

AUT 280 : HYBRID ELECTRIC VEHICLES I

Transcript title

Hybrid Electric Vehicles I

Credits

4

Grading mode

Standard letter grades

Total contact hours

80

Lecture hours

20

Lab hours

60

Prerequisites

AUT 206.

Course Description

A study of HEV (hybrid electric vehicles) and EV (electric vehicles). Safety procedures will be strongly emphasized. Vehicle systems that will be covered: Hybrid safety and service procedures, introduction to hybrid batteries and service, introduction to hybrid electric motors, generators, and controls, regenerative braking systems, introduction to hybrid vehicle transmissions and transaxles, hybrid vehicle heating and air conditioning, first responder safety and procedures, introduction to manufacturer scan tools, hybrid vehicle diagnostic trouble codes.

Course learning outcomes

1. Describe and apply proper hybrid/electric vehicle safety and service procedures.
2. Describe the theory, diagnosis, and repair of vehicle electronic systems as it applies to: high voltage batteries and service; electric motors and controls; regenerative braking systems; transmissions and transaxles (electric machines); high voltage heating and air conditioning.
3. Describe first responder electrical safety and first aid procedures.

Content outline

1. Hybrid Safety and Service Procedures
2. Carbon-Based Fuels and the Environment
3. Introduction to Hybrid Vehicles
4. Hybrid Engine Systems
5. Alternative Fuels
6. Hybrid Auxiliary and High-Voltage Batteries
7. Electric Motors, Generators, and Controls
8. Regenerative Braking Systems
9. Hybrid Vehicle Transmissions and Transaxles
10. Hybrid Vehicle Heating and Air Conditioning
11. Fuel Cells and Advanced Technologies

12. First Responder Procedures

13. Manufacturer Systems

Required materials

Required textbook and special gear, see syllabus for details.