

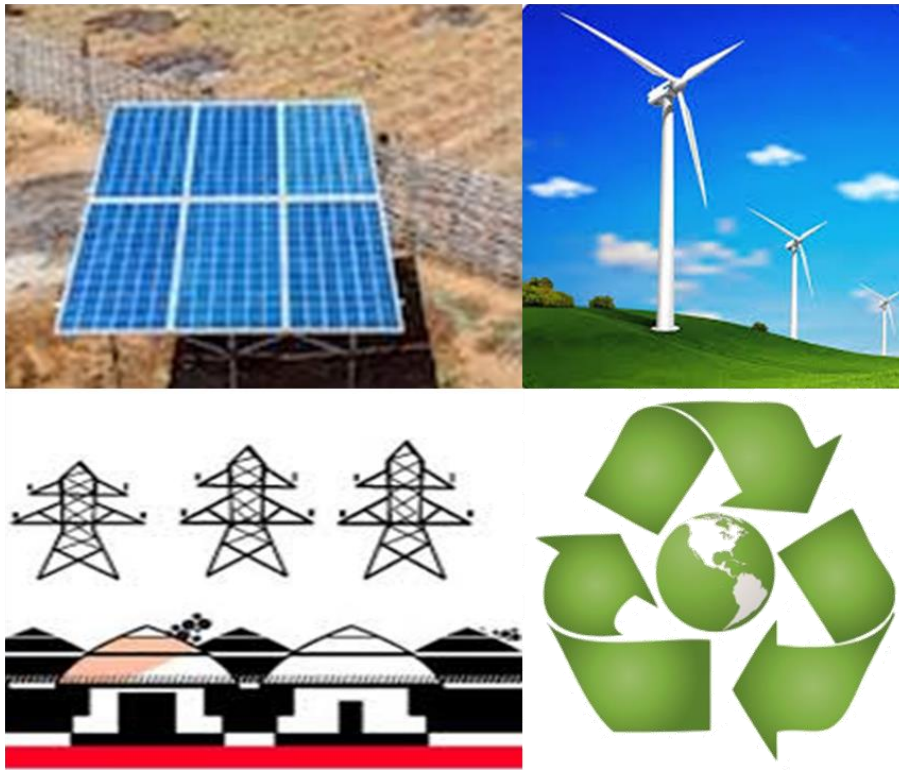
Faculty Development Program on
Renewable Energy Resources and Rural Electrification: Challenges and Solutions



Two Week
Faculty Development Programme
on

**RENEWABLE ENERGY RESOURCES AND
RURAL ELECTRIFICATION: CHALLENGES AND
SOLUTIONS**

10–21 October 2022



ORGANIZED BY

**Department of Electrical Engineering
Faculty of Engineering
Dayalbagh Educational Institute Agra
NBA and NAAC A+ Accredited**

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AICTE Training And Learning (ATAL) Academy

Faculty Development Program on Renewable Energy Resources and Rural Electrification: Challenges and Solutions

ABOUT THE INSTITUTE

Dayalbagh Educational Institute is an educational institution located at Dayalbagh in Agra. The institute has been given deemed to be university status by the University Grants Commission of India in 1981. A Significant development of far-reaching consequence in the history of education at Dayalbagh was the establishment of the DEI as a Registered Body in 1973, which integrated and brought under one umbrella all the educational institutes of Dayalbagh.



The Dayalbagh Educational Institute (DEI), an A+ graded Deemed to be University by NAAC in Agra, is known for its broad-based comprehensive education, which bridges the dichotomous rural and urban educational compartments by exposing students to both rural and urban environment to harness democratic, inclusive and creative thinking. Thus, Systems Thinking has been the DNA of the dynamic educational framework of DEI which imparts sound academic scholarship, work-based education and moral, ethical and spiritual values. Education at DEI also integrates education from pre-nursery level to D.Sc/D.Lit levels, entrepreneurial educational linkages for connecting nano-enterprises and rural economies to urban and international market, skilling to technical education for promoting frugal practices and innovations and provides 360⁰ progression and transition pathways for holistic and connected development of learners and the communities around. With 80% students from socially and economically marginalized sections of the society and 67% women students on the campus, women empowerment and rural problem-solving becomes the major objective. Agriculture, Entrepreneurship and Consciousness are the areas where DEI aims to emerge as national forerunner with international acclaim. The education system at DEI is based on Sigma Six Q-V (Quality and Values) model for sustainable future and better worldliness. It is synergistic blend of qualities and values innovation, water quality, air quality, education and healthcare, agriculture and dairy and human values with special emphasis on moral and spiritual values, it has successfully implemented Total Quality Management framework which is based on excellence, initiative, creativity, innovation and involvement of stakeholders.

