2000

IARE

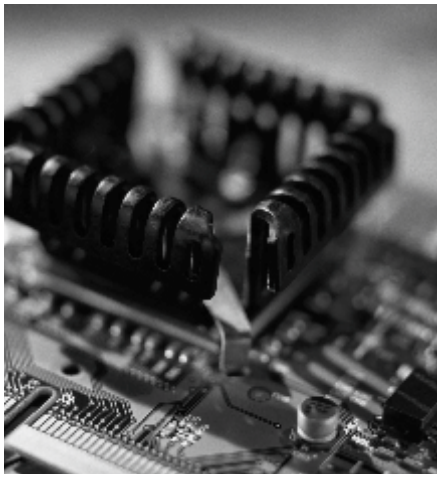
EDUCATION FOR LIBERATION

IARE

Institute of
Aeronautical Engineering

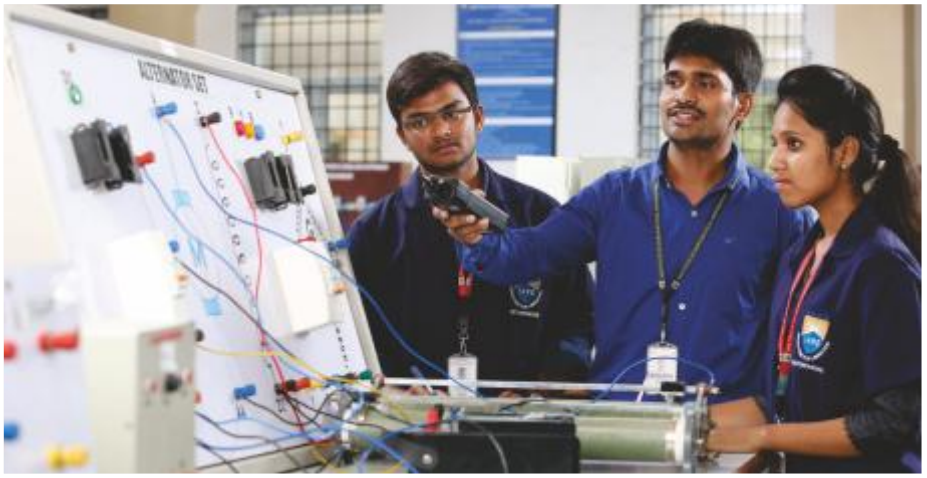
WELCOMES YOU INTO

DAZZLING FUTURE



EEE

Electrical and Electronics Engineering



VISION & MISSION

VISION

To produce comprehensively trained, socially responsible, innovative electrical engineers and researchers of high quality who can contribute for the nations and global development.

MISSION

The mission of Electrical and Electronics Engineering is to provide academic environment with a strong theoretical foundation, practical engineering skills, experience in interpersonal communication and teamwork along with emphasis on ethics, professional conduct and critical thinking. Further, the graduates will be trained to have successful engagement in research and development and entrepreneurship.

EDUCATIONAL OBJECTIVES AND OUTCOMES

Objective of the department is to facilitate students to meet the goals set through Program Outcomes (POs), Program Educational Objectives (PEOs) AND Program Specific Outcomes (PSOs) so that they can face the challenges in real time applications.

B. Tech (EEE) - PROGRAM OUTCOMES (PO's)

A graduate of the Electrical and Electronics Engineering Program will demonstrate:

Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, demonstrate the knowledge of, and need for sustainable development.

Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PROGRAM EDUCATIONAL OBJECTIVES (PEO's)

A graduate of the Electrical and Electronics Engineering Program should:

- To provide students with the knowledge of Basic Sciences in general and Electrical and electronics Engineering in particular so as to acquire the necessary skills for analysis and synthesis of problems in generation, transmission and distribution.
- To provide technical knowledge and skills to identify, comprehend and solve complex tasks in industry and research and inspire the students to become future researchers / scientists with innovative ideas
- To prepare the students for successful employment in various Industrial and Government organizations, both at the National and International level, with professional competence and ethical administrative acumen so as to handle critical situations and meet deadlines.
- To train the students in basic human and technical communication skills so that they may be both good team-members, leaders and responsible citizen.

PROGRAM SPECIFIC OUTCOMES (PSO's)

A graduate of the EEE Program will demonstrate:

- Able to utilize the knowledge of high voltage engineering in collaboration with power systems in innovative, dynamic and challenging environment, for the research based teamwork.
- To explore the scientific theories, ideas, methodologies and the new cutting edge technologies in renewable energy engineering, and use this erudition in their professional development and gain sufficient competence to solve the current and future energy problems universally.
- To be able to utilize of technologies like PLC, PMC, process controllers, transducers and HMI and design, install, test, maintain power systems and industrial applications.

