

KRISHNASAMY

College of
ENGINEERING & TECHNOLOGY

Approved by AICTE & Affiliated to Anna University
Anand Nagar, Nellikuppam Main Road, S. Kumarapuram, Cuddalore - 607 109, Tamil Nadu.
☎ (04142) 285 601 - 604 🌐 www.kcet.in ✉ info@kcet.in

DEPARTMENT OF MECHANICAL ENGINEERING

30.11.2023

CIRCULAR

Ref.: KCET/MECH/VAC/CIRCULAR/2022-23/01.

The following Value Added Course will be conducted during the academic year 2022-2023. The course will be conducted from 23.01.2022 to 28.01.2023. Students are instructed to register their names in the course allotted to them.

Note: Students are instructed to attend the program without fail.

S.No.	Course Code	Name of the Course	Year	No. of Period	Course Coordinator
1	ME-VAC2201	3D Printing	IV	30	Er.L.Purushothaman, Asst.Prof
2	ME-VAC2202	Fundamentals of Electric Vehicles	III	30	Er.G.Senthilvel, Asst.Prof

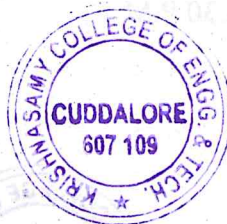
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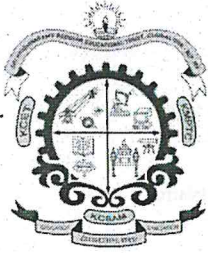
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SYLLABUS

Subject Code/ Subject Name: ME-VAC2202-FUNDAMENTALS OF ELECTRIC VEHICLES

Duration: 30 Hours

COURSE OBJECTIVES

- The course is a beginner-level course designed to introduce students to Electric vehicles and give them a brief idea about electric vehicles, and its importance.
- This course gives some basic technical foundations regarding electric vehicles In-order to help them move on to advanced electric vehicle courses.

Module I : INTRODUCTION

4

Overview of Electric Vehicles in national and international and benefits of electric vehicles; fundamentals of EVs; tractive effort; vehicular dynamics; drive cycle and vehicle control unit

Module II : COMPONENTS OF POWER TRAIN

4

Components of conventional vehicle and propulsion load; power train of HEV and EV; efficiency considerations for conventional vehicle, HEV and EV; multi-motor in-wheel EVs; impact and benefits of EV on utility grid

Module III : ON-BOARD CHARGERS

8

Review of semiconductor devices; turn-on and turn-off characteristics; loss computation in semiconductor devices; basics of nonisolated /isolated DC-DC and grid connected converters; classification of EV chargers; modelling and control of bi-directional DC-DC converters

Module IV : ENERGY SOURCES FOR EVS

8

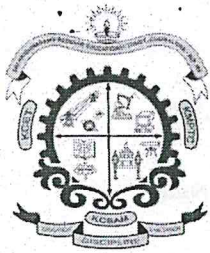
Batteries, Solar Photovoltaics, Wind Power, Flywheels, Super Capacitors, Fuel Cells, Hydrogen Supply; Fundamentals of EV Battery Pack design, EV Motors and Controllers:

Module V : FUNDAMENTALS AND DESIGN

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Vehicle Accessories; Battery Charging and Swapping; Advancements in EVs.

Total No. of Periods 30



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COURSE OUTCOMES

- To make students aware about the emerging area of Electric Vehicles and helps learn the Basics of Battery driven Electric Vehicle and its Dynamics, Motors, Power Electronics, Batteries, Charging etc.

REFERENCES

- Alfred Rufer, "Energy Storage systems and components", CRC Press 2017
- Tom Denton, "Automotive Electrical and Electronic Systems", 5th Edition, Routledge 2018
- Mehard Ehsani, Yiming Gao, Stefano Ilongo and Kambiz Ebrahimi, "Modern Electric, Hybrid Electric, and Fuel Cell Vehicles", CRC Press, 3rd Edition.

f. J. Prabhakaran
25/11/22
HOD E/c