

TIFAC-CORE in AUTOMOTIVE INFOTRONICS @ VIT

(Sponsored by Dept. of Science & Technology, Govt. of India)



**TIFAC-CORE** is conducting Certificate Program on <u>"INTRODUCTION TO HYBRID</u> <u>AND ELECTRIC VEHICLE DESIGN USING MATLAB - SIMULINK</u>" for the benefit of VIT Students. This program is to impart high end technical inputs and to acquire hands on exposure.

Course fee	: Rs 8500/-
Registration deadline	: 6 <sup>th</sup> January 2020
Duration	: <b>50 hrs</b> on 3 days in a week of 2hrs based on common free slot of attendees ( JAN 2020-APR 2020)
Payment mode	: DD taken in favour of "Vellore Institute of Technology, Vellore" payable at Vellore
participants limit	:30 (based on first come first serve)

Students undergoing this program will be given preference to carryout Mini Projects, In-Plant Training and projects at TIFAC CORE.

## **Topics**

Vehicle Fundamentals Electric Vehicles

- Configurations of Electric Vehicles
- Performance of Electric Vehicles
  - Traction Motor Characteristics
  - 🖊 Tractive Effort and Transmission Requiremen
  - 🖊 Vehicle Performance
- Tractive Effort in Normal Driving
- Energy Consumption

Hybrid Electric Vehicles

- Concept of Hybrid Electric Drive Trains
- Architectures of Hybrid Electric Drive Trains
  - 4 Series Hybrid Electric Drive Trains
  - 🖊 Parallel Hybrid Electric Drive Trains

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For Technical Details:

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## **TIFAC-CORE in AUTOMOTIVE INFOTRONICS**

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Electric Propulsion Systems

DC Motor Drives

- Principle of Operation and Performance
- Combined Armature Voltage and Field Control
- Chopper Control of DC Motors
- Multi-quadrant Control of Chopper-Fed DC Motor Drives

## Induction Motor Drives

- Basic Operation Principles of IM
- Steady-State Performance
- Constant Volt/Hertz Control
- Power Electronic Control
- Field Orientation Control
- Voltage Source Inverter for FOC
- Voltage Control in Voltage Source Inverter
- Current Control in Voltage Source Inverter

Permanent Magnetic Brush-Less DC Motor Drives

- Basic Principle
- Construction and Classification
- Properties of PM Materials
- Performance Analysis & Control
- Sensorless Techniques

Energy Storages

- Battery Technologies
- Lead-Acid Batteries
- Nickel-based Batteries
- 🖊 Nickel/Iron System
- 🖊 Nickel/Cadmium System
- ∔ Nickel-Metal Hydride (Ni-MH)

Lithium-Based Batteries

- 🖊 Lithium-Polymer (Li-P) Battery
- ∔ Lithium-Ion (Li-Ion) Battery

Ultracapacitors