

Faculty Development Program

On

RECENT TRENDS IN RESEARCH & OPPORTUNITIES IN ELECTRICAL AND ELECTRONIC ENGINEERING

Under the banner of
Electronics and ICT academy
at National Institute of Technology Patna

15th March to 23rd March, 2021



Chief Patron

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Director, NIT Patna

Patron

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Organized by

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

Supported by

Ministry of Electronics and Information Technology,
MeitY, Govt. of India.

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 pleader's 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 buildings 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., and 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

The 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 programmes 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.

Objective and Scope

- Primary objective is to impart research opportunities to the beginners and improve the quality of research among the existing researchers in the areas of Power Electronics, Power System & Control and instrumentation.
- To explore critical aspects of Renewable Energy, Electric Vehicle, High voltage DC system, Micro-grid and Motor Drives etc.
- Conventional as well as Advance control techniques will be explained.
- To demonstrate modeling of power systems and obtain reduced order model.
- To familiarize safety measurements and issues in Hydro Power Projects in Industry.

Course Outcomes

By the end of the program, the participants will be able to:

- Develop competence in understanding recent advances in electric vehicle, micro-grid, renewable energy sources, solar PV system, high voltage DC system, advanced power converter control for Solar/Electric drives
- Design controllers for converters used in electric drives, electrical vehicles etc
- Derive dynamic model of various industrial process & obtain reduced order model
- Learn and apply conventional and advanced control techniques to various industrial processes
- Understand and design Kalman filter for specific applications.
- Develop interest in writing projects related to Hydro Power Plant to overcome the issues and

challenges faced by Engineers.

Topics to be covered

Issues, Challenges and advancement in Electrical Vehicles, Converter and Controller for Electric Vehicles, PMBLDC, PMSM & Induction Motors Drives for EV, Charging infrastructure for Electric Vehicles, Vehicle to Grid (V2G) & Grid to Vehicle (G2V) control, Impact of distributed generation on protection coordination in Micro-grid, Power electronics Interface for Smart Grid Integration of RES, Power System Deregulation, Instrumentation surveillance in Hydro Power Projects, Introduction to HVDC, Trends in condition Monitoring of Electric Drives, Grid Interactive Solar PV System with battery Energy Storage, Solar wind advanced converter design, High Power drives, Smith Predictor control, Kalman Filtering based Continuous glucose monitoring, A Transition from PID Controller to Sliding Modes, Balanced Truncation based Frequency-weighted Model Order reduction, Control system Design and analysis, Resonant Power Converters, Control system design and simulation for various processes

Resource Persons

For expert lecture, design and simulation sessions:

1. Prof. Mukhtiar Singh DTU Delhi
2. Prof. Sanjeev Singh MANIT Bhopal
3. Dr. Ranjan Kumar Behera IIT Patna
4. Dr. Ahmad Ali IIT Patna
5. Dr. Shyam Kamal IIT BHU
6. Dr. Jeevanand Seshadrinath IIT Roorkee
7. Dr. Abhinoy Kumar Singh IIT Indore
8. Dr. Arun Kumar Verma MNIT Jaipur
9. Dr. Neeraj K. Chaudhary MNNIT Allahabad
10. Dr. Deepak Kumar MNNIT Allahabad
11. Dr. Shailendra Kumar MANIT Bhopal
12. Dr. Amit Singh NIT Delhi
13. Dr. Rahul Panday Exicom Power Solutions Ltd
14. Mr. Sanjeev Arya HPPCL
15. Dr. Ajit Kumar NIT Patna
16. Dr. Lloyds Raja NIT Patna

One-week FDP includes

Seven Days Training will be taken by a group of experts from IISc, IITs, NITs with the experience ranging from several years to several decades in delivering sessions in India and abroad. The training hour is 5-6 hours/each day. Mode of training is Instructor-led live online.

- **40 Hours Instructor-led live online Hands-on based learning & Interactive Query Session.**
- Soft copy of study material, Training PPTs & Projects code
- Participants will get recorded sessions after completion of training
- E-Certificates will be given to participants who attend more than 70% sessions in the workshop, attendance for each session will be taken.

Who Can Participate

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

Registration Fee

- **Faculty/ Research Scholar (Ph.D.): Rs. 500/-**
- **Students (B.Tech/Pg): Rs. 500/-**
- **Industry and others: Rs. 1000/-**

Registration Process

1. Registration fee should be paid through online mode, the account details for this purpose is

Account Name: NIT Patna

Account No.: 50380476798

IFSC Code: IDIB000B810

2. Registration link: <https://forms.gle/a9DWpckETitjMeeEA>
3. The brochure of the program may be downloaded from the Institute website www.nitp.ac.in.

Deadline for registration: 11.03.2021, 5:00 PM

Total 200 seats and the selection will be done on first-cum-first-serve basis. A PDF file of the online filled registration form with proof of registration fee paid should be sent by email to **Dr. Moina Ajmeri (email: moina@nitp.ac.in).**

<http://www.nitp.ac.in/ict/>

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REGISTRATION FORM

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:

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Signature of the Applicant