



Online Programme on Fundamentals of Smart Grid

7th July – 1st Aug. 2025



Chairman, EICT Academy & Director MNIT Jaipur

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Objective (Electronics & ICT Academy-Phase II)

1) To conduct specialized FDPs for faculty/mentor training in line with the vision of MeitY by promoting emerging areas of technology and other high-priority areas that are pillars of both the "Make in India" and the "Digital India" programs.

2) To promote synergy and collaboration with industry, academia, universities and other institutions of learning, especially in emerging technology areas.

3) To support the National Policy on Electronics 2019 (NPE 2019) which envisions positioning India as a global hub for ESDM sector, including MeitY Schemes/policies such as Programme for Semiconductors and Display Fab Ecosystem; India AI; National Programme on AI, Production Linked Incentive Scheme for IT Hardware & Large-Scale Electronics Manufacturing; EMC; SPECS; Chips to System (C2S); etc.

4) To promote standardization of FDPs through Joint Faculty Development Programmes.

5) To support the vision of the National Education Policy (NEP 2020), which mandates that Indian educators go through at least 50 hours in professional development programmes per year.

6) To design, develop & deliver specialised FDPs on emerging technologies/ niche areas/ specialised modules for specific research areas for Faculty in Higher Education Institutions (HEI), besides FDPs on multi-disciplinary areas connected with ICT tools and technologies and other digital hybrid domains, covering a wide spectrum of engineering and non-engineering colleges, polytechnics, ITIs, and PGT educators.

An intensive 40 Hours Training Programme in online mode is being organized for faculty and doctoral students of engineering and technological institutions. It is also open to working professionals from industry/organizations. The main theme of training program will be oriented around exploring the fundamentals of Smart Grid. **The programme will be run during 5-7 PM ONLY on weekdays only** (Saturdays, Sundays off).

Instructor: Prof. N. P. Padhy is currently Director & Chairman, BoG, MNIT Jaipur. He also holds the post of Professor (HAG) of Electrical Engineering at IIT Roorkee. He is well published in reputed journals and authored several books. He has successfully executed 6 international/national research projects and is currently leading 6 international research projects, with a funding of over INR 200 million.

Programme Modules:

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| M1: Introduction to Smart Grid-I, Introduction to Smart Grid-II |
| M2: Introduction to energy storage devices, Different types of energy storage technologies, Analytical modelling of energy storage devices, Optimal sizing and siting of storages, Battery management system (BMS) |
| M3: Modelling of Storage Devices, Modelling of DC Smart Grid Components, Operation and Control of AC Microgrid-I |
| M4: Operation and Control of AC Microgrid-II, Operation and Control of DC Microgrid -I, Operation and Control of DC Microgrid -II, Operation and Control of AC-DC hybrid Microgrid -I, Operation and Control of AC-DC hybrid Microgrid -II |
| M5: Phasor measurement unit placement, Cyber security and resiliency, Virtual inertia and ancillary support, Demand Side Management in the Smart Grid, Demand Response Analysis of Smart Grid |
| M6: Demonstration of solar power generation, Demonstration of wind power generation, Demonstration of Battery Management System, Demonstration of EV charging system, Hierarchical control techniques in hybrid ac-dc microgrid |
| M7: Simulation and Case Study of AC Microgrid, Simulation and Case Study of DC Microgrid, Simulation and Case Study of AC-DC Hybrid Microgrid, Demonstration of parallel inverter operation in AC microgrid, Harmonic effects and its mitigation techniques |
| M8: Energy Management, Design of Smart Grid and Practical Smart Grid Case Study-I, Design of Smart Grid and Practical Smart Grid Case Study -II, System Analysis of AC/DC Smart Grid, Demonstration of grid-connected DC microgrid |
| M9: Demonstration of energy management in microgrid, Demonstration of PHIL experimentation for symmetric and asymmetric fault analysis of grid-connected DFIG wind turbine, Demonstration of ancillary support from virtual synchronous generator, Demonstration on peak energy management using energy storage system, Conclusions |

Principal Coordinator:

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| Prof. N. P. Padhy | fdp.academy@mnit.ac.in | Dr. Manmohan Garg 88405 45438 (M) |
| Dr S K Jain, IITDM Jabalpur | Dr. Siba K Patro, IIT Roorkee | Dr.Rajib Kumar Mandal, NIT Patna |

Registration:

Registration is open to faculty, working professionals, industry persons, doctoral, postgraduate and graduate students. Participants will be admitted on first-come first-served basis.

Register online at- (<http://online.mnit.ac.in/eict/>)

Certification Fee: Academic (faculty/Students): Rs. 500/-

Working professionals, Industry/Others: 1500/-

(A) Fee once paid will not be refunded back.

(B) The fee covers online participation in the programme, tutorial notes and examination, certification charges.

(C) The organizers should receive the registration amount through online mode- NEFT/UPI, provided at the registration portal.

→ For any other query, email us at fdp.academy@mnit.ac.in

