PROSPECTUS FOR INTERNATIONAL STUDENTS

ADMISSION TO ONE YEAR

POST GRADUATE DIPLOMA COURSES IN

1. **Power Plant Engineering**
2. **Smart Grid Technologies**
3. **Power System Operation**
4. **Energy Market Management**
5. **Renewable Energy & Grid Interface Technologies**

2017 - 2018

NATIONAL POWER TRAINING INSTITUTE
A National Apex Body for Training in Power Sector
Established vide The Gazette of India, July 3, 1993
(An ISO 9001:2015 & ISO 14001:2015 Organization)
Ministry of Power, Govt. of India

MESSAGE FROM THE DIRECTOR GENERAL

It is my great privilege to welcome you to National Power Training Institute which is a National Apex Body for Training in Power Sector established vide The Gazette of India, July 3, 1993. NPTI is working for development of Power Sector human resources from the last 50 years.

Energy plays an important role in the development and progress of the country. With a view to build adequate technical capacity and develop economically viable Energy sector & energy efficient systems and compliance of laudable objectives of the Govt. of India, adequate scientific and technical manpower at all levels is a pre-requisite.

NPTI recognized the need for making this technically trained manpower readily available to the Power Sector in line with its present and future requirements.

Post Graduate Diploma Course in Power Plant Engineering is a successful program and has wide acceptance in the industry. Further, in view of the latest trends and modern practices in the Power sector, NPTI is launching the following four new job oriented & technologically advanced programs:

PGDC in Smart Grid Technologies
PGDC in Power System Operation
PGDC in Energy Market Management
PGDC in Renewable Energy & Grid Interface Technologies

NPTI also covers a wide range of training programs for utility professionals of the power sector in the areas of Generation, Transmission, Distribution, Power Management, Regulatory aspects etc.

Welcome to the NPTI family. You are going to witness a curriculum that is a unique blend of technical thinking and practical exposure. I sincerely hope that your learning pursuit in NPTI will be fruitful and enjoyable in every aspect and the experiences you gain here and the moments you spend here will be cherished by you all throughout your professional career.

Wish you a very happy and rigorous learning experience.

(Prof. (Dr.) Rajendra Kumar Pandey)
Director General

ABOUT NPTI

NPTI Corporate Office, Faridabad, Haryana.

National Power Training Institute (NPTI), the national apex body under the Ministry of Power, Government of India, has been engaged in the service of Human Resources Development in the country's power sector since 1965. NPTI operates on all India basis through its five Regional Institutes at Badarpur (New Delhi), Neyveli (Tamil Nadu), Durgapur (West Bengal), Guwahati (Assam), Nagpur (Maharashtra) and four specialized Institutes i.e. Power System Training Institute (PSTI) & Hot Line Training Centre (HLTC) at Bangalore, and Hydro Power Training Center (HPTC) at Nangal & Centre for Advanced Management and Power Studies (CAMPS) at Faridabad. All institutes of NPTI are fully equipped with latest state-of-art training infrastructure and expert faculties with long years of professional teaching background as well as R&D exposure. These institutes are conducting a number of training programs for Power Engineers, Operators and Technicians in the areas of Thermal & Hydro Generation and Power System. To provide off-job/hands on operation training, NPTI is equipped with three computerized full scope, fossil fuel Thermal Power Plant Simulators. Two of them of 210 MW thermal power Simulators are available at Badarpur and Nagpur Institutes and a 500 MW Simulator at Faridabad Institute. Also NPTI is having one CCGT Simulator of 430 MW at Faridabad and one 250 MW Hydro power training Simulator at HPTC, Nangal. Super Critical Thermal Simulator of 800 MW is coming up at Faridabad and also Multifunctional Simulators are coming up at 6 Institutes. NPTI also provides consultancy to the Utilities on training and technical problems

including setting up of Plant Level/State Level Training Institutes. The Regional Institutes are conducting large number of long-term and short-term courses every year. Long-term courses (52 weeks) cover the mandatory requirements under Indian Electricity Rules. In addition, these institutes are also conducting on plant/on-site training programs as per the need of the Power Sector organizations. Since inception of this organization over 2.65 Lakhs personnel at various levels have been imparted training by the Institutes of NPTI.

