

# **Electrical Vehicle & HEV**



Certification 2-8 Weeks / 30-40 Hours Industry ready exhaustive program

# Internship & Training Program

Make Projects & Get Trained





## About EduVitae Services

**EduVitae Services**, run by **IITians & industry experts**, is a renowned provider of education, training, research and development programs, with a large presence. We offer a wide range of specific industry ready courses and training opportunities in the areas of computer science and IT, animation and multimedia, as well as engineering, management and advanced technology. Our programs include workshops, training, internships, hackathons, corporate training, certificate courses, placement training, research, and development programs, all designed to meet the needs of students, professionals, academic institutions, and industry. Our reputation as one of the best technology training providers, is a testament to our commitment to helping our students and clients acquire the skills and knowledge they need to succeed in their careers and goals.

## **Our Clientele/Collaborations**

Top private & government academic institutions, college's fests and corporates where directly/indirectly our presence have been felt:

Indian Institute of Technology, Kanpur Indian Institute of Technology (Banaras Hindu University), Varanasi Indian Institute of Technology (ISM), Dhanbad Indian Institute of Technology, Jodhpur Indian Institute of Technology, Bhubaneswar Blithchron, Indian Institute of Technology, Gandhinagar Indian Institute of Technology, Guwahati Indian Institute of Technology, Patna Indian Institute of Management (IIM), Lucknow Indian Institute of Management (IIM), Indore National Institute of Technology, Surat National Institute of Technology, Bhopal National Institute of Technology, Warangal National Institute of Technology, Trichy Chandigarh University DIC, Department of Applied Arts (Visual Arts), Banaras Hindu University, Varanasi Madan Mohan Malaviya University of Technology, MMMUT Gorakhpur Maharaja Agrasen Institute of Technology, Delhi Thapar Institute of Engineering & Technology, Punjab Assam Engineering College, Assam Jaypee University of Engineering & Technology Shillong College, Meghalaya SRCC, Delhi University Kendriya Vidyalaya, India DAV School, India

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Industry/Corporate/Startups/Government

MapsCrew Rabbixel CreativeHatti Accenture Capgemini F1 Digitals TIH IIT Roorkee, DST, Govt. of India ......

and many more tech & non-tech colleges/universities/institutes/schools & organizations/startups/companies across India and globe.

## **Achievements & Milestones**

- Our alumni / students are working in top notch company of India & MNCs VMware, Infosys, Cognizant, CGI, Fidelity, Razorpay, EXL, CARS24, Tata Steel, NVIDIA, MyKaarma, Oyo Rooms, Samsung, Walmart Labs, L&T, JIO, Citibank, TCS, Accolite, BNY Mellon, and many more.
- Conducted a number of workshop/training/internship programs in many colleges/universities/schools like IITs, IIMs, NITs, IISc & other prestigious institutions of India & with the corporates too.
- Trained many college/university/school students, some of them have created a milestone for EduVitae Services by meeting with Shri Narendra Damodardas Modi (Prime Minister of India) related to some robotics projects.
- Collaborating with Industries / Corporates / Startups to provide them hiring services (helping them to hire fresh trained talent with us).
- Signed MOUs / worked with top notch colleges / universities / schools / organizations like Techkriti IIT Kanpur, Technex IIT (BHU) Varanasi, Wissenaire IIT Bhubaneswar, Techniche IIT Guwahati, Concetto IIT (ISM) Dhanbad, Pravega IISc Bangalore, IGNUS IIT Jodhpur, Ranbhoomi IIM Indore, IIM Lucknow, MMMUT GKP, NIT Surat, NIT Bhopal, NIT Warangal, NIT Trichy, Chandigarh University, Thapar University, SRCC DU, KMC DU, TIH IIT Roorkee DST Govt. of India and many other academic institutions for professional / industry ready & learning skills training / workshop / internship programs.

## Prerequisites

Participants from 1<sup>st</sup> year/ 2<sup>nd</sup> year / 3<sup>nd</sup> year / 4<sup>th</sup> year of ME/EE/Mechatronics/Other related branch/stream will get more benefit after joining this program and other interested students / learners can also participate in that as per their requirement.

# What is required before joining this training program?

Here's the checklist

- 1. A laptop with Microsoft Windows (7 or later) configuration along with smartphone as per need/requirement.
- 2. Laptop Charger/Adapter for charging purpose.
- 3. USB Mouse for designing purpose (if required).
- 4. Internet Connectivity (Typically to be able to do video call / conferencing, if the program is in online mode)
- 5. Notepad & Pen/Pencil for important notes and most important your interest & dedication.





