

# Information Boucher

PhD and MS (R) Admission

Department of Electrical Engineering

January 2025 Session



School of Electrical and Computer Sciences  
Indian Institute of Technology Bhubaneswar  
Argul, Jatni, Odisha 752050

# Department of Electrical Engineering @ IIT Bhubaneswar

**Faculty:** 17 (Regular) + 1 (Visiting Professor)

**Program:** BTech, Dual Degree, MTech, PhD

**Specialization:**

Btech: Electrical Engineering (EE)

Dual Degree: Btech in Electrical Engineering (EE) + MTech in Power Electronics & Drives (PED)

MTech: Power System Engineering (PSE) and Power Electronics & Drives (PED)

PhD: Electrical Engineering

**Students:** 421 (Btech + DD: 324; MTech: 65; PhD: 32)

**Research Laboratory:** 11

**Teaching Laboratory:** 7

**Sponsored Research Project:** 20 Cr +

**Research Publication:** 250 +

**Doctorates Graduated:** 25 +

# Faculty Profile (Clickable)



## [Prof. Subhransu Ranjan Samantaray](#)

Professor, HoS

Research Interests: Power System Protection; PMU and WAMs; Smart Grid



## [Prof. Chandrashekhar Narayan Bhende](#)

Professor

Research Interests: Renewable Energy Sources, Microgrids, Power Quality, Application of Artificial Intelligent Techniques



## [Prof. N. C. Sahoo](#)

Professor

Research Interests: Power System Optimization and Control, Power Electronics and Control of Electric Drives, Renewable Energy Systems, Applied Soft Computing



## [Dr. Sankarsan Mohapatro](#)

Associate Professor, Head of EE

Research Interests: High Voltage Engineering; Industrial Application of High Voltage for Air Pollution Control; High Voltage Modular Power Supply; Non-thermal plasma application to agriculture; DC Microgrid; Renewable Energy



## [Dr. Srinivas Bhaskar Karanki](#)

Associate Professor

Research Interests: Power quality, Energy storage, DC-DC Converters for renewable energy sources, and power electronics applications in power systems.



## [Dr. Narsa Reddy Tummuru](#)

Associate Professor

Research Interests: EV chargers; Wireless Power Transfer Systems for EV Applications; Hybrid Energy Storage Applications; Microgrids; Regenerative Braking aspects of EVs, and Integration of Renewable Energy Resources.



## [Dr. Dipankar De](#)

Assistant Professor

Research Interests: Switched Mode Power Converters; Design of Integrated Magnetics; Application of Power Electronics in Power Systems; Grid Interactive Converters; Wide Band-gap Device based Power Conversion; Renewable Energy and Energy Storage

# Faculty Profile (Clickable)



## [Dr. Chandrasekhar Perumalla](#)

Assistant Professor

Research Interests: Integration and Control of Renewable Energy Systems, Design and Development of Smart Controllers for Microgrid/Smart Grid Systems, Control of Active Distribution Systems, Smart Energy Management in Hybrid AC/DC Microgrid Systems, Virtual Synchronous



## [Dr. Olive Ray](#)

Assistant Professor

Research Interests: Multi-port Power Electronic Converters; Digital control of Power Electronics; Electric Vehicle subsystems



## [Dr. Ankit Ravindra Deshmukh](#)

Assistant Professor

Research Interests: Model Based Controls; Data driven Control; Adaptive Algorithms for Sparse System Identification; Applications of Linear and Nonlinear Optimization in Control and signal processing



## [Dr. Ankit Dalal](#)

Assistant Professor

Research Interests: Electrical machines, Motors for Electric vehicles, Unmanned vehicle systems, Motion solutions for medical devices, Diagnostics and Predictive maintenance



## [Dr. Pankaj Dilip Achlerkar](#)

Assistant Professor

Research Interests: Power electronics interfaced power systems (dynamic model development, stability analysis, control design issues, control interactions, fault studies); Microgrids (AC, DC, Hybrid, and Networked Microgrids); HVDC transmission; Renewable Energy Systems



## [Dr. Nawaz Hussain](#)

Assistant Professor

Research Interests: Multilevel power conversion devices and control; Machine learning algorithms for power electronic converters; Model predictive control of power electronic converters; Stability analysis and optimization of power systems.

# Faculty Profile (Clickable)



**[Dr. Ramu Nair](#)**

Assistant Professor

Research Interests: Electric Machine Modeling, Analysis and Control Design and Development of Power Electronic Converters Resonant Converter Topologies and Control WBG Devices for Power Conversion



**[Dr. Abhinav Arya](#)**

Assistant Professor

Research Interests: Power Electronics and Reliability in Electric Vehicles, Reliability Assessment and Improvement of Wide Bandgap Power Devices



**[Dr. Abhineet Prakash](#)**

Assistant Professor

Research Interests: Stability and control of large power system with high renewable energy penetration; Power system dynamic state estimation; Forced oscillation detection and inertia estimation in power system.



