

Short-Term Course

on

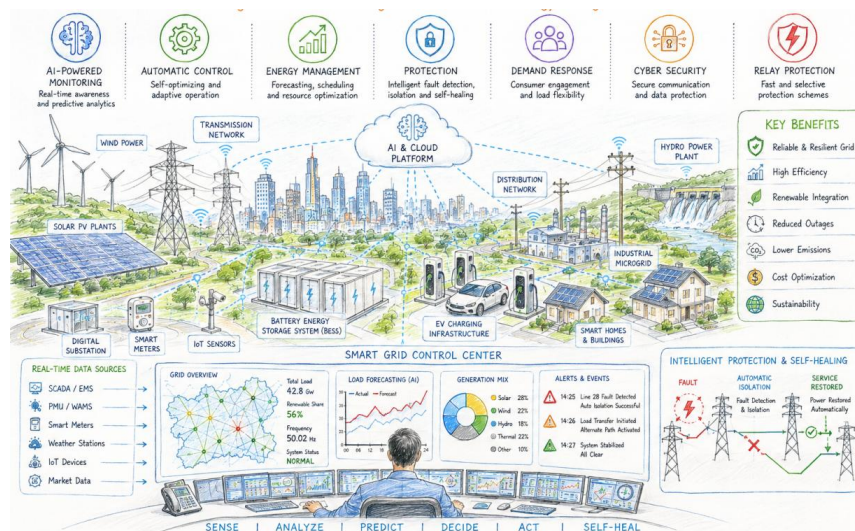
Next-Generation Smart Power Grids

Artificial Intelligent-based Monitoring, Automatic Control, Energy Management, and Protection

21st – 25th September 2026

(An Industry-Oriented Course Featuring Eminent Experts from Leading Industries and Premier Academic Institutions)

Sponsored by
IIIT Ranchi and ACM India



भारतीय सूचना प्रौद्योगिकी संस्थान राँची
Indian Institute of Information Technology Ranchi

(An Institute of National Importance under an Act of Parliament)

Ranchi, Jharkhand, India



ABOUT THE INSTITUTE:

The Indian Institute of Information Technology Ranchi, also known as IIIT Ranchi, was established in 2016 by the Ministry of Education, Government of India as an Institute of National Importance under an Act of Parliament. The institute is funded and managed by the government of India, the government of Jharkhand, and industry partners represented by Tata Technologies Limited, Tata Consultancy Services, and Central Coalfields Limited under the Public Private Partnership (PPP) model. At present, IIIT Ranchi is operating from its temporary premises at ARTTC, BSNL Campus, Ranchi and, till its new campus is made operational at Kanke, Ranchi. IIIT Ranchi is one among the 21 IIITs across India, with a vision to contribute to the IT world through education and research, entrepreneurship and innovation. The Institute is governed by the Board of Governors, which consists of eminent personalities from government, industry, and academia.

Currently, the Institute offers admissions to B.Tech. programmes in Electronics and Communication Engineering, Computer Science and Engineering, Electronics and

Communication Engineering with Specialization in Embedded Systems and Internet of Things, Computer Science and Engineering with Specialization in Data Science and Artificial Intelligence, Mathematics & Computing, M.Tech. programmes in Computer Science and Engineering with Specialization of Data Science and Artificial Intelligence, Electronics and Communication Engineering with Specialization of Embedded Systems and Internet of Things, and Ph.D. programmes in various fields. The honourable Director of IIIT Ranchi, Prof. Rajeev Srivastava, is looking forward to focusing on multidisciplinary fields that can extend the availability and usefulness of technology and its environment to our society and industry directly. He promotes various research activities by the faculty members and students.

ABOUT THE COURSE:

The rapid transformation of conventional power systems into smart and sustainable energy networks has created the need for advanced technologies in monitoring, control, energy management, and protection of modern power grids. The increasing integration of renewable energy sources, electric vehicles, battery energy storage systems, and intelligent loads requires reliable, efficient, and adaptive grid operation.

This short-term course aims to provide comprehensive knowledge on emerging trends and recent developments in future power grid technologies. The course will cover intelligent monitoring techniques, automatic control strategies, smart energy management systems, and advanced protection methods for modern power systems and microgrids.

The programme will also highlight the applications of Artificial Intelligence (AI), the Internet of Things (IoT), smart sensors, data analytics, and automation in enhancing grid reliability, stability, efficiency, and security. Practical challenges associated with renewable energy integration, smart grid operation, and cyber-physical energy systems will also be discussed.

A group of eminent experts from leading industry and researchers from IITs/NITs will deliver lectures in this programme. Classes will be conducted in hybrid mode.

At present, there exists a significant gap between academia and industry, while industries increasingly require skilled human resources with practical and interdisciplinary knowledge. Through this industry–academia interaction programme, academicians, researchers, and students

will have the opportunity to interact with industry experts and understand current industrial requirements and technological challenges. Nowadays, academic institutions are also actively collaborating with industries to promote research and develop innovative solutions for real-world problems.