THE NEED FOR THE COURSE

The Indian Power Sector with approx. 314.65 GW installed capacity at present has an annual growth of 7% approx. This huge annual growth of Indian Power Sector along with technological advancements and sophistication during last few decades has, in turn, been demanding trained man power. The technical knowledge acquired from Engineering Colleges provides the basic foundation, which needs to be supplemented with the Applied Engineering skills so as to groom the engineers for efficient functioning at every stage of planning, designing, engineering, procurement, construction, commissioning, operation, maintenance, transmission and distribution of power supply industry.

NPTI recognized the need for making this technically trained manpower readily available to the Power Sector in line with its present and future requirements. It was felt that requirement of trained manpower for Power Sector could be fulfilled if the engineers after passing their engineering degree are groomed by conducting a technical course approved by the competent authority of Government of India and giving them an exposure to the theoretical as well as practical aspects.

The “Post Graduate Diploma Course in Thermal Power Plant Engineering” has been one of the many flagship programs of NPTI. Assessing the next decades requirements NPTI has now re-designed the course contents to suit the needs of the Power Sector. It is now re-named as **“Post Graduate Diploma Course in Power Plant Engineering”**. **The course profile also covers the mandatory requirements under Indian Electricity Rules.** Product of the course has promising record of employment in the power industry.

Further, in view of the latest trends and modern practices in the Power sector, NPTI is launching the following new job oriented & technologically advanced programs:

- PGDC in Smart Grid Technologies
- PGDC in Power System Operation
- PGDC in Energy Market Management
- PGDC in Renewable Energy & Grid Interface Technologies

The courses are designed to improve knowledge and enhance skill of fresh graduate engineers/working engineers who wish to make their career in power and energy sector.

WHY YOU SHOULD JOIN THE COURSE?

Energy, the world's largest industry, is undergoing a tectonic shift. Sustainable energy systems become main focus across the globe since the need to efficiently acquire low-cost, clean, and renewable energy is remarkable. The smart grid and renewable energy have recently emerged as a promising technology to motivate sustainable energy systems. Institutes, industries, and governments are all trending toward a transformation of the traditional electricity grids into smarter grids. One of the biggest challenges for the transformation is getting skilled manpower. The main aim of the courses is to create a pool of technically trained manpower readily available for recruitment to the Power Utilities.

ABOUT THE COURSES

Duration of the course is one year consisting of two semesters covering formal training at Institutes and industrial/field training. The courses cover the syllabus as per Indian Electricity Rules. Course Details are tabulated below:

S. No.	Course Name	Course Details
1.	PGDC in Power Plant Engineering	The course covers operation and maintenance of Thermal Power Plants and it satisfies the mandatory requirement of Indian Electricity Rules which stipulates that "No person shall be authorized to operate or undertake maintenance of any plant or whole of generating stations of capacity 100 MW and above together with associated sub-station unless he is adequately qualified and has undergone the specified training at a recognized training institute.
2.	PGDC in Smart Grid Technologies	The use of communications and information technologies is likely to cause major shifts in the way energy gets delivered. The objective of this course is to introduce about the smart grid technologies, their applications and control issues covering Smart Generation, Smart Transmission and Smart Distribution.
3.	PGDC in Power System Operation	Objective of the course is to provide the basics of electric power system generation, operation, and control to the students. The emphasis is on power system operation and operating mechanism/tools
4.	PGDC in Energy Market Management	The course focuses on the market structures that exist within the electric energy industry. It includes mechanism of energy markets; comparative market systems; determination of prices under different market structures; electricity market architecture; electricity market design; dispatch and new build decisions; risk and risk

		management, current and proposed policies on the energy industry etc.
5.	PGDC in Renewable Energy & Grid Interface Technologies	Focus of the course is to equip the students with technologies, economics and policy involving energy systems and supply with Renewable Energy sources. Detail expertise will be offered in Solar energy systems involving photovoltaic as well as thermal energy systems, wind energy, biomass, Geothermal, Tidal and Wave energy, Hydrogen & Fuel cells, Small Hydro along with problem associated with grid integration of all the sources and concept of SMART grid

