

NATIONAL POWER TRAINING INSTITUTE

COURSE CONTENTS

ONE YEAR POST GRADUATE DIPLOMA COURSE (PGDC) IN SMART GRID TECHNOLOGIES

Contents	Hours
First Semester	
General Introduction: - Evolution of Indian Power Sector & Indian Electricity Act & other Regulations, Market Mechanism & Grid Standards, R-APDRP/DDUGJY/UDAY/IPDS etc.	60
Various types of Power Generation Systems(Hydro, Thermal, Nuclear & RE Sources)	60
Basics of Power System, Traditional Grid and Micro Grid, Generation, Transmission & Distribution Challenges in India, AT & C loss reduction	90
Introduction to Smart Grids, Global Roadmaps, Regulatory Aspects, Smart Grid Vision & Roadmap for India, National Smart Grid Mission, Smart Grid Maturity Models, Smart Grid Architecture,	120
Advanced Meter Interface (AMI) - Overview, Smart Meters, DCUs, HES, MDM, Inter-Operability, Standards, Protocols, Outage Management System	120
ICT & Cyber Security and Smart Grid Security, IoT. IT/OT Systems	60
Load Forecasting, Demand Side Management (DSM), DER/DR/SCADA/EMS, WAMS	60
Power Electronics, Reactive Power Management &, PMU	60
First Semester Examination/Evaluation	60
Second Semester	
GIS & Assets Management: Asset Mapping and Consumer Indexing on GIS maps; and Business Process Re-engineering for GIS	30
E-Mobility & Energy Storage and other New Technologies – Micro grids, SST, DLR, Wide Area Control, EVs and V2G	60
Renewable Energy & Grid Integration Technologies, Renewable Energy Financing, Project, Procurement, Contract & its Financial Management	120
Laboratory Session in Big Data Analytics and R Programming, GIS, Cyme/Homer Simulation & Smart Grid Simulator Laboratory	180
On-Job Training	240
Plant Visit to Smart Grid Lab visit of TPDDL, New Delhi/UHBVN, Panipat, BSES Charging Station, New Delhi, Smart Grid Pilot Project of various Smart Cities in India.	60
Projects & Viva Voce.	120
Second Semester Examination	60