

# Training Calendar

October - December, 2019

"एनपीटीआई के साथ, पावर सेक्टर का सुनिश्चित सम्पूर्ण विकास"



Fifty Years of Service to the Power Sector



राष्ट्रीय विद्युत प्रशिक्षण प्रतिष्ठान  
National Power Training Institute

विद्युत प्रणाली प्रशिक्षण संस्थान

Power Systems Training Institute  
(Ministry of Power, Govt. of India)

(An ISO 9001: 2015 & ISO 14001: 2015 Organization)

Bangalore- 560070



## Circular Letter

Sir,

### **Sub: Circular letter inviting nominations for the training courses - reg.**

The National Power Training Institute (NPTI), Power Systems Training Institute (PSTI), Bengaluru invites nominations for the following courses proposed to be conducted during the **October - December, 2019** quarter. Further details of Courses and General Information are enclosed herewith.

Sl. No.	Course	Period	Course fee for Indian participants in Rupees including GST@18%	
			Non-Residential	Residential
1	HVDC Transmission Systems	09 - 11 Oct., 2019	Rs.15,340/-	Rs.17,110/-
2	Electrical Safety and Inspection of Electrical Installations, Accident Prevention, Recent Trends	16 -18 Oct., 2019	Rs.15,340/-	Rs.17,110/-
3	High Voltage Testing of Power System Equipment	23 – 25 Oct., 2019	Rs.15,340/-	Rs.17,110/-
4	Power System Communications SCADA & EMS	28 – 30 Oct., 2019	Rs.15,340/-	Rs.17,110/-
5	Renewable Energy Sources and Grid Integration	28 Oct., – 02 Nov., 2019	Rs. 28,320/-	Rs. 39,471/-
6	Energy Conservation and Energy Audit in Process Industries	06 – 08 Nov., 2019	Rs.15,340/-	Rs.17,110/-
7	Power System Operation	18 – 30 Nov., 2019	Rs. 38,940/-	Rs.61,242/-
8	Power cables and Jointing Techniques	20 – 22 Nov., 2019	Rs.15,340/-	Rs.17,110/-
9	Familiarization on Despatcher Training Simulator	02 – 14 Dec., 2019	Rs.56,640/-	Rs.78,942/-
10	O&M, Testing of Power Transformers and HT Circuit Breakers	04 – 06 Dec., 2019	Rs.15,340/-	Rs.17,110/-
11	SPV (Solar Photo Voltaic) Power plant - Integration with Grid and Storage Batteries	11 – 13 Dec., 2019	Rs.15,340/-	Rs.17,110/-
12	Selection, O&M and Condition Monitoring of Large Electrical Motors and Generators for Industries and Power Plant Applications	18 – 20 Dec., 2019	Rs.15,340/-	Rs.17,110/-

It is requested that the nominations for these courses may please be sent so as to reach this office at least 7 days before the commencement of the course by Post/Fax/Email.

It is also requested to furnish the fax, email addresses and telephone Nos. of the sponsoring authorities and the sponsored candidates for fast communication. All payments in respect of the above short term courses shall be done in advance as given in general information enclosed.

