

COURSES MODULE

For

HYBRID & ELECTRIC VEHICLE

TECHNOLOGY ENGINEERING



Course Outline

- ❖ Introduction: Electric Vehicle
- ❖ Electric Vehicle Architecture Design
- ❖ Electric Vehicle Architecture Design
- ❖ Electric Drive and controller
- ❖ Energy Storage Solutions(ESS)
- ❖ Battery Management System(BMS)/Energy Management System
- ❖ Control Unit
- ❖ Electric Vehicles charging station
- ❖ INDIAN and GLOBAL Scenario

CERTIFICATION & PG DIPLOMA COURSES FOR **Hybrid and Electric Vehicles (H/EVs)** are leading the automotive industry technological.

Introduction: Electric Vehicle

History
Components of Electric Vehicle
Comparison with Internal combustion Engine :
Technology
Comparison with Internal combustion Engine: Benefits and Challenges
EV classification and their electrification levels.
EV Terminology

Motor Torque Calculations For Electric Vehicle

Factors Affecting The Required Torque
Calculating the Rolling Resistance
calculating the grade resistance
Calculating The Acceleration Force
Finding The Total Tractive Effort
Torque Required On The Drive Wheel

Electric Vehicle Architecture Design

Types of Electric Vehicle and components
Electrical protection and system requirement
Photovoltaic solar based EV design
Battery Electric vehicle (BEV)
Hybrid electric vehicle (HEV)
Plug-in hybrid vehicle (PHEV)
Fuel cell electric vehicle (FCEV)
Electrification Level of EV
Comparison of fuel vs Electric and solar power
Solar Power operated Electric vehicles

Electric Drive and controller

Types of Motors
Selection and sizing of Motor
RPM and Torque calculation of motor
Motor Controllers
Component sizing
Physical locations
Mechanical connection of motor
Electrical connection of motor

Energy Storage Solutions(ESS)

Cell Types (Lead Acid/Li/NiMH)
Battery charging and discharging calculation
Cell Selection and sizing
Battery lay outing design
Battery Pack Configuration
Battery Pack Construction

Battery Management System(BMS)/Energy Management System

Need of BMS
Rule based control and optimization based control
Software-based high level supervisory control
Mode of power
Behavior of motor
Advance Features

Control Unit

Function of CU
Development Process
Software
Hardware
Data Management
GUI/HMI

Electric Vehicles charging station

Type of Charging station
Selection and Sizing of charging station
Components of charging station
Single line diagram of charging station

INDIAN and GLOBAL Scenario

Technology Scenario
Market Scenario
Policies and Regulations
Payback and commercial model
Polices in India

"To enrol please contact info@meccengineer.com"

International Accredited Standard by:



Training Partner of Government Skill Programme:



MECCIEngineers Pvt. Ltd.

**E-49, 1st floor, Sec-3
Noida - 201301, INDIA
Landline No: +91 - 120 - 4157540
Mobile No: +91-9910988623, 9910907623**

Email Id: info@mecciengineer.com

www.Liprat.com

www.mecciengineer.com