

# Medi-Caps University, Indore

Madhya Pradesh, India

## Summer Training Program

on

### Skill Development in Basics of Electric Vehicle and Its Components

#### Overview of summer training

The world is moving towards Electric Vehicle Technology, it is necessary to learn about different aspects of an EV, so that it can be prepared for future employment. An electric vehicle has an on-board battery that gets charged through an electricity supply and then stores and uses that energy to power an electric motor and set the wheels in motion. It means the cars have no need for a clutch and gearbox or an exhaust pipe and it makes them much quieter and, many say, smoother to drive. It's clear that we're entering a new age of electric vehicles. The infrastructure to support them, the cost to build them and the speed to charge them all look set to improve dramatically in the next few years. Driving an electric car will become the norm for many in the coming years and governments and energy companies are setting big goals to help that happen.

The department of Mechanical Engineering is organizing a one month summer training program on "Skill Development in Basics of Electric Vehicle and Its Components" from (14 June – 09 July), 2021. In this training program the student will learn about the basic components and also technical aspects of the EV. The candidate applying for this training program must have the basic knowledge of automobile and electrical engineering. Applicable for B.Tech. students of branches ME, AU, EE, EX, EC, EI.

#### Tentative Schedule

	S. No.	Topic
<b>WEEK 1</b>	1	Introduction to Electric Vehicle
	2	Basics of Electric Vehicles
	3	Layout of Electric Vehicles
	4	Sensors & Actuators, Control Strategy of them
	5	Torque Distribution
	6	ABS/ESP Interaction
	7	Types of batteries – Pb Acid
	8	Metal Air Batteries
	9	Li-Po Batteries
	10	Alternative Energy Storage – Photovoltaic cells
	11	Super-Capacitors
	12	Fuel Cell

	13	Basics on Motor Control
	14	Regeneration Algorithms
	15	Basic designing parameters parameters & Specification
<b>Week 2</b>	1	Transmission and Power Couplings- AMT
	2	Dual Clutch, CVT,
	3	Shift Quality Parameters
	4	Architecture Development of EV's
	5	Braking, Safety,
	6	Range / Power conflict
	7	Thermal Management for Motors & Batteries
	8	Technologies for Thermal management Air Cooling, Liquid Cooling
	9	Direct Refrigerant Cooling
	10	Similarities and differences with ICE
	11	Components and key performance criteria
	12	Components and key performance criteria
	13	Existing EVs Architecture
	14	Discuss about technology used in present scenario
	15	What's new in Electric Vehicles
<b>Week 3</b>	1	Introduction to the Electrical motors
	2	Types of motors used for the EV
	3	Performance Characteristics
	4	BLDC motors and Performance characteristics
	5	DC motors and Performance characteristics
	6	AC motors and Performance characteristics
	7	Electrical braking
	8	Series braking, parallel braking
	9	Regenerative braking, Energy storage during braking
	10	Introduction to the Electrical Converters
	11	Role of Converters in the EV charging circuit
	12	Introduction to AC - DC Converter
	13	Introduction to DC - AC converters
	14	Introduction to DC - DC Converters
	15	Different Waveforms of converters
<b>Week 4</b>	1	Different Batteries used in electric and hybrid vehicles
	2	Battery parameters
	3	Properties of batteries used in electric vehicles
	4	Lithium ion batteries in EV
	5	Battery management system (BMS)
	6	BMS requirements and operation
	7	Introduction to the charging circuit of EV
	8	Introduction to the On board Charging System
	9	Overview of global EVSE classification practices

10	Different Charging connectors
11	AC charging, DC charging, inductive charging
12	Battery swapping, Comparative assessment of available charging options
13	Introduction, Classification of charging stations
14	level 1, level 2 and level 3, Public charging stations
15	Site section approach for public charging stations

### Registration Details

1. Fill the Registration Form available at our website [www.medicaps.ac.in](http://www.medicaps.ac.in).
2. Registration link: <https://forms.gle/4HXYt1fruTwt3wW36>
3. The selection of students to any training module is on first come first serve basis.
4. Maximum no. of seats: 60
5. The participants can pay registration fees through Internet transfer, the details are:  
Bank: IDBI  
A/C No: 0001104000600323  
A/C Name: MEDI-CAPS UNIVERSITY-CEP  
IFSC Code: IBKL0000001

### Contact

For Summer Training Related Queries:

The candidates may mail to:

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Trainer:

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