**[Dr. Bidhan Biswas](#)**

Assistant Professor

Research Interests: Novel monitoring and diagnostics methods for power apparatus; Non-thermal plasma applications

PhD

# Broad Research Area

1. Power Systems
2. Power Electronics & Drives
3. Control and Instrumentation
4. Electric Machines
5. Renewable Energy Systems
6. Microgrid/Smartgrid
7. Electric Vehicle
8. Electric Power Quality
9. High Voltage Engineering

# Eligibility: Who Can Apply?

## Institute PhD Scholar

For Details [Click Here](#)

1. M. Tech./ME or equivalent degree in appropriate disciplines, with minimum 60% marks or 6.5 CGPA (in a 10-point scale).

OR

B Tech/BE or equivalent degree in appropriate disciplines with minimum 70% marks or 7.5 CGPA (in a 10-point scale). The candidate must be GATE qualified in (EE, IN) discipline.

2. Minimum 60% marks or 6.5 CGPA (in a 10-point scale) required in all other examinations from Class 10 onwards. A single relaxation up to 5% marks in secondary/higher secondary/equivalent is permitted.

In addition, the following categories of candidates will be automatically shortlisted (they need not be GATE/CSIR-UGC NET (LS) qualified) to appear for the written test:

- i. B.Tech. and Dual Degree /Equivalent students of IIT Bhubaneswar and other IITs having CGPA  $\geq 8.0$
- ii. IISc M.Tech/M.Sc. degree holders with CGPA  $\geq 8.5$



# Eligibility: Who Can Apply?

## **Sponsored PhD Scholar (Sponsored by External Organization)**

**For Details [Click Here](#)**

They must be in continuous service for at least three (3) years in any one of the following categories of organizations where appropriate R&D facilities exist

1. M. Tech./ME or equivalent degree in appropriate disciplines, with minimum 60% marks or 6.5 CGPA (in a 10-point scale).

OR

B Tech/BE or equivalent degree in appropriate disciplines with minimum 70% marks or 7.5 CGPA (in a 10-point scale). The candidate must be GATE qualified in (EE, IN) discipline.

2. Minimum 60% marks or 6.5 CGPA (in a 10-point scale) required in all other examinations from Class 10 onwards. A single relaxation up to 5% marks in secondary/higher secondary/equivalent is permitted.

**Candidates under this category need not be GATE or CSIR-UGC NET (LS) qualified.** All other academic qualifications under Institute PhD Scholar apply to these candidates. Candidates must submit Sponsorship Certificates as per the prescribed format at the time of application; otherwise their applications will not be considered.

# Eligibility: Who Can Apply?

**Sponsored PhD Scholar** (Sponsored GoI Doctoral Fellowship (CSIR—UGC, DST-INSPIRE, DBT, ICMR etc.))

**For Details [Click Here](#)**

1. M. Tech./ME or equivalent degree in appropriate disciplines, with minimum 60% marks or 6.5 CGPA (in a 10-point scale).

OR

B Tech/BE or equivalent degree in appropriate disciplines with minimum 70% marks or 7.5 CGPA (in a 10-point scale). The candidate must be GATE qualified in (EE, IN) discipline.

2. Minimum 60% marks or 6.5 CGPA (in a 10-point scale) required in all other examinations from Class 10 onwards. A single relaxation up to 5% marks in secondary/higher secondary/equivalent is permitted.

**Candidates under this category need not be GATE or CSIR-UGC NET (LS) qualified.** All other academic qualifications under Institute PhD Scholar apply to these candidates.

# Shortlisting Process

**For Details [Click Here](#)**

The candidate must fulfil the minimum eligibility criterion as specified earlier.

Department may fix additional criterion in terms of marks / score.

Moreover, school may put additional criterion in terms of discipline/branch of the candidate at undergraduate and postgraduate level.

In addition, the following categories of candidates will be automatically shortlisted (they need not be GATE/CSIR-UGC NET (LS) qualified) to appear for the written test:

- i. B.Tech. and Dual Degree /Equivalent students of IIT Bhubaneswar and other IITs having CGPA  $\geq 8.0$
- ii. IISc M.Tech/M.Sc. degree holders with CGPA  $\geq 8.5$

# Selection Process

**For Details [Click Here](#)**

All shortlisted Ph.D applicants including sponsored and Institute staff category (IIT Bhubaneswar) candidates will have to appear the written test and interview.

The Ph.D. selection to be based on 40% weightage in a written test and 60% weightage in an interview.

