INSTITUTE VISION

To facilitate transformation of students into good human beings, responsible citizens and competent professionals, focusing on assimilation, generation and dissemination of knowledge.

INSTITUTE MISSION

- Impart quality education to meet the needs of profession and society, and achieve excellence in teaching-learning and research.
- Attract and develop talented and committed human resource, and provide an environment conducive to innovation, creativity, team-spirit and entrepreneurial leadership.
- Facilitate effective interactions among faculty and students, and foster networking with alumni, industries, institutions and other stake-holders.
- Practice and promote high standards of professional ethics, transparency and accountability.

ABOUT THE DEPARTMENT

The Department of Electrical and Electronics Engineering was established right from the inception of the institute i.e., on August 6, 1960, with the under-graduate programme. The post-graduate programme in Power and Energy Systems was started in the year 1992. Formal research activities leading to a doctoral degree (PhD) were introduced in the year 2003. The department has always exerted the best of its effort to meet the objectives of achieving technical excellence in the areas of Electrical and Electronics Engineering such as power systems, power electronics & drive systems, energy systems, instrumentation, control, industrial automation, analog & digital electronics, signal processing and microprocessor & microcontrollers.

The department has well-equipped state-of-the-art laboratories to complement the theoretical coursework. The faculty of the department have been involved in several research projects in cutting-edge technologies and have publications in many international journals & conferences. The department also undertakes many consultancy projects from industry and other organisations. There are several full-time Ph. D. scholars pursuing research in the department, in addition to the part-time registrants. Some of the advanced equipments were procured and maintained under TEQIP-I and TEQIP-II programmes. The testing and consulting service provided by the department faculty to the nearby industries and other Govt. organizations has placed the Industry-Institute collaboration at a higher platform. The faculty members are actively engaged in the Research and Development activities with externally sponsored projects from various funding agencies like CPRI, MoPs, MoCIT, KSCST, DELL, Schneider Electric, L&T, Robert Bosch to name a few.
Students from the department are recruited by multinational Core-companies as well as IT companies. A large number of students have been obtaining admissions into various reputed institutions in USA, Australia, Canada, Singapore, and the European Union for higher studies. Presence of our alumni at various Industries and reputed universities across the globe has helped our graduates to plan their post graduate and doctoral studies.

VISION OF THE DEPARTMENT

The Department of Electrical and Electronics Engineering strives to be a Centre of Excellence in education, training and research, producing high quality engineers and researchers. In this endeavour, the Department will continually develop knowledge and quality of staff, upgrade and create new laboratory facilities, revise the teaching program, acquire adequate new equipment to keep abreast, contribute and progress in the emerging technologies and committed for rendering the best service to the society.

MISSION OF THE DEPARTMENT

- To produce graduates with a strong foundation in the basic sciences and mathematics that will enable them to identify and solve electrical engineering problems.
- Provide students with a solid foundation in Electrical Engineering that prepares them for life-long careers and professional growth in fields of their choice.
- Provide our students with the basic skills to communicate effectively and to develop the ability to function as members of multi-disciplinary teams.
- Provide our students with a broad-based education so that they can appreciate diversity of opinion, better understand ethical issues, and develop a more global perspective.
- Provide our students with a relevant engineering design experience that is integrated across the four-year curriculum. Through those experiences we will develop in our students an understanding of the relationships between theory and practice.

POST GRADUATE PROGRAMME OF THE DEPARTMENT:

- M.Tech. in Power and Energy Systems Annual intake: 27
- M.Tech. (By Research) Annual intake: 01
- Admission through ICCR in last five years 07
- Department is recognised centre for QIP and QIP-Polytechnic
- Department is part of the M.Tech. programme Construction Technology and management in collaboration with L & T (list in Civil engineering department).
Description:
- Started with an intake of 13 in 1992
- Intake increased to 27 in 2010.

