

Auto Upkeep

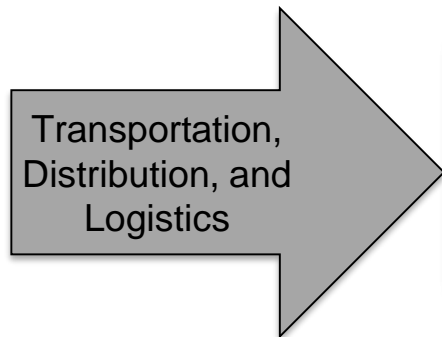


National Career Cluster

Iowa CTE Service Area

Introductory Courses

Possible Careers



Applied Sciences,
Technology, Engineering,
and Manufacturing

Automotive Maintenance
Basic Automotive
Consumer Auto Mechanics
Auto Care and Maintenance
Car Care
Auto Upkeep

Auto Service Tech
Collision Repair Tech
Parts Specialist
Service Advisor
Automotive Machinist
Collision Estimator
Automotive Engineer

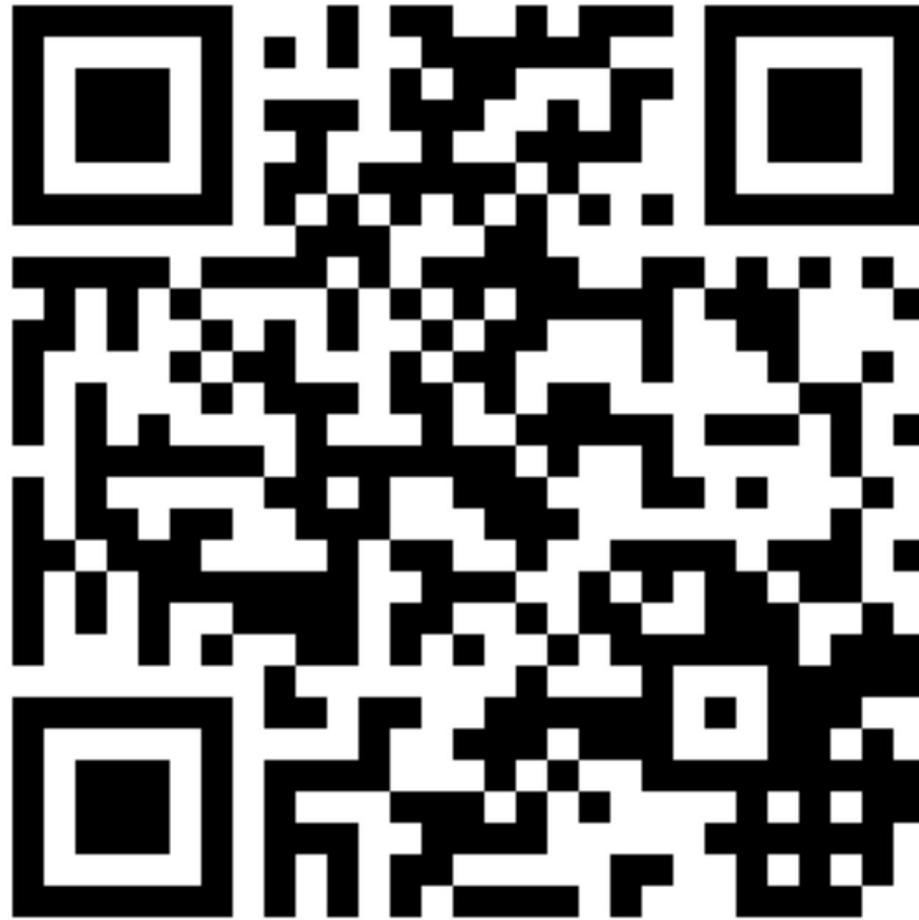
Presenter:

