

Faculty Development Program On Renewable Energy: Research to Industry (Online)

Under the banner of
Electronics and ICT Academy, NIT Patna

22nd Aug - 6th Sep 2020

(On Saturdays and Sundays, 6 days)



Patron

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Sponsored by

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Organized by

Department of Electrical Engineering,
National Institute of Technology, Patna-800005

About NIT Patna

National Institute of Technology Patna is the 18th National Institute of Technology created by the Ministry of H.R.D. Government of India after rechristening the erstwhile Bihar College of Engineering Patna on 28.01.2004. NIT Patna marked its humble beginning in 1886 with the establishment of a pleaders survey training school which was subsequently promoted to Bihar College of Engineering Patna in 1924. This made this institute the 6th oldest Engineering Institute of India. The Institute is situated on the south bank of holy river Ganges behind Gandhi Ghat (where the ash of father of the Nation, Mahatma Gandhi was offered in the river Ganges). The campus has a picturesque river view with historic building presenting a spectacle of architectural delight and natural beauty. The Institute imparts high-level education training, research and development in science, engineering technology and humanities along with high quality education and values at UG, PG, and Ph.D. level. At present, the Institute offers courses in six major technical disciplines viz. Architecture, Civil Engineering, Computer Science & Engg., Electrical Engg., Electronics & Communication Engg. And Mechanical Engg. It also consists of well-established departments of Physics, Chemistry, Mathematics and Humanities and Social Sciences.

Electronics and ICT Academy

Ministry of Electronics and Information Technology, Government of India has instituted seven Electronics and Information & Communications Technology (ICT) Academies of which, the academy of NIT Patna is one. The Academy at NIT Patna aims to design and organize basic as well as specialized training programs in niche areas of electronics and ICT for the development of required knowledge base, skills, and tools to equip the teaching community with better knowledge and understanding.

Overview of Program

Renewable energy is a multi-disciplinary topic that is relevant to different disciplines of Science and Engineering such as Electrical, Electronics, Physics, Chemistry and Computing etc. This program gives an insight into various aspects of renewable energy from research to industry. The program will discuss various topics from Solar cells to its implementation as Solar Panels and other related concepts. Solar Panels can be either integrated into a Solar Power Station on a large scale or can be implemented as a Solar

Household System on small scale. The related concepts from Power Electronics and Power Systems about Solar Power Station and Solar household System will be dealt through illustrative discussion from Industry as well as from research/academia. Further, recent innovations in Solar Cells to Solar Panels and various challenges involved will be discussed. Theory along with lab sessions would be conducted to discuss various aspects of renewable energy from research to entrepreneurship. The program will also have sessions of general discussion on research methodology, various research tools, basics and drafting of journals, book-chapters, books, patents etc.

Objectives and Scope

- ❖ With the example of Renewable Energy, we intend to provide an exposure of research to industry level implementation of a device/technology to understand various aspects and issues involved.
- ❖ Our focus will be to explore critical aspects of renewable energy *from theory to implementation* along with research/industry challenges involved through interaction with experts from academia (IITs/NITs & premier institutions) & industries.
- ❖ This program would provide a platform for collaborative participation of research, industry, and academia through interactive sessions among faculties, students (UG, PG), Ph.D. scholars, other researchers, and working professionals from engineering as well as basic science background.
- ❖ The topics will focus on basics, advances and applications to benefit different people from academic & research communities associated with the disciplines of *Electrical, Electronics, Computer Science, Chemistry, Physics, & Nanotechnology* etc.
- ❖ Along with theoretical concepts, lab sessions will have *training on modelling tools* and illustrations.
- ❖ Design & Implementation of Solar PV systems to the fabrication of Solar cells in the lab will be discussed.
- ❖ *Besides*, the basics of drafting of *research articles (journals, book chapters, patents)* and various *research tools* would be discussed. By the end of this program, participants could start their research work to help their research as well as academic career.

Course Content

The following topics will be discussed in Theory Sessions & corresponding Lab Sessions.