DEI is a national forerunner in meticulously moving through experimenting towards the science of consciousness. The advanced centers of research in the institute like i-c-n-c TALL (Information-Communication-Neuro-Cognitive Technologies Assisted Language Lab) and the Center for Consciousness Studies are the epicenter for research in this field on the campus. Achievements of DEI in this field are recognized internationally. Harmonizing with the demands of the future DEI has created nine research divisions in transdisciplinary areas like Esoteric Art & Science, Thinkism, Digital Life, Maintenance Networks, Entrepreneurship, Agriculture, Classical Studies, Life and Mathematics, Sustainability. These research divisions cut across all the conventional and vocational programs running on the campus and create a bridge to connect with the communities around. Dynamic and spontaneously evolving educational framework of D.E.I. shows that the systems-thinking can expand the external and internal experiential learning of students and integration of systems and their interactions through subtle interconnection can lead to dynamically evolving system of systems that will open new vistas for holistic learning.

ABOUT THE DEPARTMENT

The Department supports Under-Graduate, Post- Graduate and Doctoral Programmes. At the UG and PG level a broad-based course structure enables the students to acquire core competence and specialization in the fields of Power Systems, Electrical Machines, Electronics and Computer Science by way of core courses, electives, and focused projects. The effectiveness of the programmes is indicated by the excellent performance of our students in competitive examinations such as GATE, CAT, GRE etc. Further, the fact that the students score

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very high percentile in Electrical Engineering, Electronics and Communications Engineering and Computer Science clearly show the superiority of the broad-based programme followed by the Department.



(Faculty of Engineering at DEI, Agra)

An innovative and unique M. Tech. Programme in "Engineering Systems" is jointly conducted with the Mechanical Engineering Department. The programme is designed to inculcate in the students the 'Systems' way of thinking. Development of such a systemic viewpoint enriches the mindset of the students to address real life problems in a holistic manner.

At the research level the Department has focused on cutting edge soft computing technologies and their applications in diverse fields of Electrical Engineering. The current research interests can be classified into the following broad disciplines: Systems Engineering, Signal Processing, Power Systems, Soft Computing & Quantum Algorithms, Mobile Telecommunication Networks, Search Based Software Engineering and Electrical Drives.

INTRODUCTION OF FDP ON RENEWABLE ENERGY RESOURCES AND RURAL ELECTRIFICATION: CHALLENGES AND SOLUTIONS

Recently there has been growing interest in renewable energy and it has become one of the primary sources to electrification of the rural areas. The biggest concern in the field of renewable energy is power generation depending on natural resources that are uncontrollable by humans. Due to uncontrollable and uncertainty in energy, production in renewable energy technologies is making integration more complex. Also, there are several technical challenges with Renewable Energy Resources (RES), such as availability of power, power quality issues, resource location, information barrier and cost issues. All these challenges with RES can be addressed by microgrid system due to its ability during utility grid disturbances, to separate and isolate itself from utility seamlessly with little or no disruption to the load within the microgrid.

Faculty Development Program on Renewable Energy Resources and Rural Electrification: Challenges and Solutions

Week-1: Programme Schedule [10-15 October 2022]

Day/Session	Name	Event	Affiliation	Time (IST)
Day-1 (10-10-2022)	Prof. N.P. Padhy	Smart Grid: Deployment and Applications	MNIT Jaipur	19:00-20:30
Day-1 (10-10-2022)	John D. McDonald	Grid Modernization: Technological Advancements Beyond Smart Grid	GE Renewable Energy, USA	20:30-21:30
Day-2 (11-10-2022)	Prof. Sathans	Hybrid Renewable Energy Sources: The way forward	NIT Kurukshetra	19:00-21:30
Day-3 (12-10-2022)	Dr. Nishant Kumar	AI-Based Grid Integrated Solar Energy Conversion System	IIT Jodhpur	19:00-21:30
Day-4 (13-10-2022)	Mr. Raphael Oluwaseun George	Repurposing Lithium Ion Batteries for Second Life Application in Solar Photovoltaic Microgrids	Sunhive Limited. Nigeria	19:00-20:00
Day-4 (13-10-2022)	Prof. A.K. Bansal	Optimization of hybrid energy system including forecasting	CUH Mahendragarh	20:00-21:30
Day-5 (14-10-2022)	Dr. Marwa Ben Ali	Analysis of Barriers and Opportunities in the Transition to Electric technology toward sustainable urban mobility future	University of Sfax, Tunisia	19:00-20:00
Day-5 (14-10-2022)	Prof. A. K. Singh	Control of Renewable Energy Resources and Energy Storage	MNNIT Allahabad	20:00-21:30
Day-6 (15-10-2022)	Dr. E.S. N. Raju	Control and Energy Management in Microgrid	IIT Guwahati	19:00-21:30

