



IEEE PELS SPONSORED Ph.D. Summer School 2026

On

“Power Converter Design, Digital Control and Battery Management Systems”

June 29 – July 3, 2026

Department of Electrical Engineering
Indian Institute of Technology (ISM), Dhanbad

About the Program

The **Ph.D. Summer School 2026** is an intensive academic and hands-on training program focused on **advanced power electronics and control systems**, specifically:

- Power converter design
- Digital control implementation
- Battery Management Systems (BMS)
- Emerging applications in electrification and energy systems

Inspired by the successful model of similar IEEE PELS-supported programs, this school integrates:

- **Expert lectures (academia + industry)**
- **Hands-on design sessions**
- **Research presentations by PhD scholars**
- **Industry-relevant case studies**

Key Highlights

- Practical sessions on **converter design and control circuits**
- Hands-on exposure to **digital control and embedded systems**
- Specialised modules on **Battery Management Systems**
- **Ph.D. research presentations** (20 min + 10 min Q&A format)
- Dedicated **Women in Engineering (WIE) panel discussion**
- Evaluation-based **recognition for top participants**
- Certificates for all successful participants

Technical Modules / Themes

Based on the resource plan, the program includes:

Core Engineering Topics

- Power Converter Design & Magnetics
- Digital Control of Power Converters
- Small & Large Signal Analysis
- FPGA-based Control Systems

Energy Systems & Applications

- Battery Management Systems (BMS)
- Wireless Power Transfer
- Maritime Electrification & Charging Infrastructure

Embedded & Intelligent Systems

- Microcontroller Programming
- Embedded Control Architectures

- Prognostics & Health Management of Machines



Distinguished Speakers & Resource Persons



Invited Experts

- **Prof. Akshay Kumar Rathore** – Area Director (Power & Energy Systems)
- **Dr Brij Singh (IEEE Fellow)** – John Deere



IIT Faculty Contributors

- IIT (ISM) Dhanbad:
 - Prof. Ashok Kumar
 - Prof. Sethupathy S
 - Prof. Sukanta Halder
 - Prof. Soumyabrata Barik
 - Prof. Anirban Ghoshal
 - Prof. Ananda Shankar Hati
 - Prof. Bhawana Singh
 - Prof. Sonam Acharya
- External IIT Experts:
 - Prof. Suvendu Samanta (IIT Kanpur) – Wireless Power Transfer
 - Prof. Santanu Kapat (IIT Kharagpur) – FPGA & Control Systems



Industry Expert

- **Dr Anirudh Acharya**
Senior R&D Engineer, *The Switch*
(Maritime Electrification & Battery Systems)



Women in Engineering (WIE) Initiative

Aligned with IEEE WIE activities:

- Panel discussion on **women in power electronics**
- Awareness of **government schemes for women researchers**
- Networking with senior women professionals
- Encouragement for participation in **research & leadership roles**



Hands-On & Practical Learning

Participants will engage in:

- Converter circuit design & simulation
- PCB layout fundamentals
- Digital controller implementation
- Testing & validation of power electronics systems



Ph.D. Scholar Participation

- Selected Ph.D. scholars will present:
 - **20-minute research presentation**
 - **10-minute expert Q&A session**
- Focus: improving **defense readiness & research communication**



Registration Fee (Tentative)

Category	Fee (INR)
IEEE Student Members	₹1500 + GST
Non-IEEE Students	₹1800 + GST
Industry Professionals / Faculty	₹8000 + GST



Important Dates (Tentative)

- Application Deadline: **Mid-June 2026**
- Selection Notification: **Within 1 week after the deadline**
- Fee Payment: **Within 2 days of selection**

Facilities & Support

- 🍵 Meals (tea/snacks/lunch) during program days
- 🏠 Accommodation in institute hostels (subject to availability)
- 🎓 Certificate upon successful completion

About IIT (ISM) Dhanbad

Indian Institute of Technology (ISM) Dhanbad is a premier institution known for:

- Strong emphasis on **engineering research & innovation**
- Excellence in **electrical engineering and power systems**
- Growing footprint in **energy, sustainability, and electrification domains**

About Department of Electrical Engineering

The department is actively engaged in:

- Power electronics and drives
- Renewable energy systems
- Embedded systems and control
- Advanced electrical machines

With a strong base of faculty, research scholars, and modern laboratories.

Selection Process

- Based on:
 - Academic background
 - Research interests
 - First-come-first-serve basis (limited seats)

Contact & Coordination

Organized by:

Prof. Ananda Shankar Hati
Department of Electrical Engineering
IIT (ISM) Dhanbad

Prof. Ashok Kumar
Department of Electrical Engineering
IIT (ISM) Dhanbad

Conclusion

This Summer School provides a **rare convergence of theory, design, and real-world applications** in modern power electronics and energy systems. It is particularly valuable for:

- Ph.D. scholars (2nd–4th year)
- M.Tech students
- Industry professionals transitioning into power electronics