ABOUT THE DEPARTMENT

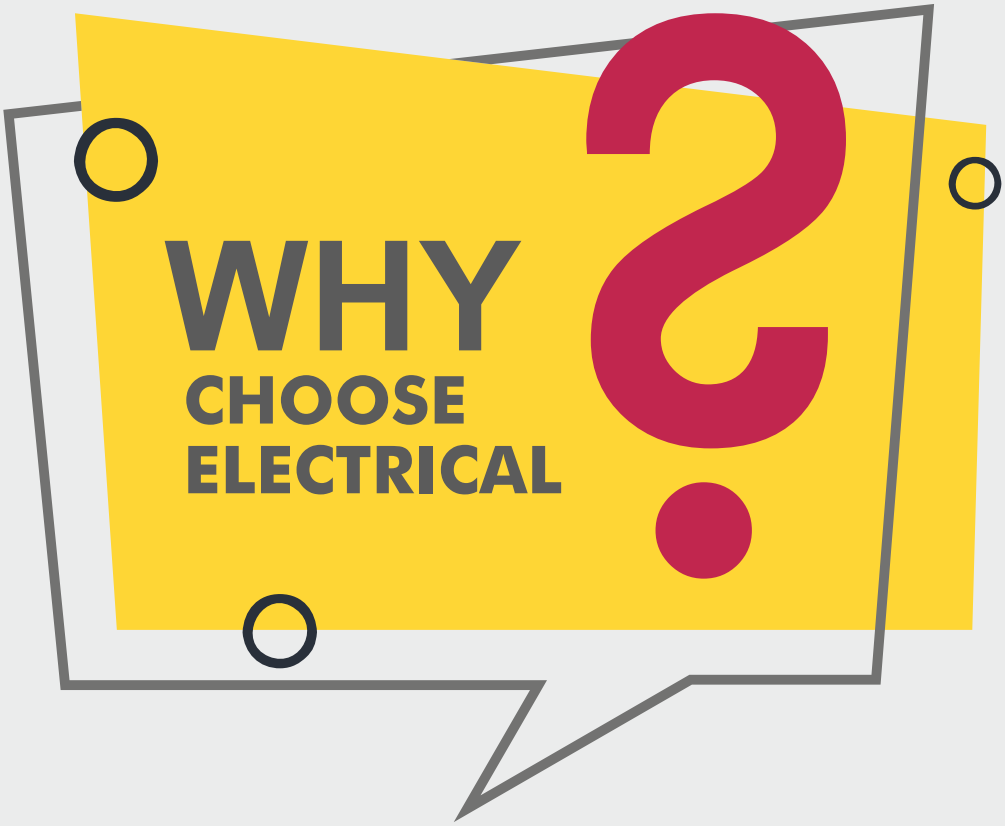
Electrical and Electronics department at IARE prides itself as a founding department, which brings best ranks for the college. The power packed EEE department is established in the year 2004 and has been offering value rich education helping our students to mature into vibrant graduates. The faculty is the channel through which the technical education is sensed and absorbed. The well experienced faculty takes care to simplify the concepts and crystallizes a thorough understanding of engineering fundamentals and applications in various electrical engineering fields. The academic strength of the faculty is reflected by the alumni, who are in top echelons of industry.

The department offers both:

- B-Tech in Electrical and Electronics Engineering.
- M-Tech in Power Electronics and Electrical Drives and Electrical Power Systems.

Highlights of the Department

- Highly qualified and prominent faculty.
- Modern pedagogy with E- Class Rooms.
- Center of excellence in Renewable and Sustainable Energy Sources.
- Consultancy in High Voltage Engineering
- Solar and power quality consultancies.
- Department library with E-Journals and video lectures.
- Energy auditing and management cell.
- LabVIEW Certification Programs.
- Hands-on Training programs in Industrial Automation.
- Training program on solar energy, skill development and entrepreneurship
- Highly Innovative and industry ready students projects.
- Students Technical and Cultural Clubs.
- Personality Development and Soft Skills Training.
- Annual Technical and Cultural Fests.



The department of Electrical and Electronics Engineering (EEE) deals with the engineering problems, opportunities and needs of electrical, electronics, computer, telecommunication systems and related industries. This branch provides students with a wide range of fundamental knowledge in core disciplines such as communications, control systems, signal processing, radio frequency design, micro-processors, micro-electronics, power generation and electrical machines.

ELECTRICAL ENGINEERS HAVE GOOD GRADUATE PROSPECTS

- Enjoy high starting salaries
- Global opportunities
- Always in demand
- At the forefront of future technologies
- Ability to adapt other disciplines of engineering
- DIY (Do It Yourself)

A degree in electrical engineering offers a variety of opportunities for career that are interesting and well paying. Career in EEE include all aspects not only in design, manufacturing, power system engineering, nanotechnology but also in education, robotics, biomedical, aerospace, computers, communications and sales of systems containing electrical and electronic components. EEE applications are very wide and solutions are required for any company in this modern era. It also includes research and implementation of emerging applications.