## **Training Deliverables & Takeaways**

Every participant will get

- ✓ Industry Ready Curriculum
- ✓ Interactive & Doubt Session
- ✓ Certification Program
- ✓ Mini & Major Projects
- ✓ Career Guidance
- ✓ Projects/Practical Based Learning

## **Course & Content**

All of the sessions will be theoretical & practical oriented, so it will be really great if participant(s) can look on the syllabus which we are going to cover during training days.

# **ELECTRIC VEHICLE & HEV**

Electric Vehicle training courses are provided for various specializations in the industry. Almost all learning programmers are usually theme based and provide certification in a specific EV trade. In order to get the maximum outcome from an Electric Vehicle course in India one should know what kind of specializations are available in this field. It has been found that the following specializations currently have the highest scope of development in the electric and hybrid vehicle industry for the next few years.

#### Session #1

#### Introduction to Hybrid Electric Vehicles

- History of hybrid and electric vehicles
- Social and environmental importance of hybrid and electric vehicles
- Impact of modern drive-trains on energy supplies
- Motion and dynamic equations for vehicles
- Propulsion requirements for vehicles
- HEV architectures

#### Session #2

#### Hybrid Electric Drive-trains

- Vehicle power source characterization
- Transmission characteristics
- Mathematical models to describe vehicle performance
- Basic concept of hybrid traction
- Introduction to various hybrid drive-train topologies
- Power flow control in hybrid drive-train topologies
- Fuel efficiency analysis



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#### Session #3

#### **Electric Drive-trains**

- Basic concept of electric traction
- Introduction to various electric drive-train topologies
- Power flow control in electric drive-train topologies
- Electric power analysis
- Electrical machines for EVs and HEVs
- DC-DC Converters
- Boost and Buck-Boost Converters
- Multi Quadrant DC-DC Converters

#### Session #4

#### **Electric Propulsion unit**

- Introduction to electric components used in hybrid and electric vehicles
- Configuration and control of DC Motor drives
- Configuration and control of Induction Motor drives
- Configuration and control of Permanent Magnet Motor drives
- Configuration and control of Switch Reluctance Motor drives
- Drive system efficiency

#### Session #5

#### **Energy Storage**

- Introduction to Energy Storage Requirements in Hybrid and Electric Vehicles
- Battery based energy storage and its analysis
- Fuel Cell based energy storage and its analysis
- Super Capacitor based energy storage and its analysis
- Flywheel based energy storage and its analysis
- Hybridization of different energy storage devices

#### Session #6

#### Sizing the drive system

- Matching the electric machine and the internal combustion engine (ICE)
- Sizing the propulsion motor
- Sizing the power electronics
- Selecting the energy storage technology
- Communications,
- Supporting subsystems

#### Session #7

#### **Energy Management Strategies**

• Introduction to energy management strategies used in hybrid and electric vehicles



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- Classification of different energy management strategies
- Comparison of different energy management strategies
- Implementation issues of energy management strategies

#### Session #8 & #9

#### Electric vehicle charging arrangement

- Electric vehicle charger
- Electric vehicle charger technology
- The EV charging station architecture
- EV chargers and portfolio management
- EV charging and the grid
- Smart grid and EVs

#### Additional Objectives and Outcome of the Training:

- Analysis of hybrid vehicles
- Analysis of electric vehicles
- Understanding the use of Simulation software
- Do the simulation of Hybrid vehicle with MATLAB
- Demonstrate, the skill for Engine simulation software's and Hybrid vehicles simulation software's
- Have hands on experience for Engine simulation and Hybrid /Electric vehicle simulation

#### Disclaimer

Please make sure that this training/internship will be organized by EduVitae Services, it is to note that if any IIT/NIT/IIM/IISC/Private/Government organization is EVS partner then they are responsible for providing certification to attending students/professionals, marketing, publicity and rest operations, scheduling, payment processing, training, content development etc. will be taken care by EduVitae Services.

All of the matters/disputes related to internship/training/workshop needs to be addressed to EduVitae Services team only. See our terms and conditions on www.eduvitae.co.in and fees once paid is non-refundable and non-transferrable. Company reserves full right to withdraw any offer/discount anytime without any prior notification, also it's important to understand that center & batches date of internship/training can be changed as per requirements & situations.