Programme Educational Objectives (PEOs)

**PEO-1:** To train students into professionals who can hold appropriate positions in the area of Power and Energy Systems with specific advanced topics in (i) Electrical Power (ii) Generation of electrical power in conventional method for bulk use (iii) Generation Nonconventional for tiding over the crisis (iv) Utilization of power: Efficiency, Reliability, Conservation, Availability, Quality. (v) Transmission Distribution and control (vi) Power equipment testing (vii) Protection and safety (viii) Costing and audit (ix) Systems approach (x) Electronics (xi) Computing.

**PEO-2:** To train students in the area of Power and Energy Systems for Engineering professions of the kind (i) Operations (ii) Maintenance (iii) Research and innovation (iv) Design (v) Fabrication (vi) Testing (vii) Planning (viii) Analysis (ix) Academics (x) Interdisciplinary (xi) Further studies in Core Technical.

**PEO-3:** Objective is to develop students into good human beings, useful to the society through their core expertise (PEO1 and PEO2), with good human values and professional ethics.

**PEO-4:** Objective is to develop them for lifelong learning process in the core area (PEO1, PEO2), by giving them the state of the art technology and the learning process.

Programme Outcomes (POs)

**PO-1.** Ability to apply the knowledge of basic sciences, mathematics and engineering in the broad area Power and Energy Systems.

**PO-2.** Ability to design, conduct experiments, analyze & interpret data based on the ability of basic science and engineering to inculcate research abilities.

**PO-3.** Ability to understand the component, system or process to meet desired needs with in realistic constraints such as economic, environmental, and sustainability issues to function in multidisciplinary teams.

**PO-4.** Based on the above PO (1 to 3) to develop skills to analyse the core (Power and Energy System) related engineering problems, through experimentation and analysis.

**PO-5.** To develop the “understanding and the skills” needed to analyze power and energy system related problems which are complex and need to be learnt through scaled down lab models, or simulations (Computer based). (This is to development of soft skills to aid the core engineering discipline).

**PO-6.** To give basic understanding of economic, social, legal and safety issues associated with power and energy systems.
PO-7. To impart knowledge related to renewable energy sources and energy conservation issues, pointing towards sustainable development, in the power and energy discipline.

PO-8. To impart knowledge related to professional practices applicable to engineering practices by ingraining in the courses.

PO-9. Personality development to work in groups required for the system science related complex problems with multidisciplinary knowledge requirement through interconnected project/study activities.

PO-10. To impart knowledge required for effective professional communications through technical writing, reports and presentations.

PO-11. Skill development and knowledge in the area of core engineering activates (Power and Energy Systems) specific to the program.

PO-12. To impart education to learn over and above the planned curriculum leading self and lifelong learning habits

AWARDS AND RECOGNITIONS:
- Department is recognised centre for QIP and QIP-Polytechnic.
### National awards for M.Tech. Projects:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sl No.</th>
<th>Name of the student</th>
<th>Name of guide</th>
<th>Project title</th>
</tr>
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<tbody>
<tr>
<td>2013</td>
<td>1</td>
<td>Mr M Vijay</td>
<td>Dr D Jena</td>
<td>Automatic generation control using artificial neural network.</td>
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<tr>
<td>2014*</td>
<td>1</td>
<td>Mr. D Shakthi Prasad</td>
<td>Dr G S Punekar</td>
<td>Concerning channel base current functions for lightning studies.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Ms .Arathi Sahaya Rones V</td>
<td>Dr K P Vittal</td>
<td>Adaptive protection scheme for feeder with DG penetration: Development of relay coordination software and relay logic.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Mr. Vinod. M. P</td>
<td>Dr K P Vittal</td>
<td>Development of generator protection relay.</td>
</tr>
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<td></td>
<td>4</td>
<td>Mr. Prashanth K V</td>
<td>Mr Girisha Navada</td>
<td>Nonlinear adaptive control of permanent magnet synchronous motor.</td>
</tr>
<tr>
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<td>2</td>
<td>Ms. Ritty Raju</td>
<td>Dr K N Shubhanaga</td>
<td>Design, Implementation and Modelling Of A Laboratory TCSC</td>
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<tr>
<td></td>
<td>3</td>
<td>Mr. Vanjari Venkata Ramana</td>
<td>Dr D Jena</td>
<td>Modelling and Control of Photovoltaic System Under Non- Uniform Irradiance</td>
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<tr>
<td></td>
<td>4</td>
<td>Ms. Meghana Ramesh</td>
<td>Dr G S Punekar</td>
<td>Inrush Current Due to Switching-in of Capacitors in a Pre- Energised Capacitor Bank : Some Aspects</td>
</tr>
<tr>
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<td>5</td>
<td>Ms. Geethi Krishnan</td>
<td>Dr D N Goankar</td>
<td>Intentional Islanding Operations Of Distributed Generation Systems</td>
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<tr>
<td>2016</td>
<td>1</td>
<td>Ms. Elchuri Prasanthi</td>
<td>Dr K N Shubhanaga</td>
<td>Stability Analysis of a Grid Connected Doubly-Fed Induction Generator- Based Wind Energy Conversion System</td>
</tr>
</tbody>
</table>

