

Objectives of the Course

Increasing emphasis on delivering the energy demand through green energy sources has led to a quantum development of renewable energy sources like solar and wind. Among these, Solar Power installed capacity increased approx 30 times from 2.6 GW to 70.10 GW & Wind capacity increased 2 times from 21 GW to 42.6 GW since 2014. 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 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 quantum 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, smartgrids at the power distribution level are evolving at a steady pace, comprising of distributed generation, loads and energy storage systems. The uncertain generation from renewable generation based smartgrids 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 interest in noticeable growth of LED lighting, variable speed drives, digital appliances, data centers and telecommunication system.

With these developments happening, 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. Understanding these changes occurring in the power engineering, IIITDM Kancheepuram offers a short term course that delves on multiple aspects of renewable energy conversion in Smart-grids, both at the

component level as well as the system level. The proposed course intends to fulfil 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.

Course Content

The major contents of the program are

- ❖ Fundamentals of wind energy conversion system
- ❖ Grid Connected and Off-Grid renewables
- ❖ Maximum Power Point Tracking Algorithms
- ❖ Power Converter Topologies for Renewables
- ❖ 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 Smartgrid
- ❖ Other relevant topics of Smartgrid

Registration

The participants are requested to register online by using the following link

Registration Form: <https://forms.gle/6bSEY19FLUAzoNXV8>

Category	Fees
Faculty/Scholars/Professionals/Students	Rs. 1626

Nonrefundable registration fee inclusive of 18% GST. Two Sessions(FN and AN) per day. E-certificate will be provided at the end of the course. Last date for Registration: 4th April 2024.

Follow the procedures for payment in SBI Collect:

<https://www.onlinesbi.com/sbicollect/icollecthome.htm>

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Course Coordinator

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One Week Short Term Course (online mode)

on Sustainable and Smart Grid Technologies

17th – 21st April, 2024

Self Sponsored Category



<https://www.youtube.com/watch?v=ujtJyW30P60>

Organized by

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