Theory Session

- ❖ *Renewable Energy: Current status and prospects*
- ❖ *Solar Panels (and related Power Electronics components): Household to Power Station*
- ❖ *Solar Power Station (from Power Systems perspective): EPC, Operation & maintenance etc.*
- ❖ *Solar Cells: Basics & Advances (Fabrication to modelling), current status and future prospects*
- ❖ *Solar Cells: Innovations & Challenges*
- ❖ *Research articles (Journals, Patents, Book Chapters), & various research tools*
- ❖ *Various other renewable as well as conventional Energy resources and their optimization*

Lab Session

Training on following tools & their implementation for the simulation of concepts (from theory sessions) would be done in Online Lab Sessions.

- ❖ *Software: PVSyst, Silvaco, COMSOL, SCAPS, MATLAB, Octave etc.*
 - ❖ *Research tools: Origin, Latex, Mendeley etc.*
- Besides modelling, fabrication/characterization techniques for Solar Cells would be discussed.

Resource Persons

Esteemed experts for theory & lab sessions:

- ❖ Dr. Avanish Tripathi, EE, IIT Roorkee
- ❖ Mr. Ramlagan, Production Manager, IOCL
- ❖ Dr. Abhijit, ECE, NIT Hamirpur
- ❖ Dr. Vivek Garg, EE, DIAT Pune
- ❖ Dr. Rohit Singh, EE, SNU Noida
- ❖ Mr. Ankit Bhugra, Director, Greenage India
- ❖ Dr. Brajendra S. Sengar, EST, CAS Lucknow
- ❖ Dr. Dipesh Kumar, EST, CAS Lucknow
- ❖ Dr. Aaryashree, Appl. Chem., SIT Japan
- ❖ Dr. Amitesh Kumar, EE, NIT Patna

One-week FDP includes

6-Days Training will be taken by a group of experts from academics (IITs, NITs & other premier

institutions) as well as industries working in different areas of Semiconductor devices. The daily training sessions would run for 6-7 hours/ each day. The mode of training is Instructor-led live online.

- ❖ Interactive Theory & Lab Sessions for 40 hours.
- ❖ Soft copy of study materials, training videos etc.
- ❖ Certificate from E & ICT Academy, NIT Patna

Who Can Participate

Faculty members of UGC/AICTE recognized Universities and Engineering colleges all over India, Research scholars (Ph.D. only), students (UG/PG) and Industry personals, however priority will be given to the faculty members.

Registration Fee

- ❖ Faculty Members & Ph.D. Scholars: Rs 500/-
 - ❖ UG & PG Students: Rs 500/-
 - ❖ Industry & others: Rs 1000/-
- The certificate will be given by Electronics & ICT Academy, NIT Patna.

Registration Process

1. Registration fee will be paid through online mode. The account details for this purpose is as follows:
Account Name: NIT Patna
Account No.: 50380476798
IFSC Code: ALLA0212286
2. Link for registration:
<https://forms.gle/8scmMcXqv9Pxqz1j9>
3. The brochure of the program may be downloaded from the Institute website (www.nitp.ac.in).
4. **Last date of registration: 21.08.2020**
Limited seats and the selection will be done on the first-cum-first-serve basis. PDF file of online filled registration form with proof of registration fee paid is to be sent through email to any of the following:

- ❖ Dr. Amitesh Kumar
(Email: amitesh.ee@nitp.ac.in, Contact No.: 8349287043)
- ❖ Dr. Rajeev Kumar Arya
(Email: rajeev.arya@nitp.ac.in, Contact No.: 8130336451)

FDP On

Renewable Energy: Research to Industry

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REGISTRATION FORM

Photo

1. Name (block letter):
2. Gender:
3. Caste:.....
4. DOB:.....
5. Designation
6. Organization:
7. Address for communication:
-
-
- Pin code: Ph. No.:
- E-mail:
8. Highest Academic Qualification:
9. Specialization:
10. Experience (in years):
(a) Teaching: (b) Industrial:
11. Aadhar No:.....

DECLARATION

I do hereby agree to abide by the rules and regulations of the FDP.

Place:

Date:.....

.....
Signature of the Applicant