



NaMPET @ IIT BHU

Short-term course

on

Emerging Trends in Electric Vehicles (ETEVE-2024)

October 21-25, 2024

Organized by



Department of Electrical Engineering

Indian Institute of Technology (IIT) BHU
Varanasi, Uttar Pradesh, India

Under the aegis of
NaMPET Phase II



सत्यमेव जयते
Ministry of Electronics
& Information Technology
Government of India



deployment, and commercialization of power electronics technology are envisaged, enhancing the indigenous R&D expertise and infrastructure in the country with active participation from academic institutions and industries. Centre for Development of Advanced Computing, CDAC, Thiruvananthapuram, a premier R&D organization under MeitY, is the Nodal Centre coordinating the activities of NaMPET.

Centre for Development of Advancement Computing (CDAC)

The CDAC undertakes application-oriented research, design, and development in electronics so as to generate state-of-the-art, producible, marketable, field-maintainable products and systems. The Power Electronics group has wide experience in developing successful power electronics products/systems and a very good industry interaction by way of transfer of technology, field implementation, etc. It is closely associated with reputed academic institutions like IISc, IITs, NITs, etc. C-DAC has contributed significantly to the growth of the industry through the Indigenous development of commercially viable products and systems, foreign technology absorption, consultancy, training, and turnkey implementation of contract projects.

Preamble

The Five-days short-term course aims to highlight the recent trends of research and development in electric vehicles, which is a promising solution for combating environmental pollution and dealing with the fossil fuel crisis. The charging infrastructure is one of the key factors for the successful operation of Electric vehicles. One will be able to learn various concepts related to advanced EV technology and their grid integration as V2G and G2V. Special attention is given to power electronic interfaces, system integration, and operation and control. Furthermore, the application of intelligent control techniques will be discussed for V2G and G2V, along with renewable based green energy storage. This STC program will offer an exclusive opportunity to experts from prestigious institutions, important industries, notable experts working in the area of Electric Vehicles, and Research scholars to share their experiences, novel ideas, practical challenges and probable solutions. The program consists of interactive lectures presentations/ laboratory by invited speakers from academic institutes, industries, and R&D organizations.

About IIT (BHU) Varanasi

The Indian Institute of Technology (Banaras Hindu University) Varanasi owes its existence to Bharat Ratna Mahamana Pandit Madan Mohan Malviya, the founder of the first residential University of modern India, Banaras Hindu University (BHU), who could foresee the vital role of technical education in strengthening independent India.

About the Department of Electrical Engineering

The Department of Electrical Engineering, IIT (BHU), which was established in the year 1919, is one of the oldest Institutions in the country. The department since its inception offered combined bachelor's degree in Electrical and Mechanical Engineering. A separate undergraduate programme in Electrical Engineering started in 1949. The M.Tech courses were progressively introduced over the years. The Department started its Five year Integrated Dual Degree program leading to Master's degree with specialization in Power Electronics in the year 2006.

I-DAPT Hub Foundation

The Department of Science and Technology, Government of India has identified Data Analytics and Predictive Technologies (DAPT) as one of the domain areas of Technology Innovation Hub (TIH) under India's National Mission on Interdisciplinary Cyber Physical System (NM-ICPS). DST has identified IIT (BHU) Varanasi as one of the institutes for establishing TIH under this scheme. As a part of this development, I-DAPT Hub Foundation, IIT (BHU), a non-profit section 8 company is established.

About NaMPET

National Mission on Power Electronics Technology (NaMPET) is a national mission programme launched by the Ministry of Electronics and Information Technology (MeitY), Govt. of India, with a vision to provide the country with the capability to become a dominant player in Power Electronics Technology. Through this national level R&D programme, research, development,

COURSE OBJECTIVES

1. Provide a useful interactive platform for scientists, researchers, and practicing engineers in the field of Emerging Trends in Electric Vehicles (EVs). The exchange of technical ideas will lead to a better understanding of state-of-the-art research in specific areas of Electric Vehicles (EVs), renewable integration for EV charging, and EVs for grid stabilization. Feedback from the industry participants might be interesting when formulating research problems.
2. Discuss the present status, challenges, and future prospects of topologies for EV charging infrastructure.
3. Focus on “Green Energy” and “Sustainable Development.” Demonstrate the significance and requirement of renewable power integration in grid-connected and isolated EV charging.
4. Examine the challenges associated with the high penetration of renewable energy sources (RES). Adoption of power electronic converters with EVs for Vehicle to Grid (V2G) and Grid to Vehicle (G2V) to improve “Grid Resilience, Grid Inertia, and Grid Voltage Regulation.”

COURSE CONTENT

1. High power density converters for Electric vehicles
2. Advances in Electric Vehicle Charging Infrastructure
3. Multilevel converters for EV charging and propulsion
4. Virtual Synchronous Generator for Effective Utilization of Energy Storage
5. Advanced Battery management system Electric vehicles
6. Integrated onboard battery chargers for PEVs
7. Multiphase machines for Electric vehicle propulsion
8. High gain converters for certain Power Electronic applications
9. Electromagnetic design and analysis of high-frequency transformers
10. Planar magnetics structure for power converters
11. EV Energy storage and renewable penetration in the grid

ORGANIZING COMMITTEE

PATRON

Prof. Amit Patra, Director, IIT (BHU) Varanasi

CONVENOR

Prof. Santosh K Singh, Department of Electrical Engg,
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CO-ORDINATORS

Dr. Naveen Yalla

Dr. N.K. Swami Naidu

Dr. Chinmaya K A

Department of Electrical Engineering
IIT (BHU) Varanasi

TARGET AUDIENCE

Students pursuing Engineering, Professionals working in the Electronic/Electric Industry, Research students & Teaching professionals & faculties.

DURATION OF THE PROGRAM

This short-term course will be conducted from 21-25 October 2024

HOW TO APPLY

A registration form (google form) should be sent to prateek.ra.eee24@itbhu.ac.in on or before 10th October 2024.

GOOGLE FORM LINK

https://docs.google.com/forms/d/e/1FAIpQLSdD1zU4fNZorXVGLJVzfd_1qs4s0f42afLvbh8-Ah1v12glzg/viewform



REGISTRATION FEES (Including GST)

UG/PG/PhD students - INR 500 /-

Academicians/Scientists/Researchers - INR 1000 /-

Delegates from Industries - INR 1500 /-

Registration fee includes a registration kit, high tea, and lunch. The selection is based on a first-come, first-serve basis, depending upon the availability of seats.

PAYMENT DETAILS

The payment is to be made online by NEFT/ RTGS to the IIT (BHU) Varanasi Bank Account. Details are as follows:

A/C Name: **IIT (BHU) – Main Account (Institute Development Fund)**

Bank Name: **State Bank of India**

A/c No: **32778803937**

IFSC Code: **SBIN0011445**

BOARDING AND LODGING

Accommodation may be provided on a sharing basis, subject to availability.

Note: The participants will not be paid any TA/DA.