

Priority 1



ASE Education Foundation Requirements

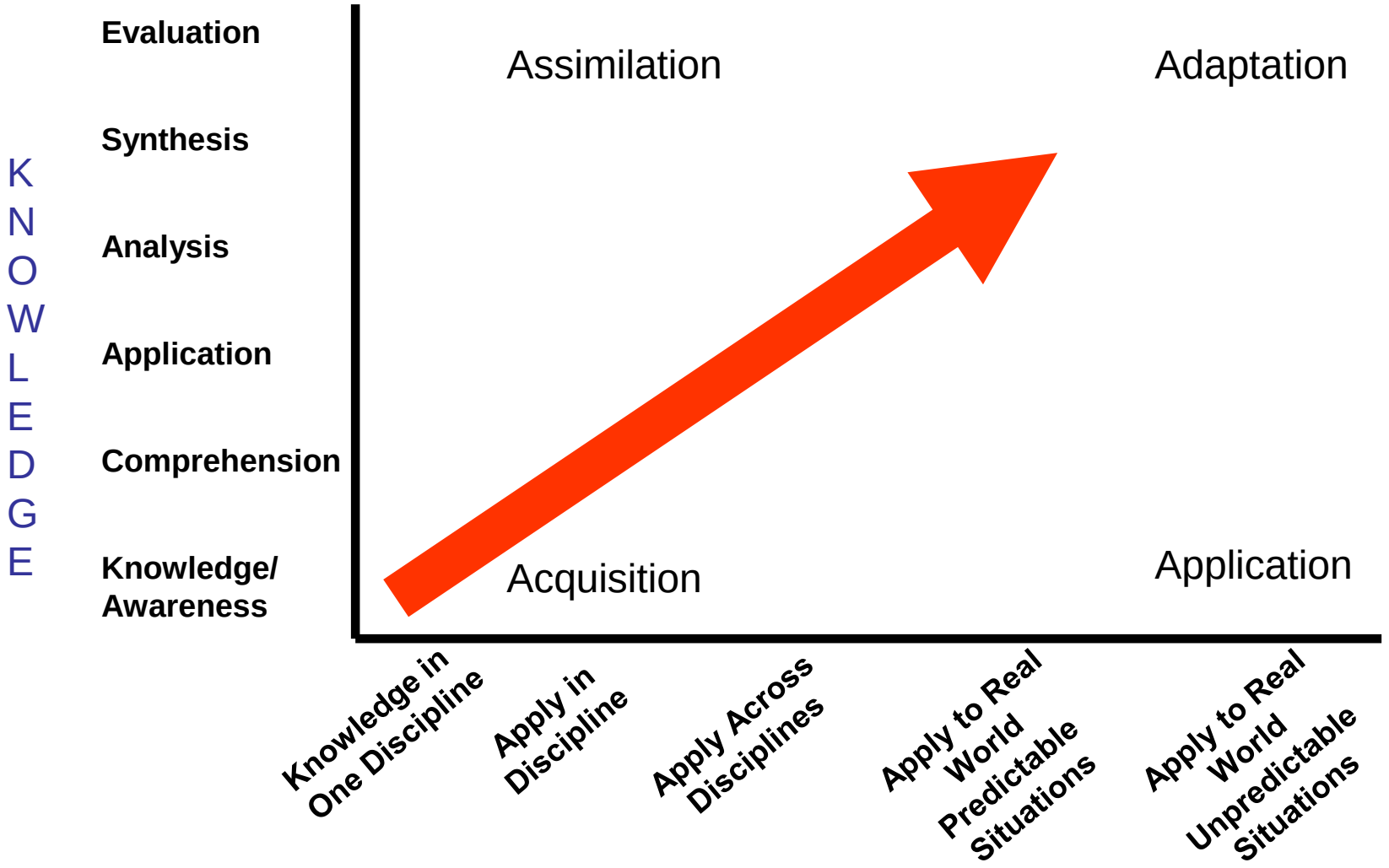
P-3 Tasks 50%

P-2 Tasks 80%

P-1 Tasks 95%

Central to discipline.
Has long lasting value beyond the classroom.
Students revisit these during their lifetime.