Michael Gray, Co-Author of Auto Upkeep

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

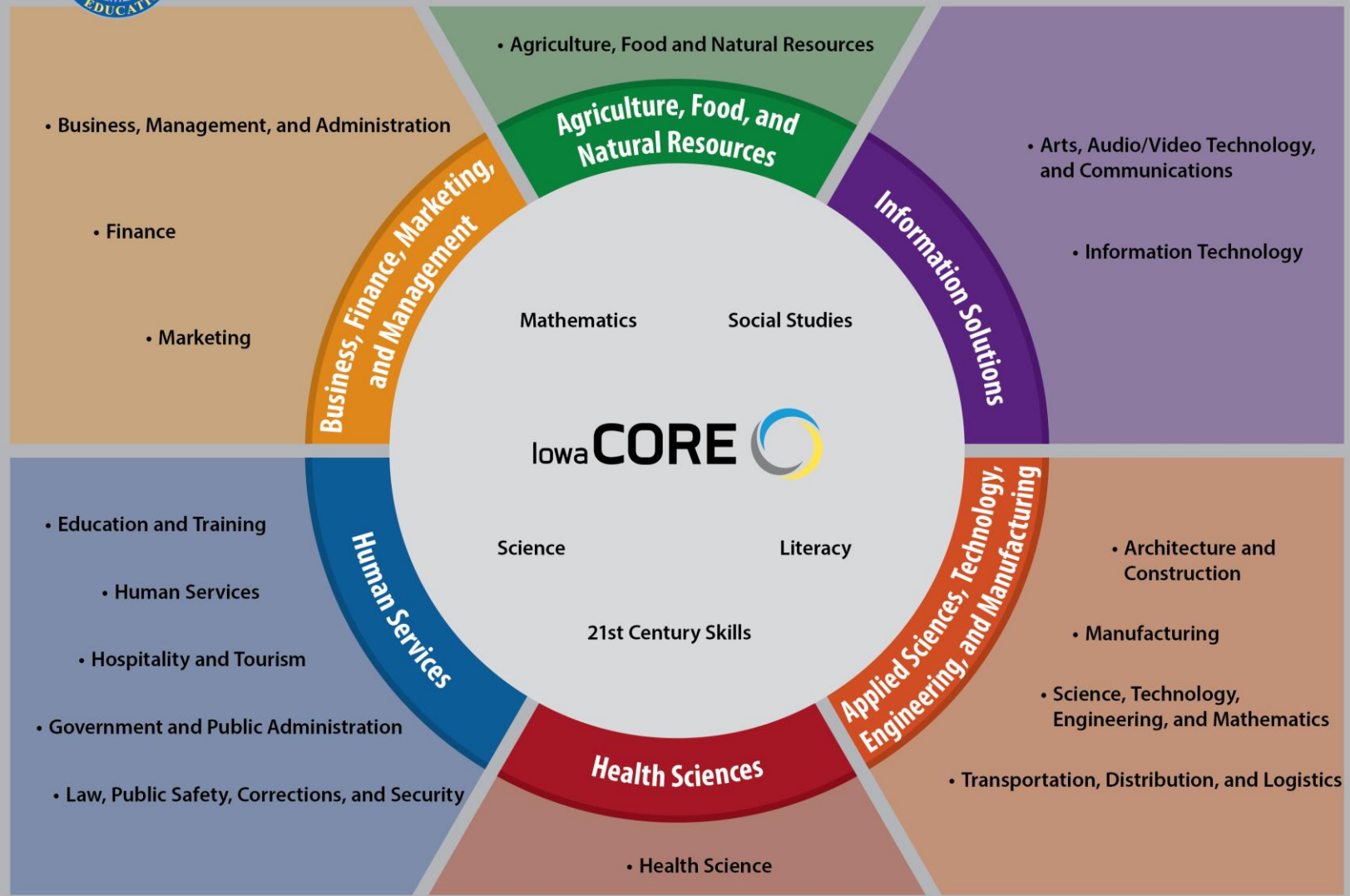


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Iowa's Career and Technical Education Service Areas



Essential Questions

- What are the essential units in an Introductory Automotive Course?
- What will each student know and be able to do at the completion of an Introductory Automotive Course?
- How does an Introductory Automotive Course fit within the ASE Education Foundation (formerly NATEF) Model?



A Few Questions to Think About...



What should students know and be able to do when they complete an Introductory Automotive Course?

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



What does your first course look like now?

- Discussion...



Why focus on Introductory Skills?

Recommendation from the Iowa Secondary Career and Technical Education Task Force:

“Provide high-quality, integrated CTE programming comprised of secondary exploratory and transitory coursework to prepare students for higher-level, specialized academic and technical training.”

“All too often, students enroll in advanced coursework without an appropriate academic and technical foundation. Such students tend to lack the necessary knowledge and skills to satisfy the rigorous expectations of advanced, specialized coursework and risk enrolling in coursework without purpose. The task force believes secondary CTE must be strengthened into a system which **encourages career exploration**, yet allows students to develop strong foundational skills through stackable, sequential technical and academic coursework.”