The modules of the course are listed in the detailed curriculum. The sequences of these modules are not rigid and may be modified suiting to requirements of power companies.

List of Modules for PGDC Courses

Subject / Module - First semester				
PGDC in Power Plant Engineering	**PGDC in Smart Grid Technologies**	**PGDC in Power System Operation**	**PGDC in Renewable Energy & Grid Interface Technologies**	**PGDC in Energy Market Management**
Power Plant Introduction & Industrial Safety	Evolution of the Indian Power Sector	Evolution of Indian Power Systems	Energy Resources and Conventional Energy Systems	Energy Resources and Electricity Generation Options
Power Plant Familiarization	Legislative & Regulatory Framework	Legislative and Regulatory Framework	Applied Heat and Power Technology	Transmission Networks
Power Plant Briefing & Scheme Tracing	Managerial & Interpersonal Skills	Managerial and Interpersonal Skills	Legislative and Regulatory Framework	Power System Operation and Management
Power Plant Operation	Communication Skills and Technical Writing	Communication Skills and Technical Writing	Managerial and Interpersonal Skills	Electricity Industry Structure and Regulations
Rotational On-Job (Operation)	Smart Grid Policy and Regulations	Elements of Power System	Energy Economics	Overview of Economic Theory
Erection, Commissioning & Construction Management	Introduction to Traditional Power Systems	Principles of Power System Operation	Communication Skills and Technical Writing	Commercial Systems & Transmission Pricing
Power Plant Performance & Efficiency Calculation	Introduction to Smart Grids.	Power System Stability and Control -I	Solar Thermal Systems	Electricity Markets Design
Power Plant Chemistry, Metallurgy ,NDT & Welding	Smart Grid Control Elements& Internet of Things	Reactive Power Management	Solar Photo-Voltaic Systems	Managerial and Interpersonal Skills
Gas turbine & Combined Cycle Power Plant	Smart Distribution technologies	Power System Analysis	Grid Interface Technologies -I	Communication Skills and Technical Writing
Advanced Steam Generation Technology-Supercritical and FBC	Energy storage, micro-grids, alternative grid designs,	**On Job Training** and Site Visits to Transmission Substation/O & M of Substation/ Switchyard/NLDC/ HVDC/FACTS facility	Tariff and Commercial Aspects	Visits to IEX/PXIL/RLDC
Business Communication & Personality Development	Demand Side Management & Demand Response	**On Job Training** on Load Dispatch Simulator and Power Systems Lab /HV Lab	Contracts Management	-
			On Job Training / Visits to Solar Thermal/ Solar PV and other RE sites and Laboratory work	-
FIRST SEMESTER EXAMINATION				