Rigor/Relevance Framework



How is Automotive Basics rigorous?

- Automotive Basics is Rigorous –
  - Students:
    - Learn in the **Cognitive** (knowledge), **Affective** (attitudes), and **Psychomotor** (skills) domains.
    - **Think and work.**
    - Apply knowledge **across disciplines**.
    - Apply knowledge to **real-world predictable situations** (e.g., change oil, rotate tires, check tire pressure, periodic inspections, check fluid levels).
    - Apply knowledge they learned to **real-world unpredictable situations** (e.g., burned out headlight, dead battery, flat tire, burst radiator hose, car stuck).

The Future is Bright for Automotive Basics

- Did you know…
  - 80% of vehicles need service, fluids, or replacement parts
    (Car Care Council, 2017)
  - 11.6 years old is the average age of cars and trucks in the USA
    (IHS Markit, 2016)

Common Vehicle on the Road Today

Is Over 11 Years Old

Has 139,000+ Miles

Needs Service

References:
HIS Markit. (2016). Vehicles Getting Older: Average Age of Light Cars and Trucks in U.S. Rises Again in 2016 to 11.6 Years, IHS Markit Says. [Press Release]. Retrieved from http://news.ihsmarkit.com/press-release/automotive/vehicles-getting-older-average-age-light-cars-and-trucks-us-rises-again-201
Car Care Council. (2017). Community Car Care Events Show Most Vehicles Need Service. [Press release]. Retrieved from http://media.carcare.org/2017-07-11-Community-Car-Care-Events-Show-Most-Vehicles-Need-Service

Uninformed Consumers

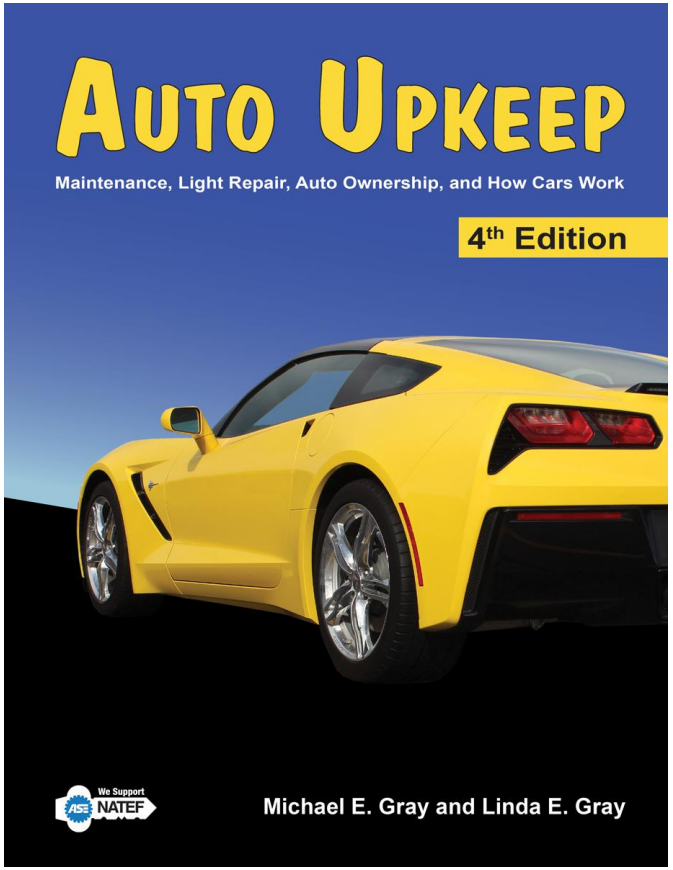
https://www.youtube.com/watch?v=MWdmD1jF8aw

https://www.youtube.com/watch?v=IOooYBJWBa4

What happens when you don’t change the oil as required?