(Dr. V. VIDYASAGAR)  
Director

Encl.: As above

**October, 2019**

<b>1. HVDC Transmission Systems</b>		
Duration: 03 days	Non-Residential course fee inclusive of GST per participant	Residential course fee inclusive of GST per participant
<b>Schedule:</b> 09 - 11 Oct., 2019	Rs.15,340/-	Rs.17,110/-
<b>Course Outline:-</b> Introduction to HVDC, Principles of HVDC Conversion, HVDC Lines, HVDC Sub Stations, Reactive Power Management in HVDC Stations, AC & DC harmonics and filtering, HVDC System operation, control and maintenance, HVDC Protection, Insulation Co-ordination, Emergencies and case studies and Field visits		
<b>2. Electrical Safety and Inspection of Electrical Installations, Accident Prevention, Recent Trends</b>		
Duration: 03 days	Non-Residential course fee inclusive of GST per participant	Residential course fee inclusive of GST per participant
<b>Schedule:</b> 16 -18 Oct., 2019	Rs.15,340/-	Rs.17,110/-
<b>Course Outline:-</b> Overview & Safety Requirements of IE Rules, Design of Electrical Installations, Earthing System Design, Circuit Breakers and Protective Relays, Basic Protection schemes of power equipment, Inspection procedures for statutory inspection by Electrical Inspectors, Check points in Electrical Inspection, Pre-commissioning tests of Transformers, Switchgears and Power Cables, First Aid and Fire Fighting Practices in Industrial Installations / Substations and Field Visits		
<b>3. High Voltage Testing of Power System Equipment</b>		
Duration: 03 days	Non-Residential course fee inclusive of GST per participant	Residential course fee inclusive of GST per participant
<b>Schedule:</b> 23 – 25 Oct., 2019	Rs.15,340/-	Rs.17,110/-
<b>Course Outline:-</b> High voltage technology, Solid insulating media, liquid insulation media, Gas & Vacuum Insulation, Generation of high voltages for testing, High voltage measurements, High voltage testing of transformers, Testing of Circuit Breakers, Testing of Surge Arrestors, Testing of Insulators, Cables, Capacitors, High Power Testing of switchgear, Partial Discharges and Field visits		
<b>4. Power System Communications SCADA &amp; EMS</b>		
Duration: 03 days	Non-Residential course fee inclusive of GST per participant	Residential course fee inclusive of GST per participant
<b>Schedule:</b> 28 – 30 Oct., 2019	Rs.15,340/-	Rs.17,110/-
<b>Course Outline:-</b> Data Acquisition System, Supervisory Control, Communications – VSAT, Microwave, Optical fibre, Communication networks & Protocols, SCADA in Transmission and Distribution, EMS Hardware: SCADA, control centre, EMS Software: SCADA & Database, EMS Software: Generation applications, EMS Software: Network applications and Field Visits		

## 5. Renewable Energy Sources and Grid Integration

Duration: 06 days	Non-Residential course fee inclusive of GST per participant		Residential course fee inclusive of GST per participant	
<b>Schedule:</b> 28 Oct., – 02 Nov., 2019	Sponsored by SLDC	Others	Sponsored by SLDC	Others
	Nil	Rs. 28,320/-	Rs. 11,151/-	Rs. 39,471/-
<p><b>Course Outline:-</b> India and World RE Power scenario, Energy Efficiency and Climate Change obligations, Overview of small Hydro Technologies, Overview of Bio-mass and Bagasse technologies, Overview of Solar Energy Technologies, latest trends, built-in protections and features to support grid connectivity, Overview of Wind Energy Technologies, latest trends, built-in protections and features to support grid connectivity, RE grid integration - Issues, Challenges, (Intermittency, Variability and Unpredictability), Causes and Impact, Forecasting, Scheduling and Deviation Settlement mechanism of Wind and Solar RE at Inter-state and Intra-state level, Steady State &amp; Dynamic modelling of WTG &amp; Grid Connected Solar, Power Quality Issues, FACTS applications, Rectifier, Inverter and Power Conditioning Systems in RE integration, CEA Standards on RE, RE Tariff Regulations and Grid Connectivity, Grid Connected Solar Roof Top SPV Generation – Challenges, issues in its implementation and Energy Storage options and experiences from the other countries.</p>				

**November, 2019**

## 6. Energy Conservation and Energy Audit in Process Industries

Duration: 03 days	Non-Residential course fee inclusive of GST per participant		Residential course fee inclusive of GST per participant	
<b>Schedule:</b> 06 – 08 Nov., 2019	Rs.15,340/-		Rs.17,110/-	
<p><b>Course Outline:-</b> Potential areas in the Power Industries for energy saving, Energy Saving methods with typical examples and exercises for electrical substations, Ways to minimise losses in power transmission &amp; distribution system, Better use of electrical energy, Proper storage and use of fuel, Waste Heat areas and their utilization, Co-generation techniques for energy boosting, Energy Management system, energy auditing and their implementation techniques for power industries.</p>				

## 7. Power System Operation

Duration: 2 weeks	Non-Residential course fee inclusive of GST per participant		Residential course fee inclusive of GST per participant	
<b>Schedule:</b> 18 – 30 Nov., 2019	Sponsored by SLDC	Others	Sponsored by SLDC	Others
	Nil	Rs. 38,940/-	Rs. 22,302/-	Rs.61,242/-
<p><b>Course Outline:- Power Sector Overview, Policy, Legal framework,</b> Power sector overview in India, Hydro station layout, startup, shutdown and emergency response, Electricity Act 2003, Legal Framework, policies &amp; regulations and organizational set up in India, EHV AC Substations: Layout, Equipment &amp; Bus arrangements, Gas Insulated Sub-Station, Ring Fencing of System Operation &amp; Independent functioning of Load Despatch Centers, Thermal station Layout, startup, shut down and emergency response. New technologies, Smart Grid Operations- Prevailing practices and future roadmap, CEA Grid connectivity standards, Grid Standards, Regulations, Metering Standards.</p> <p><b>Power System Operation and Control,</b> Frequency control-Primary, Secondary and Tertiary Control and RGMO; Reactive power management, Indian Electricity Grid Code, Protection of Generators and transformers, Protection of Bus Bars and Distribution Systems, Impedance protection- fault loops, impedance relay characteristics, reactance, impedance, admittance (MHO), quadrilateral, special characteristics, faults affecting impedance relay performance, Fault resistance, load encroachment, remote in feed, mutual induction; System protection schemes, Protection for abnormal frequency and voltages.</p>				