*M.Tech P & ES of EED-NIT Surathkal has highest number of POSOCO awards 4/25 in 2014 in par with IIT Madras and IIT Delhi.  
** M.Tech P & ES of EED-NIT Surathkal has highest number of POSOCO awards 5/25 in 2015; ahead of other IITs as well!
Dattaraya N. Gaonkar, Ph.D. (IIT-R)
Assistant Professor
Research Interest: Power System Operation and Control, Distributed Generation, Power Electronics
http://www.eee.nitk.ac.in/faculty/dng

Debasisha Jena, Ph.D. (NIT-Rourkela)
Assistant Professor
Research Interest: System Identifications, Neural networks and Evolutionary Computations
http://www.eee.nitk.ac.in/faculty/dj

Girisha Navada H., M.Tech. (NIT-Calicut), (Ph.D. NITK)
Assistant Professor
Research Interest: Control Systems
http://www.eee.nitk.ac.in/faculty/hgn

Jora M Gonda, M.E. (IISc), (Ph.D. NITK)
Associate Professor
Research Interest: Power Systems, Signal Processing, Power Electronics and Drives
http://www.eee.nitk.ac.in/faculty/jmg

Kalpana R., Ph.D. (IIT-D)
Assistant Professor
Research Interest: Power Quality Improvements in SMPS
http://www.eee.nitk.ac.in/faculty/rk

Karthikeyan A., Ph.D. (NIT-Trichy)
Assistant Professor
Research Interest: Power Electronics Applications to Renewable Energy Systems
http://www.eee.nitk.ac.in/faculty/ak
Krishnan C.M.C, Ph.D. (Ghent University, Belgium)
Assistant Professor
Research Interest: Parametric Macromodeling of complex systems, Predictive modelling / behavior modeling methods for electrical energy systems
http://www.eee.nitk.ac.in/faculty/cmck

Manjunatha Shrama K, Ph.D. (NITK)
Associate Professor
Research Interest: Distribution System Automation and Distributed Generation
http://www.eee.nitk.ac.in/faculty/kms

Nagendrappa H. Ph.D. (Univ. Of Victoria, Canada)
Assistant Professor
Research Interest: Power Electronics and Renewable Energy
http://www.eee.nitk.ac.in/faculty/hn

Panduranga Vittal K, Ph.D. (NITK)
Professor
Research Interest: Power System Protection and Adaptive Relaying, Transient Behavioural Modelling of Power Apparatus & FACT devices, Smart Grid Environment, Embedded System Application to Energy Systems
http://www.eee.nitk.ac.in/faculty/kpv

Parthiban P., Ph.D. (IIT-R)
Assistant Professor
Research Interest: Power Electronics & Drives
http://www.eee.nitk.ac.in/faculty/pp

Punekar G.S. Ph.D. (IIT-Kgp)
Associate Professor
Research Interest: High Voltage Engineering, Electric Field Computations, Condition Monitoring & Diagnostics, Power System Protection & Safety.
http://www.eee.nitk.ac.in/faculty/gsp
Rajagopala K, M.Tech. (IIT-Kgp)
Associate Professor

Research Interest: Power Systems
http://www.eee.nitk.ac.in/faculty/krg

Rao I. R., M.Tech. (Ph.D., NITK)
Assistant Professor

Research Interest: Circuit Theory, System Analysis
http://www.eee.nitk.ac.in/faculty/irr