Source: <https://educateiowa.gov/sites/files/ed/documents/2015-10-26CTETaskForceFinalReport.pdf>



Sample Course Titles and Descriptions in Iowa

Auto Care and Maintenance – “Auto Care is a class designed for everyone who plans to drive and own a vehicle. The class explores all facets of the automobile. Diagnostic and repair techniques are lab activities associated with this class. Dealing with emergencies and making educated decisions concerning automotive problems are benefits derived from successful completion of this class.”

Source: <https://cdn.dbqschools.org/wp-content/uploads/2019/01/dcsd-highschool-courseguide-1920.pdf>

Auto Maintenance – “Auto Maintenance is a one term beginning course in automotive maintenance. We will determine what can be worked on by owners at home and what needs to be done by professionals and how to choose and work with professional technicians. We will cover selecting vehicles and vehicle sources, finances, licensing, and insuring vehicles. Basic units covered in this course are lubrication, cooling, battery, fuel system, wheel balance, charging and starting systems, with some limited body repair.”

Source: http://bhs.bettendorf.k12.ia.us/application/files/2915/4992/0242/Industrial_Technology_19-20.pdf



Sample Course Titles and Descriptions in Iowa

Car Care – “Students learn the basics of automotive maintenance. This is recommended for students who do not have a background in automotives. Topics include flat tires, oil changes, checking fluids, air cleaner, batteries, tune-ups, car maintenance and operations.”

Source: <http://www.muscatine.k12.ia.us/wp-content/uploads/Curriculum-GuideBook-2018-19.pdf>

Consumer Auto Mechanics – “Consumer Auto Mechanics is a semester course intended to introduce students to theory of operation, design, and maintenance of the automobile. The course will look at the purchase, maintenance and repair of the automobile from the point of view of a car owner. The basic systems of the automobile will be covered and the student will participate in hands on labs related to common maintenance and repair including safety, tools, equipment, and systems such as cooling, lubrication, and battery/ignition.”

Source: http://www.cr.k12.ia.us/assets/30/6/Program_of_studies_19_20.pdf



The Future is Bright for Automotive

- Did you know...
 - 80% of vehicles need service, fluids, or replacement parts
(Car Care Council, 2017)
 - 11.8 years old is the average age of cars and trucks in the USA
(USA Today, 2019)

Common Vehicle on the Road Today
Is Over 11 Years Old
Has 139,000+ Miles
Needs Service

“Vehicles that are at least 16 years old will increase by 22% from 2018 to 2023, reaching 84 million. That would mark an increase from 35 million in 2002.” (USA Today, 2019)

References:

USA Today. (2019). Old cars everywhere: Average vehicle age hits all-time high. Retrieved from <https://www.usatoday.com/story/money/cars/2019/06/28/average-vehicle-age-ihs-markit/1593764001/>