The Schools can fix cut-offs for written test and interview based upon the requirements.

The final selection will be based on combined performances in the written test and interview.

# Written Test

Total Marks: 50 Marks (MCQ Type)

Part A: 10 Questions Each Carrying One Mark

Part B: 20 Questions Each Carrying Two Marks

Duration: 90 Minutes

Calculator is allowed.

# Syllabus

**Basic Electrical Engineering:** DC Networks; Single phase AC Circuits; Three phase AC Circuits; Two Port Network; Theorems; DC Transient

**Electric Machine:** DC Machines, 1-Ph Transformer

**Mathematics:** Laplace Transform; Inverse Laplace Transform; Fourier Transform; Ordinary Differential Equation; Linear Differential Equation

**Control Systems:** Open loop and closed-loop control systems; Transient Response and Steady State Error Analysis; Root Locus Method; Frequency Response Analysis; Compensation Techniques; State Space Analysis

**Power Systems:** Line Parameters; Performance of Transmission Lines; Overhead Line Insulators; Mechanical Design of Overhead Lines; Corona; Under Ground Cable; Power System Transients; Design of Transmission Lines; Power Circle diagram; Load flow analysis; Load frequency control; Economic Operation of power system; Power system stability

**Power Electronics:** Power Semiconductor Devices; Rectifiers; AC-AC Phase control; DC-DC Converters; Inverters; Pulse Width Modulation; Power Supply Applications

**AC Machine and Drives:** Single Phase Induction Motor; Three-Phase induction motor; Synchronous Motor; Synchronous Generator; Auto Transformer; Three Phase Transformer; AC Drives; DC Drives.

MS (R)

# Broad Research Area

1. Power Systems
2. Power Electronics & Drives
3. Control and Instrumentation
4. Electric Machines
5. Renewable Energy Systems
6. Microgrid/Smartgrid
7. Electric Vehicle
8. Electric Power Quality
9. High Voltage Engineering



# Eligibility: Who Can Apply?

## Institute Fellowship

**For Details [Click Here](#)**

1. B.Tech./B.E. or equivalent degree in an appropriate discipline with minimum 60% marks or 6.5 CGPA (in a 10-point scale). The candidate must be GATE qualified in (EE, IN) discipline.

OR

Master of Science or equivalent degree in an appropriate discipline with minimum 60% marks or 6.5 CGPA (in a 10-point scale), and minimum 60% marks or 6.5 CGPA (in a 10-point scale) in Bachelor of Science/Arts/Commerce or equivalent degree, from a recognized University / Institution. The candidate must be GATE or CSIR-UGC NET (LS) qualified in an appropriate discipline.

2. Minimum 60% marks in all examinations throughout the academic career with a single relaxation of 5% marks in either 10th or equivalent or 12th level examination or equivalent.

3. An additional relaxation of up to 5% marks in all academic examination levels is permitted for SC/ST/PwD candidates.

# Eligibility: Who Can Apply?

## **Project Staff Category (IIT Bhubaneswar)**

**For Details [Click Here](#)**

1. Permanent staff members of this Institute or sponsored by other recognized organizations with minimum qualification of B.Tech./B.E. or equivalent degree in an appropriate discipline with minimum 70% marks or 7.5 CGPA (in a 10-point scale) are eligible to apply for MS.R program, they need not be GATE/CSIR-UGC NET (LS) qualified.

OR

B. Tech./B.E. or equivalent degree in an appropriate discipline with minimum 60% marks or 6.5 CGPA with GATE/CSIR-UGC NET (LS) qualified.

2. The candidates of this category must have minimum 3 years of experience and be employed in industry/organization at the time of applying.

3. Such candidates need to produce No Objection Certificate (NOC) from the employer while applying.

# Eligibility: Who Can Apply?

## Students of CFTIs

**For Details [Click Here](#)**

Students with B. Tech. degree from Centrally Funded Technical Institutes (CFTIs): Such applicants with a CGPA greater than or equal to 8.0 are eligible to apply without GATE.

# Details of GATE Discipline Requirement

Details of GATE Discipline Requirement wherever applicable

**GATE in Electrical Engineering (EE)**

**GATE in Instrumentation (IN)**

# Shortlisting Process

**For Details [Click Here](#)**

The candidate must fulfil the minimum eligibility criterion as specified above.

School(s) may fix additional criterion in terms of marks / score.

Moreover, school(s) may put additional criterion in terms of discipline/branch of the candidate at undergraduate and postgraduate level.

# Selection Process

**For Details [Click Here](#)**

All shortlisted applicants including sponsored and Institute staff category (IIT Bhubaneswar) candidates will have to appear the written test and interview.

The selection to be based on 40% weightage in a written test and 60% weightage in an interview.

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**Thank You**