What is Auto Upkeep?

- Was developed because most texts are either too complex or too simple to teach an Automotive Basics course.



Think of it this way…

1500+ Pages = Comprehensive Automotive Technology Textbook Includes a lot of "Worth Being Familiar With" Information

Best Suited for MAST Programs

Auto Upkeep = 288 Pages = Best Suited for Automotive Basics/MLR Programs

Information Central to Discipline, Long Lasting Value Beyond the Classroom

What's special about Auto Upkeep?

- Short, concise chapters
- 12 point font – Easy-to-Read
- 3 Levels of headings when necessary
- A figure, picture, or graph accompanies almost every block of text
- Helpful emphasis blocks – Tech Tips, Price Guides, Web Links, Servicing, Trouble Guides, Activities, Q & A's, Career Paths, Calculations
- Videos, Apps, QR Codes, and Google Assistant Apps to extend learning online
- Reviewed by young adults and technical reviewers
- Extensive effort was put on book layout
- Hands-on and Internet-based activities (40 activities in all)

What are the Auto Upkeep units?

1. Introduction and How Cars Work
2. Buying an Automobile
3. Automotive Expenses
4. Repair Facilities
5. Safety Around the Automobile
6. Tools and Equipment
7. Auto Care and Cleaning
8. Fluid Level Check
9. Electrical System
10. Lubrication System
11. Fuel System
12. Cooling System and Climate Control
13. Ignition System
14. Suspension, Steering, and Tires
15. Braking System
16. Drivetrain
17. Exhaust and Emission System
18. Alternative Fuels and Designs
19. Automotive Accessories
20. Common Problems and Roadside Emergencies

* 40 hands-on and internet-based activities engage the students

How is Auto Upkeep commonly delivered?

- Auto Upkeep was designed to have a balance between in-class and hands-on instruction.
  - Commonly two days a week are in-class and three days a week are in the automotive lab.
  - Curriculum is flexible for you to adjust it to fit your specific situation.

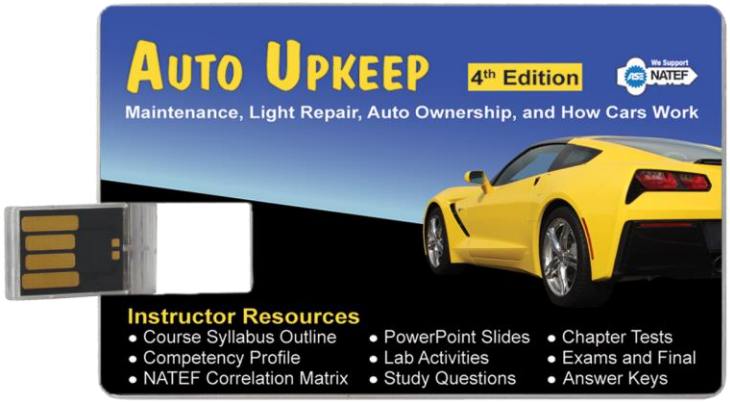
What will each student know and be able to do at the completion of Auto Upkeep?

- Automotive Basics TEKS – 100%
- Competencies – Over 200
- Over 60% of ASE Education Foundation Maintenance and Light Repair (MLR) Tasks – making it an ideal first course.

» www.AutoUpkeep.com/standards/

Instructor USB – Turn Key Curriculum or Modify it as YOU Want

- Sample Course Syllabus Outline
- PowerPoints
- Competency Profile
- MLR Correlation Matrix
- TEKS Correlation Matrix
- Tests and Exams
  - Available as PDFs, MS Word Docs, and as a Common Cartridge File for your Learning Management System (Canvas, Blackboard, etc.)
- Lab Activities
- Study Questions
- Answer Keys

