

# HYBRID ELECTRIC AND ALTERNATIVE FUEL VEHICLES

ALTO2e

Hybrid electric and alternative fuel vehicles offer many differences from their conventional internal combustion engine counterparts and special considerations need to be made when doing collision repairs. Not only is it necessary to protect yourself from the high voltage, but the batteries and high voltage electrical systems also need to be protected from damage. Recommendations vary and understanding vehicle-specific repair considerations is important to ensuring a safe and cost-effective repair.

## Course Content

### Module 1 – Hybrid Electric Vehicle System Considerations

This module will offer an overview of issues and concepts related to hybrid electric vehicle technology and points out important safety considerations necessary for anyone working on or around a hybrid electric vehicle. The student will also learn about systems impacted by the technology of hybrid electric vehicles.

### Module 2 – Hybrid Electric Vehicle Applications

The course continues with the student learning how to apply the concepts to specific vehicle makes as recommended by the manufacturer. This module includes information on belt alternator/starter systems, two-mode hybrid systems, damage analysis, and vehicle-specific safety considerations.

### Module 3 – Alternative Fuels

The final module of the course covers alternative fuel vehicles and focuses on biofuels, propane, compressed natural gas (CNG), plug-in electric vehicles, hydrogen vehicles, and other technology currently in development.

## Recommendations

This class is fast-paced and covers a variety of topics related to hybrid electric and alternative fuel vehicles. It is strongly recommended that students have an understanding of electrical systems and a basic understanding of electric and hybrid electric technology. Courses that are helpful include:

- Electric and Electric Hybrid Vehicles (ALTO1)
- Electric and Electric Hybrid Vehicles (ALTO1e)
- Electrical Circuits and DVOM Usage (ELE01)
- Diagnosis, Testing, and Repair of Common Electrical Loads (ELE02)
- Fault Code Retrieval, Diagnosis, and Testing Electronic Systems (ELE03)

## Registration

To register for Hybrid Electric And Alternative Fuel Vehicles (ALTO2e), visit the I-CAR website at [www.i-car.com](http://www.i-car.com) or contact the I-CAR Customer Care team at 800-422-7872.

## Course Highlights

**Points:** 1

**Estimated Duration:** 3 hours

**Format Option:**

- Online instruction with test

**Meets I-CAR® ProLevel™ or annual training requirements for the following roles:**

-  ESTIMATOR
-  STEEL STRUCTURAL TECHNICIAN
-  ALUMINUM STRUCTURAL TECHNICIAN
-  NON-STRUCTURAL TECHNICIAN
-  ELECTRICAL/MECHANICAL TECHNICIAN
-  AUTO PHYSICAL DAMAGE APPRAISER

**After completing this course, you will be able to:**

- Explain how to take safe measures when working on hybrid electric and alternative fuel vehicles
- Understand high voltage issues with electric A/C systems
- Identify new applications for hybrid technology and unique hybrid system features
- Understand vehicle-specific applications from popular vehicle makers, including Ford, Mercury, Mazda, Toyota, Lexus, Nissan, and Honda
- Know how to properly care for a high voltage battery prior to and during the repair process
- Identify the different types of alternative fuel vehicles currently on the market, as well as concepts in tomorrow's technology



I-CAR Training Support Center  
5125 Trillium Blvd.  
Hoffman Estates, IL 60192  
Phone: 800-422-7872  
Fax: 800-590-1215  
[www.i-car.com](http://www.i-car.com)