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=IOooYBJWBa4>

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

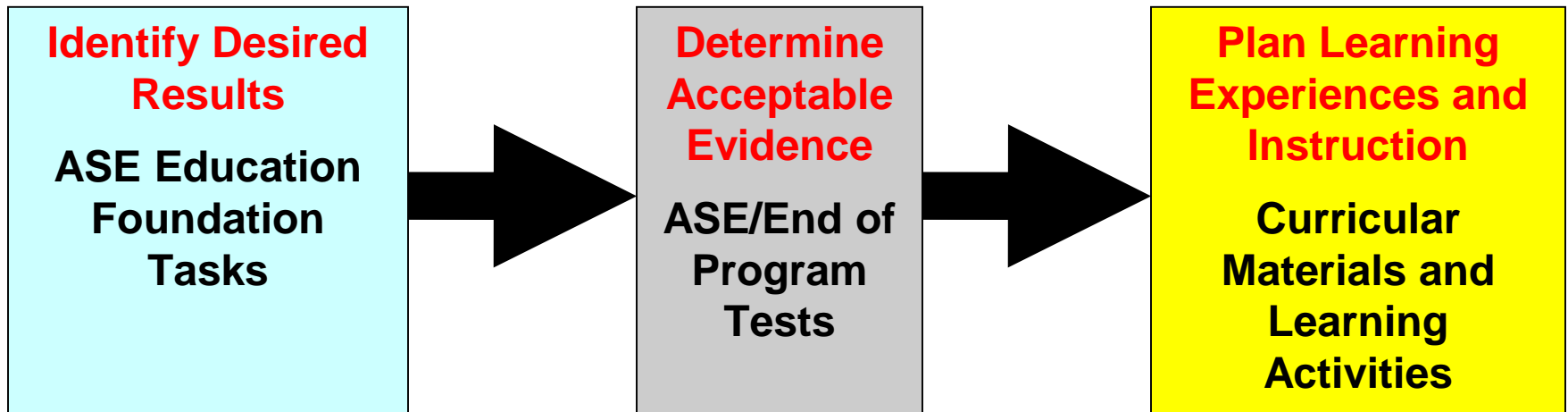


How to Develop Curriculum

Step 1

Step 2

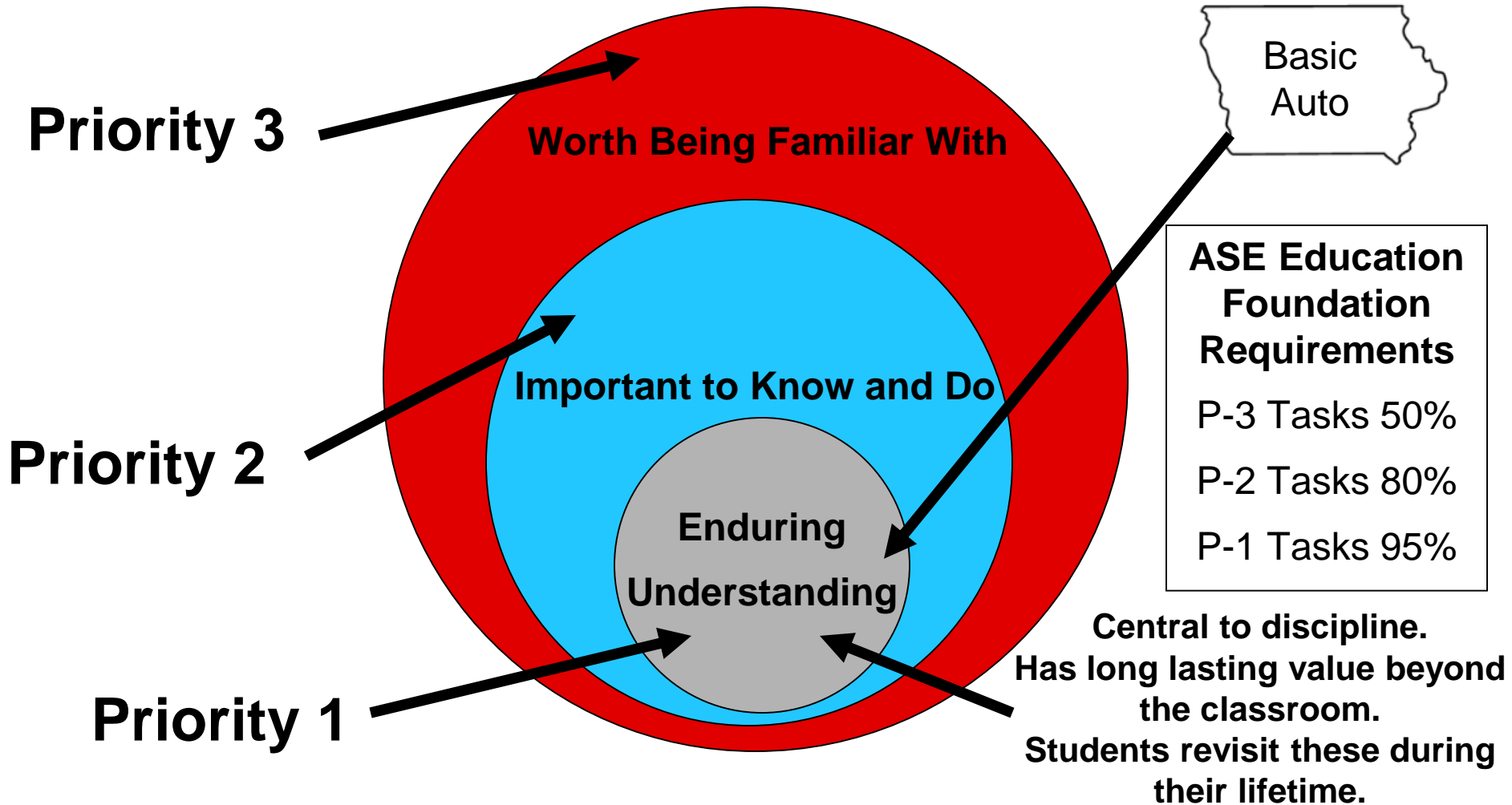
Step 3



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

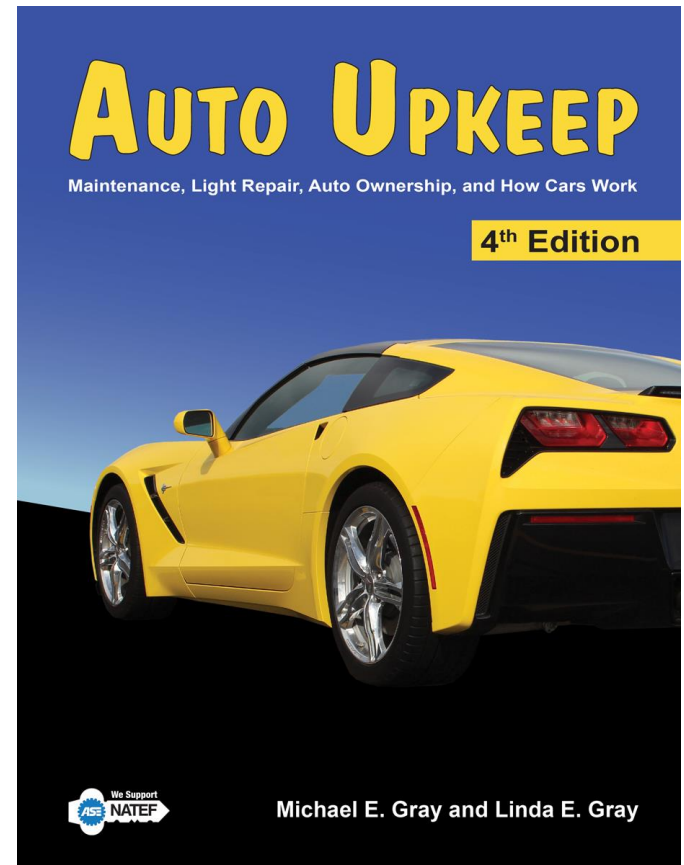


Focus on Enduring Understandings



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

* 40 Hands-on and Internet-based activities engage 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?

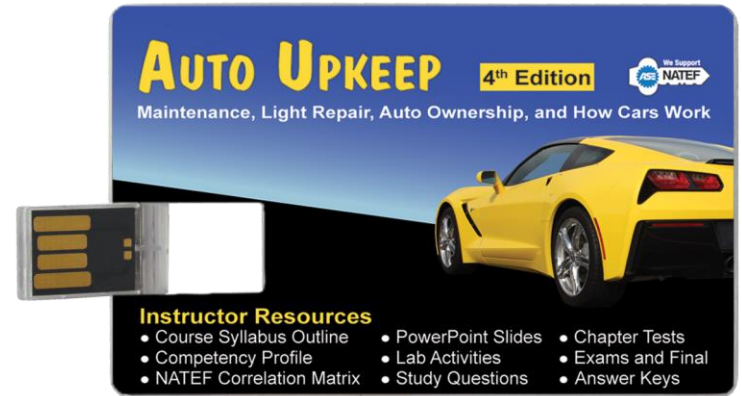
- Competencies – Over 200
- Over 60% of ASE Education Foundation Maintenance and Light Repair (MLR) Tasks – making it an ideal first course.

» 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
- 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








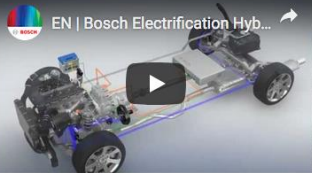

Video Site with Over 100 Videos

CHAPTER 18 - VIDEOS



ALTERNATIVE FUELS AND DESIGNS

Energy is used to propel vehicles. Energy cannot be created or destroyed, but it can be converted from one form to another. In a traditional internal combustion vehicle, gasoline or diesel is used as chemical energy in the combustion process. Some alternative fuels are derived from petroleum (e.g., propane and natural gas), others are non-petroleum based using renewable energy. The most popular alternative designs and fuels are hybrid, electric, plug-in hybrid, and flex-fuel vehicles. The fundamentals of achieving high efficiency in all vehicles include start-stop technology, low-rolling-resistance tires, underbody aerodynamics, and automated grill shutters. Hybrid and electric vehicles may also use regenerative braking, high capacity/low weight batteries, electric-only drive, and plug-in capability. The technological considerations of ideal alternative propulsion systems are whether they are environmentally safe, sustainable, practical, renewable, and affordable.