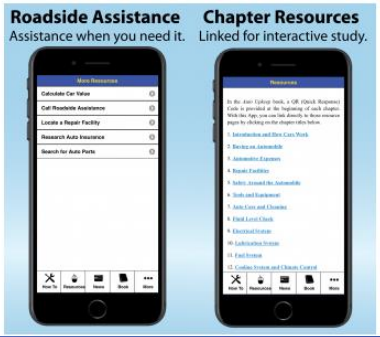


QR Codes for Each Chapter

App to Extend Learning

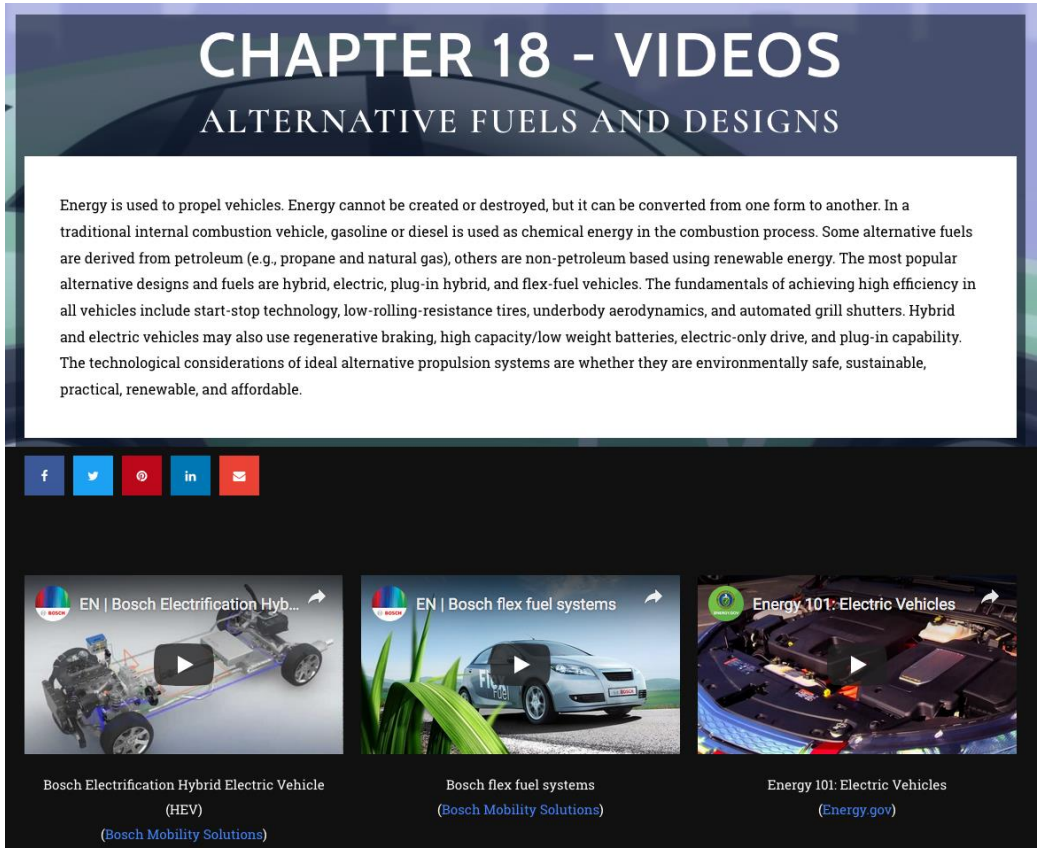
Available on the App Store

ANDROID APP ON Google play



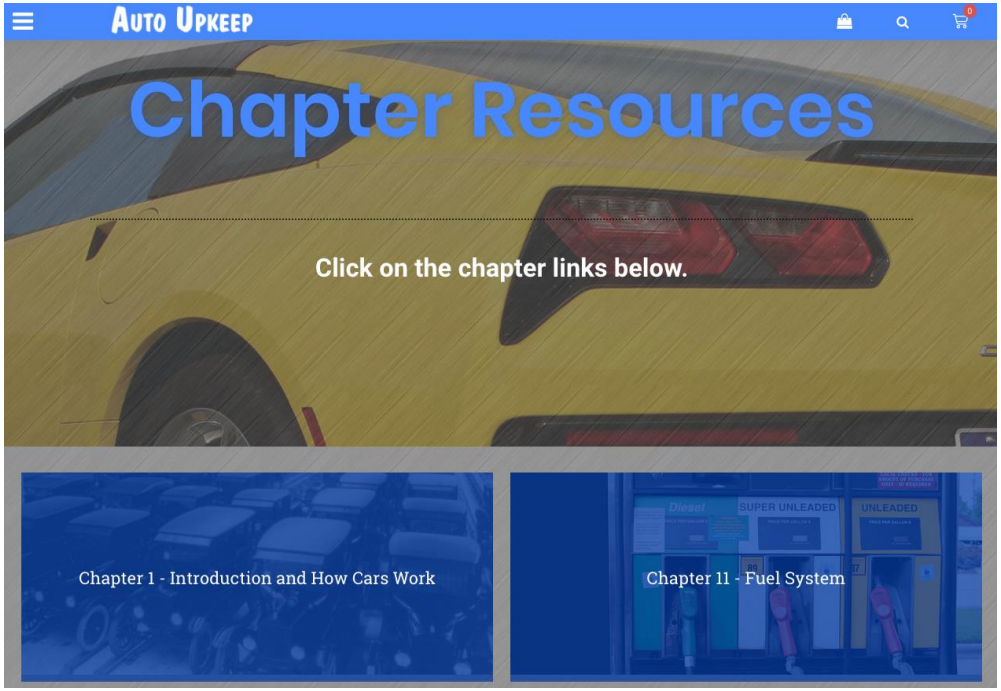
www.AutoUpkeep.com/app/

Video Site with Over 100 Videos



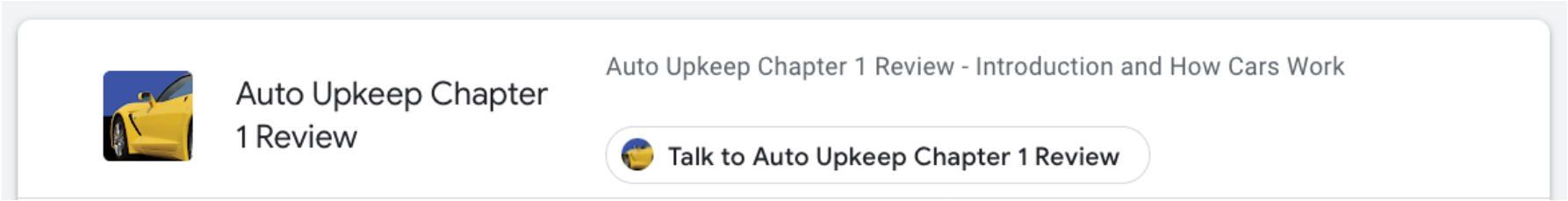
www.Video.AutoUpkeep.com

Online Chapter Resources



www.AutoUpkeep.com/resources

Free Google Assistant Reviews

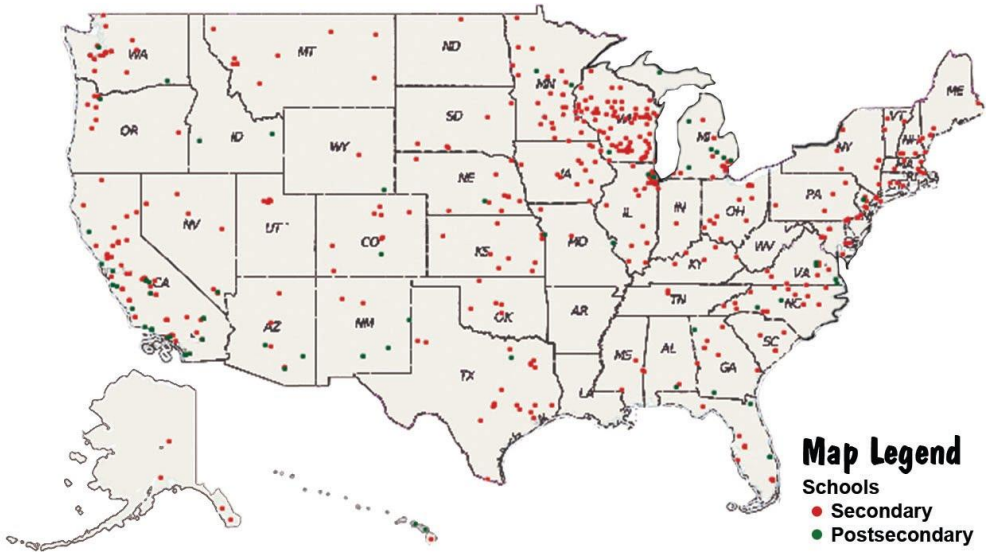


https://assistant.google.com/explore

Then Search “Auto Upkeep”

Who's using Auto Upkeep?

- Over 500 secondary and post-secondary schools throughout the United States and Canada
- Large schools in Texas to small schools in Wisconsin
- Over 100,000 copies sold since inception
- Now in the 4th Edition

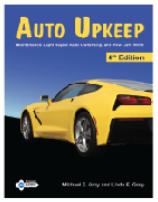


How does Auto Upkeep, ASE Education Foundation's MLR Tasks, and Automotive Basics fit together?

Auto Upkeep

Auto Upkeep provides a practical automotive foundation for all students, while also drawing students into advanced automotive technology programs. Visit www.AutoUpkeep.com to learn more.

Auto Upkeep Curriculum



Texas Essential Knowledge and Skills (TEKS) for Automotive Basics (100% Correlation to Auto Upkeep)

135 Hours of Instruction

MLR Program

Maintenance and Light Repair - 218 Tasks (60% Correlation to Auto Upkeep)

540 Hours of Instruction

AST Program

Automobile Service Technology - 353 Tasks (Includes MLR Tasks)

840 Hours of Instruction

MAST Program

Master Automobile Service Technology - 439 Tasks (Includes MLR and AST Tasks)