Sheron Figarado Ph.D. (IISc.)
Assistant Professor

Research Interest: Multilevel Inverters, Induction Motor Drives, PWM Techniques
http://www.eee.nitk.ac.in/faculty/sf

Shubhanga K N, Ph.D. (IIT-B)
Associate Professor

Research Interest: Power System Dynamics and FACT devices
http://www.eee.nitk.ac.in/faculty/kns

Tukaram Moger, Ph.D. (IISc)
Assistant Professor
Research Interest: Grid Integration of Renewable Energy, Power System Operation and Planning, Power System Deregulation
http://www.eee.nitk.ac.in/faculty/tm

Udayakumar R Y, Ph.D. (IIT-B)
Professor

Research Interest: Energy Systems, Smart Grid, Renewable Energy Resources, Power Electronics, Energy Management,
http://www.eee.nitk.ac.in/faculty/ury
Venkatesaperumal B., Ph.D. (IIT-D)
Associate Professor

Research Interest: Power Electronics and Drives, PV applications to power generation, GATE driver for High Power Devices.
http://www.eee.nitk.ac.in/faculty/bvp

Vinatha U, Ph.D. (NITK)
Associate Professor & Head

Research Interest: Power Electronics and Renewable Energy Systems
http://www.eee.nitk.ac.in/faculty/uv

Yellasiri Suresh, Ph.D. (NIT-R)
Asst. Professor

Research Interest: Power Electronics, Drives and Power Quality.
http://www.eee.nitk.ac.in/faculty/ys

Technical and Office Staff:

Arun Kumar Shetty B.
Assistant Engineer

Basavarajaiah A G.
Technician

B.S. Karunakar
Sr. Technical Assistant

Indiresha
Sr. Attendant

Jagadish S. Hegde
Sr. Technician

K. M. Naik
Asst. Executive Engineer

Santhosh Kumar S.
Anchan
Technician SG - II

Umesha P.
Assistant Engineer

Gangadhar S. Amin
Attendant

Kasturi Rohidas
Sr. Assistant
Fundos Projetados:

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<td>Amount in Lakhs</td>
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<td>20.00</td>
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Project Topics

- FPGA based Implementation of MPPT for PV System
- Control Strategies for DVR under Distorted Grid Conditions
- Renewable Energy Source Integrated Smart Grid Technology
  - I. Sensing Technique
  - II. Super-Efficient Motor Control
- Investigation on the Operation & Control of Multiple Distributed Generation Resources in a Micro grid (Phase-I) sponsored by Ministry of Power Government of India through CPRI Bangalore
- Virtual Laboratory on substation automation and industrial drives
- FPGA Implementation of Maximum power point tracking system using Neural Networks


Facilities in the Department:

- Digital Implementation Using Microprocessors/microcontrollers/DSC, DSP and FPGA hardware and software facilities from Xilinix, Micro sim, free scale semiconductors and Texas instruments.
- Energy Audit Equipment’s.
- Real Time Hardware emulating Flat-forms; dSPACE.
- Wind solar Hybrid micro grid system.
- High voltage lab with 100kV 100 mA HV ac source and associated DC and impulse voltage test facility. Insulation Tester. Insulation oil Test kit, 35pF, 100kV standard capacitor, AEPD analyser.
- Digital earth resistance test kit.
- VSC models developing-house, testing/performance evaluation of power converters.
- Scale down model of 4 machine power systems, power system simulation lab within house developed simulation packages.
- Departmental computational facilities catering for signals and systems, power system dynamics, control systems and digital signal processing laboratory.
- Fuel cell test kit
OTHER PROGRAMMES OFFERED BY THE DEPARTMENT

UNDER GRADUATE: The programme accredited by NBA for 5 years in 2015.

B.Tech. in Electrical and electronics engineering
Annual intake: 111
Admission through DASA in last five years
Annual Intake: 40

DOCTORAL:
On roll: Full time: 40 Part times: 09
Annual Intake: 09 (since 2009)
More than 20 PhD’s awarded