



MMTTC IIITDM KANCHEEPURAM

Short Term Programme on **Sustainable Smart Energy Technologies**

About MMTTC:

The Malaviya Mission Teacher Training Center (MMTTC) at IIITDM Kancheepuram is funded by the Ministry of Education (MoE) under the Malaviya Mission Teacher Training Programme. The mission aims to transform higher education by integrating Indian values and ethos into teaching, research, publications, patents, and institutional development. Established as one among the 116 centers in the country, the MMTTC at IIITDM Kancheepuram focuses on design and manufacturing education. It develops e-learning materials, low-cost laboratory instruction modules, and innovative projects for students and teachers.

Date: 25th - 30th November 2024

Online

About the Programme :

Increasing emphasis on delivering the energy demand through green energy sources has led to a significant development of renewable energy sources like solar and wind. Since 2014, the installed capacity of solar energy has increased approximately 30 times from 2.6 GW to 70.1 GW and wind energy increased from 21 GW to 42.6 GW. The Government of India has an ambitious target to achieve 100 GW of solar capacity, including 40 GW from rooftop solar, by 2026. The rapid growth in wind and solar power generation has incentivized researchers, investors, governments, and policy makers to look for alternate technology and business models to achieve this target. Power generation and supply systems, in the form of grid connected distribution systems and off-grid microgrids, are evolving as a promising technology option. This technology offers advantages of higher conversion efficiency, and offers future potential with an increasing component of loads in the overall lead portfolio. With the technical developments in energy storage technology and its increasing cost effectiveness, smart grids at the power distribution level are evolving at a steady pace, consisting of distributed generation, loads and energy storage systems. The uncertainty in renewable generation based smart grids is likely to impact power system operation, its security, reliability, load balancing, and other operational parameters. Added to these, large scale deployment of electric vehicles (EV) is likely to pose operational challenges for system protection, control, and stable energy markets. Further, there is a growing interest in LED lighting, variable speed drives, digital appliances, data centers and telecommunication systems.



In the light of these developments, it is imperative to explore and understand the underlying changes for the same, and the future it holds. These relate to evolution happening in power electronic semiconductor technology, deployment of various components such as evolving power converters technologies, wind and PV generation systems, EVs and battery storage. This short term programme delves on multiple aspects of renewable energy conversion in smart-grids, both at the component level as well as the system level. The proposed programme intends to fulfill the existing knowledge gap, by developing on the fundamentals of wind energy system, smartgrid, demand response, power converter topologies, home energy management, control systems and electric vehicles.

Topics covered:

- ◆ Fundamentals of Wind Energy Conversion System
- ◆ Grid Connected and Off-Grid renewables
- ◆ Maximum Power Point Tracking Algorithms
- ◆ Power Converter Topologies for Renewables and EV
- ◆ Building Energy Management System
- ◆ Implementation and Prototyping Techniques
- ◆ Battery Storage and Electric Vehicle Integration
- ◆ Virtual energy Storage System
- ◆ Microgrids: Challenges and Issues
- ◆ IoT and Cyber Security in Smart Grid
- ◆ Other relevant topics in Smart Energy Systems

Registration Fees:
NIL

Registration:

1. Register and login as a participant in mmc.ugc.ac.in 
2. In the dashboard click on "Apply for Guru Dakshtha (FIP), Refresher Course & Short Term Programme"
3. Select Apply for "Short Term Programme" and from the dropdown select the Programme Name and Center Name as "Indian Information of Information Technology, Design and Manufacturing, Kancheepuram (25/12/2024 - 30/11/2024)"
4. Choose the title from the dropdown menu and enter the remaining personal information including year of joining, total years of experience etc.
5. Upload the NOC on Institute/College/University letterhead as per the format provided here 
6. Click on Submit to complete the registration process

Resource Persons :

The course content will be delivered from a pool of resource persons leading prestigious academic institutions, research labs and industry.

Eligibility:

Faculty members working in universities and colleges that are included under Section 2(f) of the UGC Act are eligible to attend STP.

This programme shall be taken into consideration for fulfillment of the requirements as laid down in Career Advancement Scheme as per UGC Regulations.

Coordinator :

Dr. Vijayakumar K.

Associate Professor,
Department of Electronics and Communication Engineering,
IIITDM Kancheepuram, Chennai.
Email: vijayakumar@iiitdm.ac.in
Contact: +91 95496 59069