Subject / Module - Second semester				
PGDC in Power Plant Engineering	**PGDC in Smart Grid Technologies**	**PGDC in Power System Operation**	**PGDC in Renewable Energy & Grid Interface Technologies**	**PGDC in Energy Market Management**
Power Plant Protection	Communications and Interoperability	Legislative and Regulatory Framework - II	Wind Energy and Small Hydro	Load Dispatch Simulator Training
Energy Audit	Load Forecasting	Commercial Aspects and Contracts Management	Bio Mass& Bio Energy and Waste to Energy	Investing in Generation and Transmission
Maintenance Planning & Cost Control	Energy Management Systems	Transmission Pricing	Hydrogen and Fuel Cells	Ancillary Services Markets
Nuclear Power Plant Familiarization	Smart Grid Operations	Power System Stability and Control -II	Geo-thermal, Tidal and Wave Energy	Operation of Market Oriented Power Systems
Renewable and Hydro Power Plants	Smart Grid Controls & Smart Power Flow controllers and Intelligent Automation	Power Systems Planning and New Technologies	Co-Generation&Hybrid Systems	Electricity Storage Technology and Management
Maintenance Practice & Inspection	Smart Grid Applications Layer	System Security and Reliability	Energy Storage Technologies	Managing Risk
Design Analysis	Cyber Security	Smart Power Flow Controllers and Intelligent Automation	Appraisal & Financing of Renewable Energy Projects	Integration of Renewables and Effect on Power Markets
Load Dispatch	Integration of Legacy Systems	Power Markets	Energy, Environment and Sustainable Development	Introduction to Smart Grids
Power Reforms and regulations	E-mobility	Ancillary Services Management	Grid Interface Technologies – II	Power System Optimisation
Control & Instrumentation	Integration of RE Sources -II	SCADA / EMS and IT & Telecommunication Systems	Smart Power Flow Controllers and Intelligent Automation	Smart Power Flow Controllers and Intelligent Automation
IT Application in Power Sector & GIS	Smart Grid as enablers for Smart Cities	Protection Systems	On Job Training/ Visits to RLDC/SCADA facility	Cyber Security in Power Systems
Environment Management	International Benchmarks and Lessons learnt	Power System Operation in emergency	-	Climate Change and the impact on Energy Systems
Rotational On Job (Maint.)	Smart Grid Maturity Models	Power System Restoration	-	Power Market Simulation Lab
Training & visit to Mfrs. Works	Pilot Projects/ Case Studies and Business Models for Smart Grids	Optimization Techniques and MATLAB	-	-
Simulator Training (2-weeks will be imparted at Faridabad /Badarpur/ Nagpur/ in batches)	Visits/ Lab./Simulation	Power Markets Simulation Lab.	-	-
Project Presentation				
Second Semester Examination				

Note: The students have to select Topics for the Project before commencement of the second semester and complete by the end of second semester.

AVAILABILITY OF SEATS FOR INTERNATIONAL CANDIDATES:

For International Candidates, following is the availability of seats:

PGDC Course	Number of seats available	
	NPTI, Faridabad	NPTI (PSTI), Bengaluru
Power Plant Engineering	5	-
Smart Grid Technologies	5	5
Power System Operation	5	5
Energy Market Management	5	5
Renewable Energy & Grid Interface Technologies	5	5

WHO CAN APPLY

ELIGIBILITY:

PGDC Course	Eligibility
(1) Power Plant Engineering	Bachelor's degree or its equivalent with minimum 60% marks (or Equivalent grade point) in Mechanical/ Electrical /Electrical & Electronics / Power Engineering and related branches
(2) Smart Grid Technologies	Bachelor's degree or its equivalent with minimum 60% marks (or Equivalent grade point) in Electrical /Electrical & Electronics /Electronics & Communication /Computer Science/ Information & Communication Technology and related branches
(3) Power System Operation	Bachelor's degree or its equivalent with minimum 60% marks (or Equivalent grade point) in Electrical/Electrical & Electronics/Power Engineering and related branches
(4) Energy Market Management	Bachelor's degree or its equivalent with minimum 60% marks (or Equivalent grade point) in Electrical /Electrical & Electronics / Power Engineering and related branches
(5) Renewable Energy & Grid Interface Technologies	Bachelor's degree or its equivalent with minimum 60% marks (or Equivalent grade point) in Electrical /Electrical & Electronics /Power Engineering and related branches

Those appearing in their final year examination can also apply. However, they must submit **their final degree/provisional degree certificate at the time of admission.**

AGE LIMIT

There is no age limit for admission to PGDC courses.

