

# University of Illinois Fire Service Institute

## Course Syllabus

**Course Title:** New Vehicle Technology

**Course Duration:** 4 hours

**Program:** Special Operations Training Program

**Course Prerequisites:** None

**Course Description:** This course introduces students to new technologies not encountered in the past that can impact rescue efforts. Topics covered include hybrid or electric driven vehicles, alternative fuel systems, dangerous drive train components, hazardous mechanical and hydraulic systems, plus more. Rescue challenges associated with air bags and their deployment and detonation systems, pre-tension systems and other passive restraint devices throughout the passenger compartment are also discussed. Methods of construction, vehicle body components and their materials of construction offer challenges not found at accident scenes in the past. The course is a recommended follow-up class to the Basic Auto Extrication course.

### **Course Requirements and/or Recommendations:**

Pre-Course Work – Completed prior to arriving: None

Course Work – Completed during class: None

Post-Course Work – Completed after class: None

### **Course Policies:**

**Safety Policy:** Students shall understand and follow all instructions pertaining to operational safety, as stated by instructors or as written in course materials. Instructors and students shall be mindful of safety at all times. Conduct judged to be unsafe shall be grounds for dismissal from the course.

**Academic Integrity Policy:** IFSI has the responsibility for maintaining academic integrity so as to protect the quality of the education provided through its courses, and to protect those who depend upon our integrity. It is the responsibility of the student to refrain from infractions of academic integrity, from conduct that may lead to suspicion of such infractions, and from conduct that aids others in such infractions. Any violation of the code of conduct is grounds for immediate dismissal from the course.

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**American Disabilities Act:** As guaranteed in the Vocational Rehabilitation Act and in the American Disabilities Act, if any student needs special accommodations, they are to notify their instructor and provide documentation as soon as possible so arrangements can be made to provide for the student's needs. If arrangements cannot be made at the class site, the student will test at an alternative time and place where the special accommodations can be made.

## Course Content:

### Module: 1

Title: Introduction to Hybrid and Electric Vehicles

#### Terminal Learning Objective:

At the conclusion of this module, the student will identify main safety concerns for first responders.

### Module: 2

Title: Basic Electric Concepts and Hazards

#### Terminal Learning Objective:

At the conclusion of this module, the student will explain the differences in the electrical systems of P/HEVs and EVs.

### Module: 3

Title: P/HEV and EV Systems and Safety Features

#### Terminal Learning Objective:

At the conclusion of this module, the student will identify the safety features in P/HEVs and EVs.

### Module: 4

Title: Charging Stations

#### Terminal Learning Objective:

At the conclusion of this module, the student will identify the types of charging stations as they relate to P/HEVs and EVs.

### Module: 5

Title: Initial Response Procedures

#### Terminal Learning Objective:

At the conclusion of this module, the student will explain initial response procedures at an incident involving a P/HEV or EV.

### Module: 6

Title: Emergency Operations

#### Terminal Learning Objective:

At the conclusion of this module, the student will discuss the actions to be taken during emergency operations at an incident involving a P/HEV or EV.

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Module:7

Title: HEV and EV Review

Terminal Learning Objective:

At the conclusion of this module, the student will explain the concerns in responding to incidents involving HEV or EVs.

Module: 8

Title: Introduction to Gaseous Fuel Vehicles

Terminal Learning Objective:

At the conclusion of this module, the student will identify the types of gaseous fuels.

Module: 9

Title: Gaseous Fuels Properties

Terminal Learning Objective:

At the conclusion of this module, the student will explain the physical properties and hazards of gaseous fuels.

Module: 10

Title: Vehicle Systems and Operations

Terminal Learning Objective:

At the conclusion of this module, the student will explain the differences in the systems and operations found in CNG, LNG, and LPG vehicles.

Module: 11

Title: Fueling Stations

Terminal Learning Objective:

At the conclusion of this module, the student will identify safety measures available for alternative fuel vehicles.

Module: 12

Title: Initial Response Procedures

Terminal Learning Objective:

At the conclusion of this module, the student will discuss initial response procedures at an incident involving CNG, LNG, and LPG vehicles.

Module: 13

Title: Emergency Operations

Terminal Learning Objective:

At the conclusion of this module, the student will discuss the action taken during emergency operations at an incident involving CNG, LNG, and LPG vehicles.

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## Reference List:

*Electric Vehicle Safety for Emergency Responders*, National Fire Protection Association. 2011

NFPA 1006, Standard for Rescue Technician Professional Qualifications, Chapters 5, 10, 19, 2013 Edition

*Principles of Vehicle Extrication*, 4<sup>th</sup> Edition, IFSTA, Fire Protection Publications 2017

*Vehicle Extrication, Levels I and II: Principles and Practice*, David A. Sweet, Jones & Bartlett, 2012

*Vehicle Rescue and Extrication*, 2nd Ed., Ronald E. Moore, Mosby Jems, 2003

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## Course Schedule

### DAY ONE

#### Event

#### Duration

Module – New Car Technology

4 hours