

Thus, the secure, reliable and stable operation of power system demands a sound knowledge for its characteristics modeling, operation, control and protections.

Scope of STTP

The main objective of this training program is to enhance the knowledge of the participants with the recent trends in emerging power system operation, control and protection. Strict frequency regulations, protection and stability are the major challenges for the power grid operating as one nation-one grid. On the other hand, addressing uncertainty, resiliency, reliability, power quality and demand side management are the major challenges for operating RES penetrated microgrid/smart grid. This training program will cover in-depth discussion and deliberations on these various challenges faced by the traditional power grid as well as emerging microgrid/smart grid. The broad contents of the program are:

- Fundamentals of power system operations, control and protection
- Grid integration of Renewable Energy Sources (RES)
- Smart grid, distributed generation, micro-grid control
- Power quality, active filters, control of inverter interfaced RES
- Power system protection, Synchrophasor technology, Wide Area Measurement Systems (WAMS)
- Hands on experimentation power system protection
- Lab session for power system analysis software

The eminent professors, researchers and engineers from industry contributing in these areas will deliver the lectures during the program and share their experience and expertise with the participants.

Registration Fees

UG/PG Students	Rs. 1000/-
Research Scholars/Academia	Rs. 1500/-
Industry/R&D Organizations	Rs. 2500/-

The faculties from the academic institutions, persons from the industries, research scholars and the UG/PG students can participate in the program. Eight lecture sessions and three lab sessions are planned during the program. The registration fees for the participation include the charges for refreshment, lunch and registration kit. All payment should be made by a demand draft drawn in favor of "Pandit Deendayal Petroleum University" payable at Ahmedabad. The participant must register online on the link given below,

<https://docs.google.com/forms/d/13tyuZ8nmMqI2kEG3Zn31tf-ouPOK8jOuKv0cCjZCHxA/edit?usp=sharing>

or before **February 20, 2020** and attach registration form and demand draft.

Chief Patron

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Short Term Training Program

On

Advanced Trends in Electrical Power Systems

04-06 March, 2020

Organized By:

**Department of Electrical
Engineering
School of Technology (SoT)
Pandit Deendayal Petroleum
University, Gandhinagar**



About The University

Pandit Deendayal Petroleum University (PDPU) has been established by Gujarat Energy Research Management Institute (GERMI) as a Private University through the State Act with a vision *“To emerge as a world class Institution of Excellence in Energy Education, Research and Innovation which will prepare and sensitize the youth and ultimately the society for radical yet sustainable societal transformation”*. This objective is being addressed through a number of specialized and well-planned undergraduate, postgraduate programs and intense research initiatives in the domain of science, technology, management and humanities. PDPU has been promoted by Government and Industry to create a world class University to cater the need for trained and specialized human resource with special focus on energy sector.

PDPU got NAAC accreditation with “A” grade and CGPA of 3.39 out of 4 point scale. PDPU is the only private college in Gujarat to get the autonomous status by the University Grant Commission (UGC) in 2018 among other 60 better performing central, state and private universities in country. At present University has several research projects sponsored by various organizations and Industries. Government of India, Ministry of Science and Technology, Department of Scientific and Industrial Research have accord recognition to Pandit Deendayal Petroleum University (PDPU), Gandhinagar as Scientific and Industrial Research Organization (SIRO). The university aims to get the status of “Institute of Eminence (IoE)” and to achieve status of world Class University in near future.

About The Institute

School of Technology (SoT) is a constituent school of Pandit Deendayal Petroleum University (PDPU). SoT is a leading institute

offering multidisciplinary undergraduate, postgraduate and Ph.D. programmes in Engineering. SoT offers currently B. Tech., M. Tech. and Ph.D. Programmes in Electrical, Mechanical, Civil, Computer, Information and Communication Technology and Chemical Engineering. SoT aims to provide holistic and high quality professional education to the students. It also aims to carry out R&D and strong industry-academic interaction to advance, apply and disseminate knowledge for the benefits of society.

About The Department

The Department of Electrical Engineering has been established in 2010 since the inception of SoT. It offers B. Tech., M. Tech. with specialization in power systems and Ph.D. programs. The department has qualified and experienced faculty members with specialization in diversified areas of electrical engineering. It has state-of-art laboratories with modern equipment and software package so that the students have better opportunity to learn practical aspects of engineering problems. Department has specialized electrical software such as PSCAD, ETAP, MATLAB/Simulink, PSIM, MiPower and DSPACE 1103 for real time digital simulation.

About STTP

The power sector in India has now transformed to one national grid with an installed capacity of 360 GW as on 31st July, 2019, meeting the peak demand in range of 130-160 GW daily. Thus, India has a surplus power generation capacity and over the years there has been a marked decline in the energy deficit. Maintaining reliability, security, sustainability, stability and scalability of this traditional power

grid are the biggest challenges for the power system operators. The power network has now been compensated by FACTS devices and HVDC multi terminal transmission lines are in operation to transfer large chunks of power over very long distances. The advancement in numerical relaying and wide area measurement technologies has enhanced the power system stability significantly.

On the other hand, with the ambitions of reducing carbon emissions and enhancing energy security and affordability, the integration of distributed generators (DGs) into electrical power systems is being widely promoted by countries across the globe. Medium voltage (MV) distribution networks, to which DGs are connected directly (e.g., wind farms) or through the aggregation of installations in low voltage networks (e.g., residential-scale photovoltaic systems), are already facing technical challenges in areas where clusters of DG exist. Voltage excursions, thermal overloading and power quality are among the dominant issues that limit the ability of MV networks to host large volumes of DG.

Moreover, there is a dramatic change in the nature of electrical energy consumption, as the load of electronic devices has become the fastest growing element of the total electricity demand and new sources of high electricity consumption have been expected to penetrate in a grid such as Electric Vehicles (EVs). The power grids endure a significant wastage of energy due to a number of factors, such as consumers’ inefficient appliances and lack of smart technology, inefficient routing and dispensation of electrical energy, unreliable communication and monitoring. In order to address these challenges, the smart grid has emerged with advanced metering infrastructure (AMI), smart meters, fault tolerance, unauthorized usage detection, demand side management and self-healing function.