SELECTION CRITERIA FOR ADMISSION

Candidates will be short listed on the basis of their percentage marks/ grade points obtained in qualifying degree.

COURSE FEE

US$ 20,000 + Service Tax @15%*

*Subject to Govt. of India Notification /prevailing at the time.

OTHER FEES TO BE PAID BY THE CANDIDATES

The above course fee does not include other fees like Lodging/Boarding Charges etc. Hostel accommodation and Dining facility shall be provided to the candidates at reasonable charges.

The other institution fees like Security deposit, Transport Charges etc. has to be paid extra at respective institutes at the time of joining.

Course fee is to be transferred online before joining the course. Following are bank details:

Country: **India**
Account holder's name: **NATIONAL POWER TRAINING INSTITUTE**
Account number: **10724879119**
IFSC: **SBIN0003245**
SWIFT Code: **SBININBBFXD**
Bank Name: **State Bank of India, Faridabad, Haryana, India**

HOW TO APPLY

Application form can be downloaded from our website www.npti.in. Scanned copy of duly filled application form along-with scanned copies of requisite documents can be emailed to **ashok.npti@gov.in**

IMPORTANT DATES

Submission of application	01/06/2017 to 14/07/2017
Display of selection list for admission on NPTI website	18/07/2017
Date of Reporting & Commencement of course	07/08/2017

Note

1. **All Instructions/ Notifications or any further information to the candidates regarding PGDC Admission shall be displayed on our websites www.npti.in**

2. **All dates indicated are tentative. Any change in the schedule of any activity will be displayed on website only. All candidates are advised to check website frequently for any updates. No individual communication shall be entertained.**

3. **All the admissions will be done as per selection list prepared on the basis of marks/grades obtained in qualifying degree at NPTI Faridabad.**

4. **Selection list for admission to PGDC Courses for International Candidates shall be displayed at our website and candidates will be informed by email also.**

5. **Candidates are required to produce transcriptions/ documents of qualifying degree and passport for verification.**

6. **Medical fitness certificate is to be produced.**

CONTACT DETAILS

Principal Director (CP&M)
National Power Training Institute (CO), Faridabad
NPTI Complex, Sector-33,
Faridabad - 121003 (Haryana)
INDIA
Tele-Fax: +91-129-2277412
Phone: +91-129-2274917

NPTI ORGANISATION

The addresses of NPTI Corporate Office and Regional Training Institutes are as under:

NPTI Corporate Office
DIRECTOR GENERAL
National Power Training Institute
An ISO 9001:2015 & ISO 14001:2015 Organization
NPTI Complex, Sector-33
Faridabad-121003 (Haryana)
EPBAX: +91-129-2274916
Fax : +91-129-2277412
Website: **www.npti.in** or npti.gov.in

HOW TO REACH THE INSTITUTES

NPTI – (CO), FARIDABAD

NPTI's Corporate Centre campus is spread over a picturesque landscape of about 15 acres in Faridabad in the suburbs of New Delhi in the National Capital Region (NCR). The campus is located, just about 5 kms from New Delhi - Haryana Border, about 30 kms from the International Airport and 25 kms from New Delhi Railway Station. Nearest Metro Rail Station is NHPC Chowk.

NPTI – PSTI, BENGALURU

The Institute is situated on the Subramanyapura Road opposite to 9th main road, Yarabnagar, Banashankari second stage behind Banashankari temple, Bengaluru. The Institute is about 10 Km south of Bengaluru City Railway Station/ Bengaluru City Bus Stand (Majestic) and 45 KMs from Bengaluru International Air Port. The Pre-paid taxi / Auto-rickshaw services are available. City buses also ply via Yarab Nagar bus stop. Bus route Nos. 15C, 15E, 15H, 210A, 210R and 210E taken from Bengaluru City Bus Station to reach Yarabnagar bus stop.