



भारत 2023 INDIA

वसुधैव कुटुम्बकम्

ONE EARTH • ONE FAMILY • ONE FUTURE

This short-term course is specially designed and framed taking into account the recent trends in green energy integration and the electric vehicle charging infrastructure with inclusion of microgrids, energy management, power converters for renewable energy integration and energy storage systems into the utility grid as well as for the EV charging infrastructure. The key challenges in renewable energy integrations are the power quality issues due to intermittent nature of power generations and supply-demand management considering the uncertainties in generations and loads. Therefore, this course is designed to describe general concepts and application, control strategies and power management in green energy integration and state of art of EV charging solutions. In addition, applications of multi-level converters, MMPT for solar and wind, battery management systems, energy managements, and the power quality issues are also included for deep understanding of the power converters and their applications in renewable energy integration and in EV charging applications. Furthermore, this course has included lab sessions where students and researchers shall be able to enhance their knowledge in real time simulations, OPAL-RT, C2000 Microcontroller, hybrid energy storage systems and etc. The course is applicable for students and researchers with power electronics, power systems and control system area who want to do research in fast growing and emerging renewable energy technology. Also, it will be suitable for engineering professionals from academia, R&D organizations as well as industries.

Course Coverage:

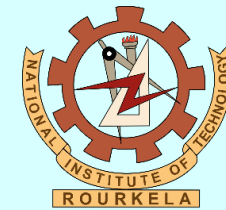
- Power Converters for Green Energy Applications
- Advanced Converters for Green Energy Application
- Multi-Level Converters for Renewable Energy Integration
- MPPT Algorithms for Solar PV and Wind Energy Systems
- Energy management in DC microgrid
- Smart Grid for Sustainable Future
- Power Quality Issues with High Penetration of Renewable Energy
- Battery Management System (BMS)
- Hybrid Energy Storage System for DC Microgrid and EV
- EV Charging - State of Art
- Electric Vehicle Charging Infrastructure
- Wireless EV Charging

Lab Sessions:

- MATLAB, OPAL-RT, C2000 Microcontroller.
- MPPT Algorithms Hands-on
- Real-Time Simulation of Microgrid and EV
- Hybrid Energy Storage System
- Microgrid Integration with Power Management
- SOC estimation and battery charging

Key Speakers:

- Prof. Santanu Kapat, IIT Kharagpur
- Prof. Ritesh Keshri, VNIT Nagpur
- Prof. Suman M, IIT BHU
- Prof. Deepak Ronanki, IIT Madras
- Dr. Sanjeet Dwivedi, Danfoss, Denmark
- Mr. Anush G. Nair, Tata Elxsi Limited
- Prof. Indrajit Sarkar, NIT Rourkela
- Prof. Monalisa Pattnaik, NIT Rourkela
- Prof. Susovon Samanta, NIT Rourkela
- Prof. Arnab Ghosh, NIT Rourkela
- Prof. Pravat Kumar Ray, NIT Rourkela
- Prof. Arijit Guha, NIT Rourkela



**National Institute of Technology
Rourkela**

**Short Term Course
&
Faculty Development Programme
On**

**Power Converters for Green
Energy and EV Integration
(PCGEEI -2024)**

**13th - 17th March 2024
(Hybrid Mode)**

Coordinators

**Prof. Indrajit Sarkar
Prof. Monalisa Pattnaik
Prof. Susovon Samanta
Prof. Arnab Ghosh**

Organized By

**Centre of Excellence on
Renewable Energy Systems
Dept. of Electrical Engineering
National Institute of Technology
Rourkela, Odisha - 769008**

Technically Co-sponsored by:



ROURKELA SUBSECTION





Introduction:

The global ratification regarding the usage of sustainable energy resources such as solar, wind, biomass, fuel cell etc. for the constant growth and development of infrastructure, industrial consumers, transportations and in various fields, are propelled by the intent to restrain the fossil fuel dependency and to reduce the carbon footprint substantially. To achieve these ambitious goals, the development of green energy harvesting and its integration with conventional or smart grid is very much desirable. The integration of renewable energy or green energy or alternative energy sources into the existing conventional infrastructure leads to a sustainable and effective approach to address the issue of fossil fuel dependency. Moreover, as the goal is to reduce the fossil fuel consumption as low as possible, the urge for e-mobility is of much demand with the initiatives of green and sustainable Electric vehicles (EVs) battery charging infrastructure. The era of EV has already started and it represents a promising green solution to mitigate the environmental concerns. However, the widespread adoption of EV technology further needs monitoring, energy management, and control of the existing power system networks. By executing these steps, we are moving towards more sustainable solutions where Government is providing incentives and subsidies to encourage the adoption of such sustainable technologies.

Online Registration Form (for External):

<https://forms.gle/FqMfFE4sYq1utVkJU8>

Online Account Details:

Account No: 10138951784

Account Name: CONTINUING EDUCATION
NIT ROURKELA

IFSC No: SBIN0002109

Branch: State Bank of India, NIT Campus
Rourkela.

About the Institute:

The course will be organized by the Centre of Excellence on Renewable Energy Systems at the Department of Electrical Engineering, National Institute of Technology (NIT), Rourkela. It is one of the premier national level institutions for technical education in the country and is funded by the Government of India.

Please visit <https://www.nitrkl.ac.in/>

37 NIRF Overall	16 NIRF Engg.	29 NIRF Research	281-290 QS Asia
-----------------------	---------------------	------------------------	--------------------

About the Department:

The department of Electrical Engineering is established with the vision to design technologies and nurture technologists for diverse and sustainable growth in electrical engineering, leading to wealth and welfare of humanity. The department offers various UG and PG programmes with the mission to develop a platform for forging students as technocrats in line with cutting-edge academic, research and modern industrial practices, and enhancing their aptness in any technical sectors across the globe.

Please visit <https://website.nitrkl.ac.in/EE/>

Registration Details:

Category	Online Registration Fee in INR	Offline Registration Fee in INR
Research Scholars/ PG / UG (3 rd year onwards) Student	600/-	5000/- (Accommodation & Food Extra)
Faculty from Engineering Institutes	800/-	
Engineers from Industry and R&D Organizations	1500/-	
Students / staffs of NIT Rourkela need to register separately, not this google form.		

Important Dates:

Registration Deadline: 12th March 2024

Short-term Course Date: 13th-17th March 2024

Contact us:

Prof. Indrajit Sarkar
Assistant Professor

Ph: 0661-2462416 (O), 9167482002 (M)

Email: sarkari@nitrkl.ac.in, jsr.indrajit@gmail.com

Prof. Monalisa Pattnaik
Associate Professor

Ph: 0661-2462423 (O), 8895381976 (M)

Email: pattnaikm@nitrkl.ac.in,
monalisa.pattnaik@gmail.com

Prof. Susovon Samanta
Associate Professor

Ph: 0661-2462420(O), 9439104535 (M)

Email: samantas@nitrkl.ac.in,
samanta.susovon@gmail.com

Prof. Arnab Ghosh
Assistant Professor

Ph: 0661-2462417(O), 9433379717 (M)

Email: ghosha@nitrkl.ac.in, aghosh.ee@gmail.com

Dept. of Electrical Engineering
National Institute of Technology Rourkela,
Rourkela-769008, Odisha.