



## Automotive Systems & Electric Vehicle Technology

Duration:- 6 Weeks

### Course Content

#### ◆ **Module 1: Advanced Two Wheeler technology**

- Ergonomics and Basics of Motorcycle
- Power Generating System
- Carburetor
- Transmission System
- Electrical Circuit
- Electronics and FI
- Periodic Maintenance and Service of bikes (Required for Maintenance-related jobs)

#### ◆ **Module 2: Advanced Four Wheeler technology**

- Introduction/ History of the automobile, automobile terminologies
- Engine & its basic components
- Air induction & exhaust system
- Power flow system, AT
- The braking system, ABS/EBD/ESP
- Steering system
- Engine management system
- Lubrication and cooling system
- Axles & differentials



- Emission norms, bs-4, bs-6
- Fuel system
- Auto electrical

## ◆ Module 3: Electric Vehicle Technology

### Introduction to EV

- History of Automobile, History of EV, What is an EV?
- Major EV Components, How EV works ?, Types of EV.

### Indian EV Market

- History, Current EV Market, Problems faced

### EV Battery

- Battery Definition, Types of battery, Internals of battery
- Working principle, EV Battery, Types of EVB, Lead-acid battery Working, Advantage/Disadvantage, Li-ion Battery
- Types of Li-ion battery, Working principle, Internals of Li-ion battery, Advantage/Disadvantage

### Motors

- Definition, Components of motors, Classification, AC Motor types, AC motor working, DC Motor types, DC motor working

### Controllers

- Definition, Working, Function, Controller as an inverter/converter, Types of controllers

### Battery Management System

- Definition, Types of BMS, Working of BMS
- Functions of BMS (collaborative study), Battery Cooling system



## **EV Chargers**

- What is EV charger? Classification of EV chargers
- Methods of charging EVB, EVB Current Ratings
- Modern technologies for charging.

## **Introduction to Hybrid Electric Vehicles (HEV)**

- History of HEV, Modern day HEV, what are HEV?
- Working of HEV, Brief Description of Major components in an HEV, Degree of Hybridization in HEV
- Advantages/Disadvantages, HEV Power-train

## **Hybrid Electric Power train**

- Electro-mechanical Power-train in HEV
- Types of HEV power-train (collaborative study)

## **Technologies used for Increasing Energy Efficiency in HEV**

- Regenerative braking system/KERS (collaborative study)
- Start-Stop system (collaborative study)

## **Introduction to Fuel Cell EV**

- What is Fuel Cell EV's? History of FCEV
- Modern-day FCEV, Major components of FCEV
- Working of FCEV, Advantages/disadvantages

## **Types of Fuel Cells**

- Classification of fuel cells, Chemical reaction in fuel cells.
- Hydrogen charging infrastructure