Bosch Electrification Hybrid Electric Vehicle (HEV)
(Bosch Mobility Solutions)



Bosch flex fuel systems
(Bosch Mobility Solutions)

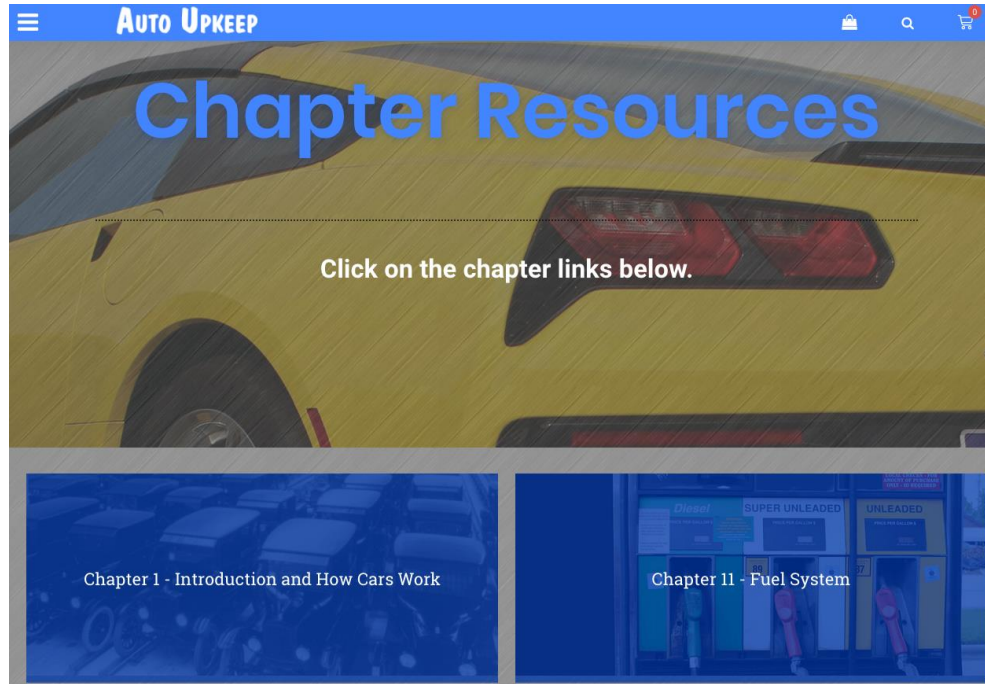


Energy 101: Electric Vehicles
(Energy gov)