**Power Market Operation**, Power system reliability, TTC / ATC Computations and Ancillary Services in Indian Electricity Market, POC Tariff Philosophy and Transmission Losses, Open Access Regulations and Long Term & Medium Term Access and connectivity with Regional and States Perspectives, Metering and settlement principles, Power Exchange Operations, Regional energy, UI and reactive energy account, Terms and condition of Tariff Regulations, Renewable energy in Power Sector, Integration of Renewables, REC Mechanism & RRF,

**Power System Logistics-SCADA, Communications & IT, Energy Management System**  
 State estimation techniques, Energy Management Systems: Load Forecasting and Network Study, UI and Congestion Charge Regulations, SCADA/ EMS- Overview, Architecture, Main Components; Communication Systems- Overview, VSAT, Microwave, Optical Fibre etc., Hardware Protocols, Configuration, Communication network, System software – Displays, Database; Disturbance data collection modules / HDR retrieval & playback, HIM, Trends, Alarms, Health check, trouble shooting;

**Labs & Assessments-** DTS Lab, Relay Testing Lab, **Technical Visits-** Visit to SRLDC, HVDC Substation

### 8. Power cables and Jointing Techniques

Duration:	Non-Residential course fee inclusive of GST per participant	Residential course fee inclusive of GST per participant
<b>Schedule:</b> 20 – 22 Nov., 2019	Rs.15,340/-	Rs.17,110/-

**Course Outline:-** Design & construction of Power Cables, Testing of cables, Testing of cable accessories, Demo on Cable Jointing, Failure of cables and case studies, Condition monitoring of power cables, Power cable jointing techniques and Field Visits

**December, 2019**

### 9. Familiarization on Despatcher Training Simulator

Duration: 06 days	Non-Residential course fee inclusive of GST per participant		Residential course fee inclusive of GST per participant	
<b>Schedule:</b> 02 – 14 Dec., 2019	Sponsored by SLDC	Others	Sponsored by SLDC	Others
	Nil	Rs.56,640/-	Rs.22,302/-	Rs.78,942/-

**Course Outline:-** Dispatcher Training Simulator Overview, DTS Laboratory Session (MMI Controls), Active Power Despatch, DTS Laboratory Session (Frequency Controls), Reactive Power Despatch, DTS Laboratory Session (Voltage Controls), DTS Laboratory Session (SCADA Operations), DTS Laboratory Session (Transaction Scheduling), DTS Laboratory Session (Islanding and Re-synchronisation), DTS Laboratory Session (Prevention of System Occurrences), HVDC Systems, DTS Laboratory Session (HVDC Controls), EMS Applications (AGC, State Estimation and Optimal Power Flow), DTS Laboratory Session (EMS Applications), System Restoration and Review of DTS Laboratory Sessions

### 10. O&M, Testing of Power Transformers and HT Circuit Breakers

Duration:	Non-Residential course fee inclusive of GST per participant	Residential course fee inclusive of GST per participant
<b>Schedule:</b> 04 – 06 Dec., 2019	Rs.15,340/-	Rs.17,110/-

**Course Outline:-** Transformers – construction, connections, Tap changing mechanism & parallel operation, Selection & sizing of transformers, transformer neutral earthing & substation earthing practices, Testing of transformers, Condition monitoring of transformers, Protection of Transformers, Maintenance of transformers, Application & design of Air & Gas Insulated circuit breakers, Selection & sizing, performance analysis of circuit breakers, O&M testing, condition monitoring of circuit breakers and Field Visits