The course is designed for faculty members, research scholars, industry professionals, postgraduate students, and undergraduate students working in the areas of power systems, power electronics, renewable energy, smart grids, and energy management systems.

OBJECTIVE OF COURSE:

- Provide participants with a comprehensive understanding of modern power grid technologies, including smart grids, microgrids, and intelligent energy systems.
- Familiarize participants with advanced techniques for monitoring, control, energy management, and protection of future power systems.
- Enhance knowledge of renewable energy integration, battery energy storage systems (BESS), electric vehicle (EV) charging infrastructure, and distributed energy resources.
- Introduce emerging technologies such as Artificial Intelligence (AI), Machine Learning (ML), the Internet of Things (IoT), smart sensors, data analytics, and automation for intelligent grid operation.
- Discuss recent developments in cybersecurity, grid resilience, digital substations, and cyber-physical energy systems to ensure secure and reliable power system operation.
- Expose participants to state-of-the-art research, industrial practices, and real-world case studies related to sustainable and intelligent power systems.
- Promote industry–academia collaboration by facilitating interactions with experts from premier academic institutions, industries, and research organizations.
- Equip faculty members, researchers, students, and practicing engineers with the knowledge and practical insights required to address emerging challenges in modern electrical power systems.
- Encourage interdisciplinary research and innovation in the areas of renewable energy, power electronics, smart grids, electric mobility, and sustainable energy technologies.

- Develop the technical competence of participants to contribute effectively to the design, operation, control, and management of next-generation smart and sustainable energy systems.

PROGRAMME SCHEDULE:

Date & Day	Session 1 (11:00 AM – 1:00 PM)	Session 2 (2:30 PM – 4:00 PM)	Session 3 (4:00 PM – 5:30 PM)
Day 1 21 st Sept 2026 (Monday)	Inauguration Session <i>Followed by</i> Speaker from Academia Keynote Lecture-1	Speaker from Industry Keynote Lecture-2	Speaker from Professional Organization Keynote Lecture-3
Day 2 22 nd Sept 2026 (Tuesday)	Panel Discussion with Industry Experts	Speaker from Industry Keynote Lecture-4	Speaker from Academia Keynote Lecture-5
Day 3 23 rd Sept 2026 (Wednesday)	Panel Discussion with Academic Research Experts	Speaker from Industry Keynote Lecture-6	Speaker from Academia Keynote Lecture-7
Day 4 24 th Sept 2026 (Thursday)	Industry Visit		
Day 5 25 th Sept 2026 (Friday)	Speaker from Industry Keynote Lecture-8	Speaker from Academia Keynote Lecture-9	Valedictory Session <i>Feedback and Certificate Distribution</i>

SPECIAL LECTURES BY INDUSTRY EXPERTS AND PROFESSIONALS

Dr. Priyabrata Shaw

M.Tech. (NIT Rourkela), Ph.D. (IIT Delhi)

Lead Engineer - Power Electronics, GE Power Conversion & Storage, General Electric

Associate Editor of IEEE Industry Applications Society

Research Interest/Expert: High-frequency power supplies, Switched-mode power converters, Converter modeling and control, Health monitoring of power electronic converters, Control theory applications

Dr. Arun Choudhary, Scientist 'C'

Ph.D. (IIT Delhi)

Ministry of New and Renewable Energy (MNRE), Government of India

Research Interest/Expert: Energy storage systems, Electric mobility, Circular economy, State resource adequacy planning, Electricity Planning & Survey (EPS), PM Gati Shakti, Energy policy and regulatory affairs

Dr. Debasish Mishra

M. Tech. (IIT BHU), Ph.D. (IIT Delhi)

Lead Engineer, GE Vernova

Research Interest/Expert: Power electronic converters for electric vehicles, Grid-integrated EV charging stations, Power quality enhancement, Linear and nonlinear control systems

Dr. Gurmeet Singh

M.Tech. (NIT Hamirpur), Ph.D. (IIT Kharagpur)

Lead Engineer, Eaton Research Labs

Research Interest/Expert: Power systems, Electrical drives, Induction motor control, Python programming for engineering applications

Dr. Arup Anshuman

M.Tech. (IIT Delhi), Ph.D. (IIT Delhi)

Senior Engineer, Eaton Research Labs

Research Interest/Expert: Power system dynamics, Low-frequency oscillations, Power system stability and control

Dr. Sumit Kumar

M.Tech. (DAVV, Indore), Ph.D. (IIT Patna)

Lead Engineer, Mantra

Research Interest/Expert: Signal processing, Image processing, Video processing, Artificial intelligence applications

Dr. Ashok Ranjan Bhoi

Ph.D. (NIT Meghalaya)

General Manage, Odisha Mining Corporation Limited

Research Interest/Expert: Power quality, Industrial power systems, Mining electrification, Solar energy systems