www.Video.AutoUpkeep.com

www.AutoUpkeep.com

Online Chapter Resources



www.AutoUpkeep.com/resources



Free Google Assistant Chapter Reviews



Auto Upkeep Chapter
1 Review

Auto Upkeep Chapter 1 Review - Introduction and How Cars Work



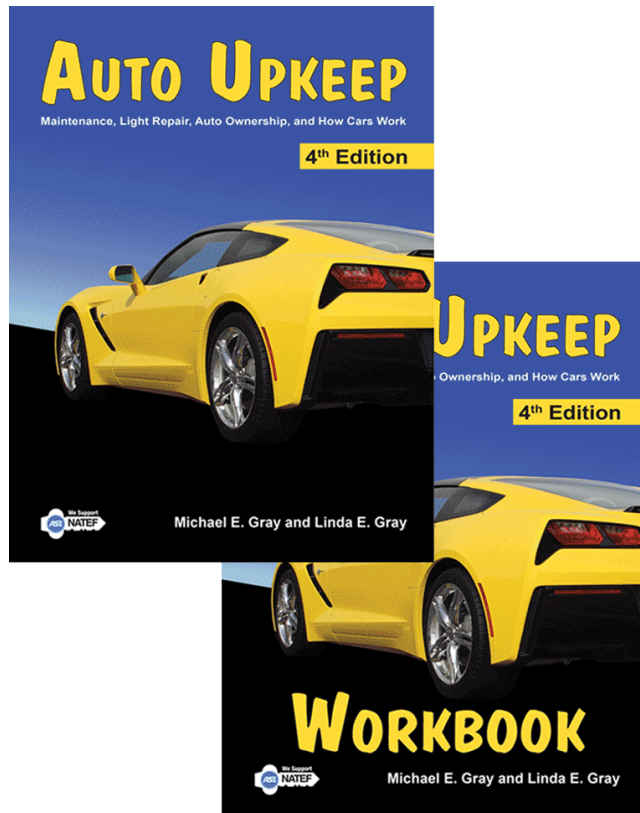
Talk to Auto Upkeep Chapter 1 Review

<https://assistant.google.com/explore>

Then Search “Auto Upkeep”

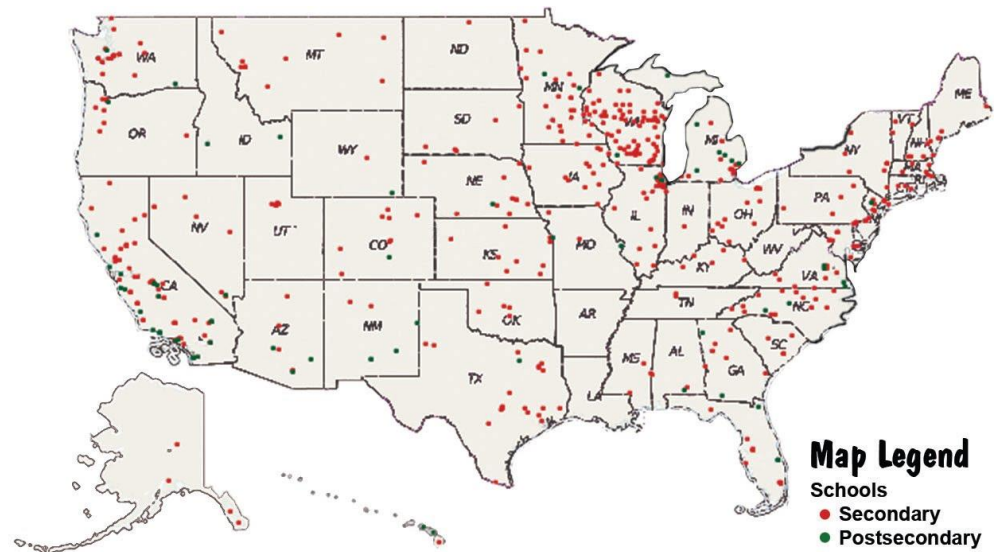


Available in Hardcover, Paperback, and eBook



Who's using Auto Upkeep?

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



What about Articulation Agreements?

“Teachers and administrators from both secondary and postsecondary instructional levels shall (when applicable) meet to identify competencies required at each level, and to jointly prepare agreements of articulation between secondary and postsecondary levels for specific occupational areas.”

Source: https://educateiowa.gov/sites/files/ed/documents/Articulation%20Agreements%20Guidelines_12-04-15.pdf

Auto Upkeep correlates to beginning tasks within the ASE Education Maintenance and Light Repair Model making it easy to see what tasks are addressed in the curriculum. Go to www.AutoUpkeep.com/standards/



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.

More Informed Consumer

No ASE* Test

Auto Upkeep Curriculum



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

Entry Level Technician

ASE* G1 Test

ASE* A1 - A8 Tests

ASE* A1 - A8 Tests

Automotive Technician

*Automotive Service Excellence (ASE) Certification Tests

ASE* Master A1 - A8 Tests All Required

Basic Automotive
Automotive Maintenance
Consumer Auto Mechanics
Auto Care and Maintenance
Car Care

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



Questions?



To Get Free eBook Access

Sign-Up on the Sign-In Sheet and I will email you an eBook access code.



Contact Information

Michael Gray
Rolling Hills Publishing
800-918-READ

www.RollingHillsPublishing.com

www.AutoUpkeep.com

Email: info@autoupkeep.com

LinkedIn – www.Linkedin.com/in/MichaelEGray

Twitter – www.Twitter.com/AutoUpkeep

Videos – www.Video.AutoUpkeep.com

YouTube – www.YouTube.com/AutoUpkeep

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