



All India Council for Technical Education (AICTE)

ATAL Academy Sponsored



ONE WEEK

Online Faculty Development Program

on

**"ELECTRIC VEHICLE  
AND HYBRID ELECTRIC VEHICLE"**

2<sup>nd</sup> – 6<sup>th</sup> November 2020



**Coordinator**

**Dr. Aqleem Siddiqui**

**Assistant Professor**

**Mechanical Engineering Department**

**Organized By**

**Department of Mechanical Engineering**

**Fr. C. Rodrigues Institute of Technology, Vashi**

### REGISTRATION PROCESS

- One can register for the course as per the specified process of AICTE Training and Learning (ATAL) Academy.
- **There is no registration fee for the course.**
- For certificate, attendance and passing of Examination is mandatory.

### RESOURCE PERSONS

The program will be conducted by eminent speakers from industry and academia.

### WHO SHOULD ATTEND THE COURSE

This course is useful for engineers and aspirants from interdisciplinary field seeking interest in EV/HEV

The course will be most beneficial for:

- Engineering post-graduates (M.E./M. Tech. in Mechanical, Production, Automobile, Aerospace, Bio-medical, Electrical, Electronics, Chemical Engineering)
- Professionals in Design, Manufacturing industry
- Faculty members from academic and research institutions
- PhD scholars

### ORGANIZING COMMITTEE

**Dr. S. M. Khot**

**Principal**

**Dr. Nilaj Deshmukh**

**HOD & Dean (Faculty)**

**Dr. Aqleem Siddiqui**

**Course Coordinator**

**Mr. Kamlesh Sasane**

**Course Co-Coordinator**

**Mr. Girish Dalvi**

**Course Co-Coordinator**

### CONTACT FOR MORE INFORMATION

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## ABOUT THE INSTITUTE



F.C.R.I.T. was established in 1994 and is a part of the Agnel Technical Education Complex at Vashi, which itself was established in 1984. The institute is named after late Rev. Fr. Conceicao Rodrigues. F.C.R.I.T. has, within a short span of time, established itself as a leading engineering college in Mumbai University. Though its reputation rests mainly on the high quality, value-based technical education that it imparts, it has to its credit a verdant, well-maintained Campus and extensive facilities. Its location in the vicinity of the holy places of various religious denominations underscores its secular credentials and its philosophy of "Vasudhaiva Kuttumbakam"

The College has been granted Religious minority status. The college prides on being one of few that has accreditation for all five branches. It was ranked by NIRF in the Rank band 201-250 in the year 2020, whereas it was ranked earlier also in 2017.

## MECHANICAL ENGINEERING DEPARTMENT

The department of Mechanical Engineering was started in the year 1994 with an intake of 60 students for Under Graduate course. The intake was subsequently increased to 120 students from AY2019-20. The department also offers PG program in Machine Design with a sanctioned intake of 18 students. The research centre under the department also offers Ph.D. in Mechanical Engineering having intake of 25. The UG Program is accredited for 3 years from AY 2018-19, by NBA.

## OBJECTIVES OF AICTE ATAL ACADEMY

- To set up an Academy which will plan and help in imparting quality technical education in the country
- To support technical institutions in fostering research & innovation and entrepreneurship through training
- To stress upon empowering technical teachers & technicians using Information & Communication Technology
- To utilize SWAYAM platform and other resource for the delivery of trainings
- To provide a variety of opportunities for training and exchange of experiences such as workshops, Orientations, learning communities, peer mentoring and other faculty development programs.
- To support policy makers for incorporating training as per requirements

## HOW TO REGISTER

- One can register for the course as per the specified process of AICTE Training and Learning (ATAL) Academy.
- Participants interested to attend this program should register online in the below mentioned link : <https://atalacademy.aicte-india.org/login>

## INFORMATION FOR PARTICIPANTS

- The FDP will be conducted in Online mode.
- Participants willing to participate in this online FDP should have the provision of laptop/desktop/smart phone with good quality internet connections and other audiovisual facilities, as required for online training.
- Seats are limited (only 200) and the participants are selected by organizers on first come first serve basis.
- On completion of the course, an objective/quiz based assessment of all participants will done
- Those who have an attendance of minimum 80 % and score more than 60% in the test, will be issued a digital certificate by the ATAL Academy.

## ABOUT COURSE

Why the course on Electric Vehicle (EV)/Hybrid Electric Vehicle(HEV)?

Most automobile companies are vowing to switch to electric, a cleaner, and sustainable alternative. An electric revolution is coming to the automobile sector in India. But, the industry is facing a shortage of talented, aptly skilled engineers needed for the transition to electric drives as the primary source of motive power to conduct this course.

When it comes to immobility, it is not just about electric vehicles. Hybrid vehicles are being seen as a temporary way to bridge the gap between traditional vehicles and EVs. And for a country like India where EV charging infrastructure is still not created, hybrid vehicles can make a difference in the short to medium term.

## COURSE OBJECTIVES

The objective of this course is to introduce the fundamental concepts, principles, analysis and design of electric and hybrid electric vehicles.

## CONTENTS

- Requirements for EV/HEV various electric drive-train topologies
- Power flow control in drive-train topologies suitability of DC and AC machines for EV/HEV applications
- AC and DC Motor drives
- Review of batteries, fuel cells, flywheels and ultra capacitors as energy sources
- Modelling and analysis of EV/HEV drive train
- Sizing of motor, and design of traction power electronics
- EV/HEV energy management strategies