Week-2: Programme Schedule [17-21 October 2022]

Name	Topic	Affiliation	Time (IST)
Day-1 (Monday) 17-10-2022			
Inauguration			09:00-09:30
Prof. S.N. Singh	Renewable Energy Resources and control	ABV-IIITM Gwalior	09:30-10:30
Dr. Kalpana Gupta	Yoga and Stress Management	DEI Agra	10:30-13:00
Lunch			13:00-14:00
Dr. Saalim Qureshi	Microgrid and Its Applications using Typhoon HIL	Quarbz Info System	14:00-16:00
Article-1 Discussion			16:00-17:00
Day-2 (Tuesday) 18-10-2022			
Field Visit			09:00-11:00
Prof. Barjeev Tyagi	Microgrids and Control	IIT Roorkee	11:00-13:00
Lunch			13:00-13:45
Prof. (Dr.) Debajit Palit	Evolution of Electrification in India & India's Energy Transition.	TERI, New Delhi	13:45-15:45
Nirojakanta Swain	Virtual inertia control of microgrid using OPAL-RT real-time simulator.	OPAL RT	15:45-17:15
Day-3 (Wednesday) 19-10-2022			
Prof. (Dr.) D Bhagwan Das	Solar Agro Farm at DEI Agra	DEI Agra	09:30-12:00
Article-2 Discussion			12:00-13:00
Lunch			13:00-14:00
Dr. Manmohan Garg	Modeling and Control of Power Electronic Converter for Renewable Energy Systems	MNIT Jaipur	14:00-16:00
Teaching Practice			16:00-17:15
Day-4 (Thursday) 20-10-2022			
Dr. Subho Upadhay	Rural Electrification challenges and remedies	DEI Agra	9.30 -12:00
MCQ			12:00-13:00
Lunch			13:00-14:00
Ms. Nidhi Verma	Optimization of hybrid power system through HOMER software	Homer India Pvt. Ltd	14:00-16:00
Teaching Practice			16:00-17:15
Day-5 (Friday) 21-10-2022			
Dr. Kalpana Chauhan	Emerging Technologies for EV Charging with green infrastructure	CUH Mahendragarh	9.30-11:00
Teaching Practice			11:00-12:15
Visit Report			12:15-13:00
Lunch			13:00-14:00
Reflection Journal			14:00-15:00
Feedback			15:00-16:00
Valedictory			16:00-17:00

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INFORMATION FOR PARTICIPANTS

ELIGIBILITY

- The FDP is open to faculty members of the AICTE approved institutions, research scholars, PG, Scholars, participants from Government, Industry (Bureaucrats/ Technicians/ Participants from Industry etc.).

REGISTRATION DETAILS

- **Maximum 50 participants** may be allowed to attend online FDP on a first come first serve basis.
- All the participants are requested to register online by visiting <https://www.aicte-india.org/atal> on or before 9 October 2022. (FDP Application No. 1650537542)
- Registration for all the participants is mandatory.

Note: After successful registration, participants are requested to join the official group for communication on “WhatsApp”. The link to join the official group would be provided in the confirmation email.

FDP Rules

- The FDP begins on 10th October 2022.
- As the FDP is being organized under the prestigious AICTE Training And Learning (ATAL) Academy, we at Dayalbagh Educational institute Agra, give prime importance to willing and serious participants who are eager to learn. In this context, it should be noted that certificates will be awarded to only those participants who will be present online and engaged during each session of the FDP. Therefore, it is compulsory for participants to attend all the online (week-1) and offline (week-2) sessions in order to receive certificate of participation.
- The certificates shall be issued to those participants who have attended the program with minimum **80% of attendance** and scored **minimum 70% marks** in the test.
- All participants need to submit an online feedback.
- **For further queries, please mail us at: rajeevnitj@gmail.com /Call – 9411860126**

Patron

Prof. Prem Kumar Kalra
Director, DEI Agra

Coordinator

Prof. Ajay Kumar Saxena
Head, Department of Electrical Engineering
Dayalbagh Educational Institute, Agra

Co-Coordinator

Dr. Rajeev Kumar Chauhan
Department of Electrical Engineering
Dayalbagh Educational Institute, Agra