Dr. Prabhat Ranjan Bana

M.Tech. (NIT Meghalaya), Ph.D. (Norwegian University of Science and Technology, Norway)

R&D Engineer, Hitachi Energy, Zürich, Switzerland

Research Interest/Expert: Artificial intelligence for power systems, Grid-forming converters, Renewable energy integration, Advanced power electronic control

Dr. Abhishek Nayak

M.Tech. (NIT Rourkela), Ph.D. (IIT Delhi)

Lead Engineer - Control Systems, GE Vernova

Research Interest/Expert: Adaptive control, Nonlinear control, Power system dynamics, Advanced control of power electronic converters

SPECIAL LECTURES BY ACADEMIC RESEARCH EXPERTS

Prof. Rajeev Srivastava

Director, IIIT Ranchi

Research Interest/Expert: Image Processing, Computer Vision, Artificial Intelligence, Machine Learning, Deep Learning, Video Surveillance, Medical Image Analysis

Prof. Pravat Kumar Ray

Professor & HOD EE, NIT Rourkela

Research Interest/Expert: Power System Estimation and Filtering, Power System Operation and Control, Power Quality, Hybrid AC/DC Microgrids, Smart Grids, Solar Irradiance Forecasting, Renewable Energy Integration

Prof. Sukumar Mishra

Director, IIT (ISM) Dhanbad

Research Interest/Expert: Power Systems, Power Quality, Renewable Energy Systems, Smart Grids

Prof. Santosh Kumar Singh

Professor, IIT (BHU)

Research Interest/Expert: Silicon Carbide (SiC) Power Converters, Pulse Power Supplies, Electric Vehicle Power Converters, Artificial Intelligence for Multilevel DC-Link Inverters, High-Gain DC–DC Converters

Prof. Gayadhar Panda

Professor, NITTR Kolkata

Research Interest/Expert: Power Quality, Power Electronic Converters, AC/DC Microgrids, Renewable Energy Integration, Automatic Generation Control

Dr. Manas Kumar Jena

Associate Professor, IIT Palakkad

Research Interest/Expert: Power System Engineering, Wide Area Monitoring Systems (WAMS), Power System Dynamics, Power System Protection

Dr. Abhilash Patel

Assistant Professor, IIT Kanpur

Research Interest/Expert: Control and Dynamical Systems, Robust Control Theory, Wide-Area Control, Systems and Synthetic Biology, Advanced Control Systems

Dr. Dushyant Sharma

Assistant Professor, IIT (ISM) Dhanbad

Research Interest/Expert: Automatic Load Frequency Control, Renewable Energy Systems, Distributed Control in Power Systems, Microgrids, Grid-Forming Inverters

Dr. Basant Kumar Sethi

Assistant Professor, SVNIT Surat

Research Interest/Expert: Energy Management Systems for Smart Distribution Networks, Smart Buildings and Smart Homes, Power System Cybersecurity, Power System State Estimation, Optimal Scheduling of Loads and Energy Resources, Machine Learning Applications for Power System Cyber-Attack Detection

Dr. Subrat Kumar Swain

Assistant Professor, BIT Meshra

Research Interest/Expert: Shared Control for Autonomous Vehicles, Fractional-Order Controller Design, Robust Control Systems, Multivariable Process Control, Intelligent Control Applications

Dr. Kaibalya Panda

Assistant Professor, PDEU (PDPU), Gandhinagar

Research Interest/Expert: Reduced-Switch Multilevel Inverters, Advanced Power Converter Design, Power Quality Improvement, Photovoltaic (PV) Systems, Renewable Energy Integration, Smart Power Electronic Systems

PROGRAMME DETAILS:

Target Participants:	Faculty Members, Research Scholars, Industry Professionals, Postgraduate Students, and Undergraduate Students
Last Date for Registration:	18 September 2026
Intimation of Selection:	19 September 2026
Programme Duration:	21–25 September 2026 (Five Days)
Registration Fee:	₹1,500/- per participant
Mode of Delivery:	Hybrid (Online & Offline)
Venue:	Room No. B-403, Third Floor, ARTTC BSNL Campus, IIIT Ranchi, Ranchi, Jharkhand, India

BANK ACCOUNT DETAILS FOR REGISTRATION FEE PAYMENT:

Participants may pay the registration fee through **NEFT/RTGS/IMPS/UPI** using the following bank account details:

Account Name:	Indian Institute of Information Technology Ranchi
Bank:	Namkum Branch, Ranchi
Account Number:	39114253842
IFSC Code:	SBIN0009011
CIF Number:	90500315570
MICR Code:	834002017

or

Pay Through QR Code



REGISTRATION DETAILS:

Registration Link: <https://forms.gle/Ta4Z3av4eQVRTW5A8>

or

Scan QR Code for Registration

**Patron:**

Prof. Rajeev Srivastava,
Director
Indian Institute of Information Technology (IIIT) Ranchi

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