<b>11. SPV (Solar Photo Voltaic) Power plant - Integration with Grid and Storage Batteries</b>		
Duration:	Non-Residential course fee inclusive of GST per participant	Residential course fee inclusive of GST per participant
<b>Schedule:</b> 11 – 13 Dec., 2019	Rs.15,340/-	Rs.17,110/-
<p><b>Course Outline:-</b> Overview of renewable energy in India – Feasibility studies, Introduction to PV Technology Basic of Solar Cell &amp; PV modules – Engineering Process Technology, Solar charge controller – types, Basic of Solar Inverter, Introduction to SPV Design: Types of SPV system &amp; their components, Basic understanding of SPV System Integration, On Grid/Hybrid/Grid-interactive SPV System, SPV Project implementation, basic criteria, requirements, standards &amp; Procedures, Manufacturing Technology of Solar PV Modules and Field Visits</p>		
<b>12. Selection, O&amp;M and Condition Monitoring of Large Electrical Motors and Generators for Industries and Power Plant Applications</b>		
Duration:	Non-Residential course fee inclusive of GST per participant	Residential course fee inclusive of GST per participant
<b>Schedule:</b> 18 – 20 Dec., 2019	Rs.15,340/-	Rs.17,110/-
<p><b>Course Outline:-</b> Maintenance – Introduction, types scheduling, Testing &amp; Requirements of CBM, On-line monitoring system of Rotating machines including partial discharge monitoring for stator windings &amp; Rotor Flux Monitoring system for Turn shorts and case studies, On-line vibration monitoring system &amp; case studies – turbo generator &amp; HT Motors and Field Visits</p>		

## General Information

### 1. Entry requirements:

- Engineers / Supervisors / Faculty of Private and Government Institutions/ Power Corporations / Utilities / Companies and Technical Educational Institutions may participate in the programs. The TA & DA of the participants have to be borne by the sponsoring authorities.
- The participants shall report at 9:30am on the first day of training program at PSTI.

### 2. Mode of Payment:

- Payments must be in the form of **e-transfer / DD** only in favour of **Power Systems Training Institute payable at Bangalore**.
- Name of the trainee & course shall be written on the backside of the DD.
- The bank transaction id and date shall be sent by mail to [pstinpti@yahoo.com](mailto:pstinpti@yahoo.com) in case of e-transfers.

### Bank Details in case of e-transfer:

- Name of the Beneficiary : Power Systems Training Institute, Bangalore
- Name of the Bank & Branch : State Bank of India, Banashankari II Stage Branch
- Address of the Branch : 9<sup>th</sup> Main Road, Banashankari-II Stage, Bangalore: 560070
- NEFT IFSC Code : SBIN0006767
- Account Type : Current
- Account No. : 10031210203
- MICR No. : 560002008
- RTGS IFSC Code : SBIN0006767
- GSTN: : 29AACAN2698A4ZG
- Pan No.: : AACAN2698A
- Tan No: : BLRP00338C
- SAC (Service Accounting Code) : Commercial Training 999293

**Note:** PSTI is a non-profit making educational institute. It does not come within the purview of I.T Act for deduction of tax at source vide 10(23C) (iii ab) of I.T Act 1961. Hence no tax deductions at source shall be done against PSTI payments. TAN No: BLR P00338C, PAN No.AACAN2698A.

**3. SLDC Nominations for System Operation Courses: (Sl. No. 5, 7 & 9) "In line with the CERC's directions in response to Petition No. 222/MP/2015 dated 6.11.2015, the SLDC Incharge, sponsoring their executives to NPTI, PSTI's System Operation Courses (both Basic Level and Specialist Level), is requested to submit an undertaking that the SLDC system operators whose training is funded through LDC Fund will not be transferred from SLDC for at least 1½ (one and half) year from the date of completion of the training".**

### 4. Address for correspondence:

- Nominations shall be sent at least 7 days before commencement of the course/workshop.
- Contact Persons: Sh. Dr. V. Vidyasagar, Director : +919421801203  
Sh.Pamu Srinivasa, Deputy Director (Training) : +919448213089

The Head of Institute, Power Systems Training Institute, NPTI Near Yarab Nagar Bus Stop Banashankari 2nd Stage, Bangalore-560070, Karnataka State, India.	Tele Fax: 080-26713758 Hostel: 080-26718493 Phone: 26934360, 26934362,26934363 Email: <a href="mailto:pstinpti@yahoo.com">pstinpti@yahoo.com</a> (or) <a href="mailto:pstinpti.training@gmail.com">pstinpti.training@gmail.com</a> Website: <a href="http://www.nptibangalore.in">http://www.nptibangalore.in</a>
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