1200 Hours of Instruction

More Informed Consumer — No ASE* Test

Entry Level Technician — ASE* G1 Test

Automotive Technician — ASE* A1 - A8 Tests

ASE* A1 - A8 Tests

ASE* Master A1 - A8 Tests All Required

*Automotive Service Excellence (ASE) Certification Tests

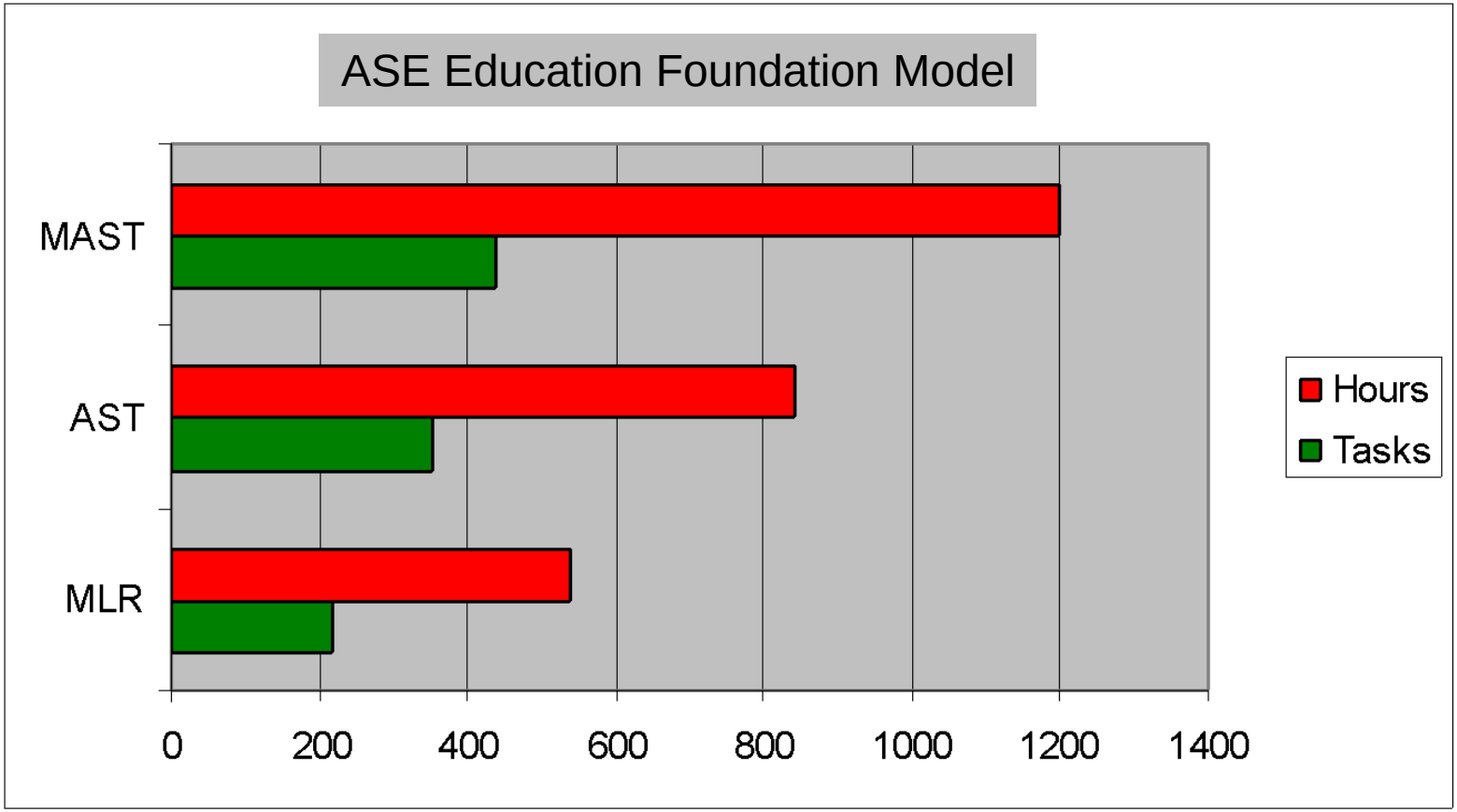
Texas High School Automotive

- Automotive Basics
- Automotive Technology I: Maintenance and Light Repair
- Automotive Technology II: Automotive Service
- Practicum

ASE Certification Test Series

- G1 - Auto Maintenance and Light Repair
- A1 - Engine Repair
- A2 - Automatic Transmission/Transaxle
- A3 - Manual Drive Train and Axles
- A4 - Suspension and Steering
- A5 - Brakes
- A6 - Electrical/ Electronic Systems
- A7 - Heating and Air Conditioning
- A8 - Engine Performance
- A9 - Light Vehicle Diesel Engines

ASE - Tasks/Hours



MAST – 439 tasks at 1200 hours (Includes MLR and AST)

AST – 353 tasks at 840 hours (Includes MLR)

MLR – 218 tasks at 540 hours

What is a Task?

- “A task is a psychomotor or cognitive entry-level learning activity consisting of one or more measureable steps accomplished through an instructor presentation, demonstration, visualization or a student application.”
  - » Obtained from the ASE Education Foundation - http://aseeducation.org/resources
  - It should be noted that each task is not dedicated an hour allotment…some tasks take longer than others.

ASE Education Foundation Assumptions

- “Individual courses of study will differ across automobile technician training programs”
- “Development of appropriate learning delivery systems and tests which monitor student progress will be the responsibility of the individual training program”

» Obtained from the ASE Education Foundation - http://aseeducation.org/resources

Basically…

- TEKS lists the required knowledge and skills.
- The ASE Education Foundation provides the required tasks and hours.
- YOU provide the program course structure, curriculum, and student materials.

Questions?

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