LADDER TO SUCCESS

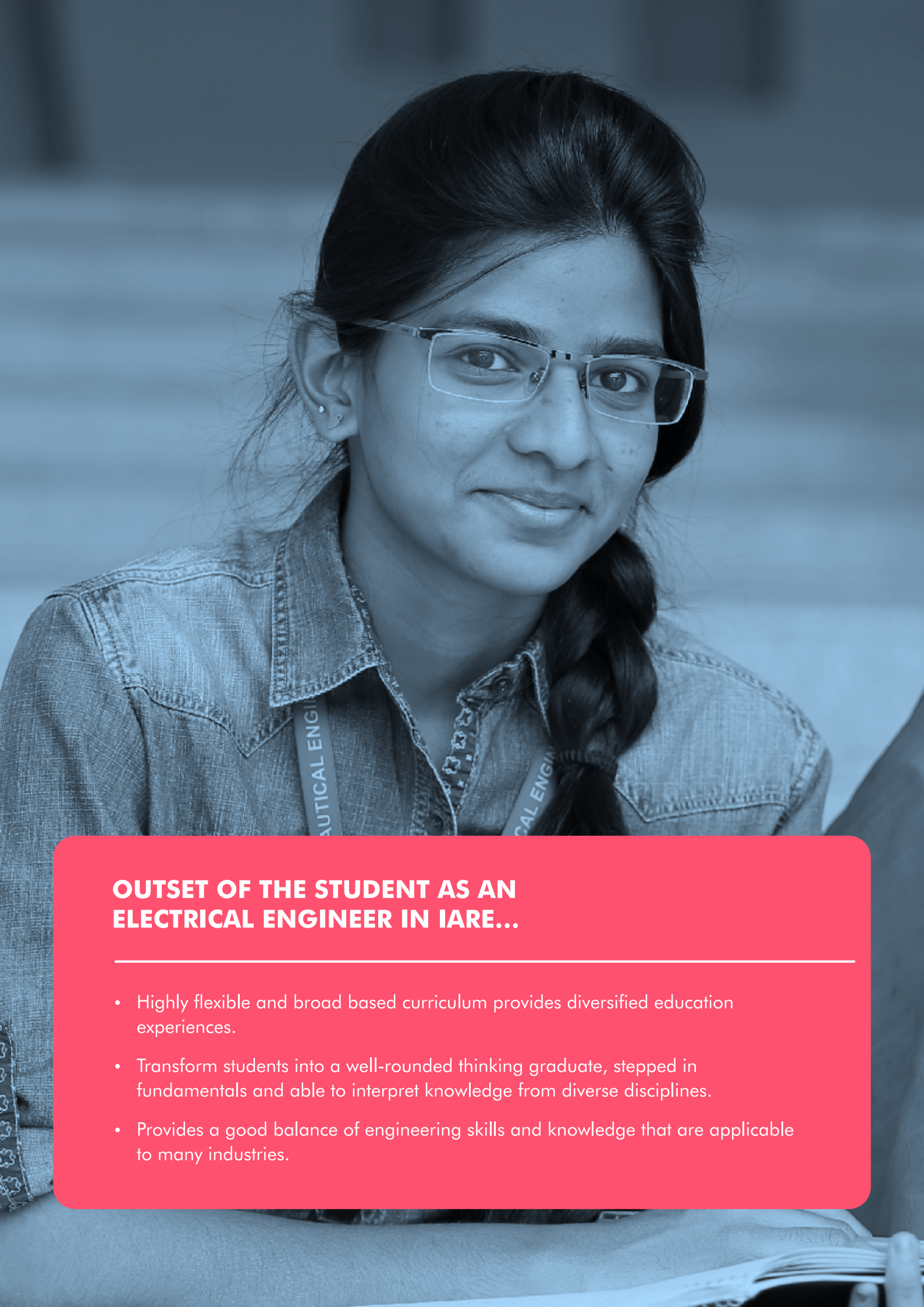
Look around you! You see many projects and companies involving electrical engineers with strong electrical background. Be a part of it! As an electrical engineer find creative solutions to problems while working on a wide range of local, regional and global projects.

JOB OPPURTUITIES

Electrical engineering and its closely related fields (electronics engineering, power engineering, telecommunications engineering, instrumentation and control engineering) - provide career opportunities in many industries and branches of business. They have ample job opportunities both in public and private sectors.

GOVERNMENT JOBS

PRIVATE JOBS



OUTSET OF THE STUDENT AS AN ELECTRICAL ENGINEER IN IARE...

- Highly flexible and broad based curriculum provides diversified education experiences.
- Transform students into a well-rounded thinking graduate, stepped in fundamentals and able to interpret knowledge from diverse disciplines.
- Provides a good balance of engineering skills and knowledge that are applicable to many industries.

AREAS

WHERE YOUR WARD CAN EXPLORE AS AN ELECTRICAL ENGINEER

LABORATORY TOUR AND INFORMATION

--learning by doing

The electrical engineering programs prepare graduates for distinguished practice in professional engineering equipping the students for pursuing solutions to industrial problems.

IARE's "learning by doing" philosophy is emphasized by integrating design throughout the curriculum in numerous design centered laboratories.

Apart from general laboratories we conduct

Industrial automation and PLC lab.

Power system research lab.

High voltage laboratory.

Additional workshop (project model house).

2 WORKSHOPS AND SEMINARS

- -proficiency through practice

- ➔ The objective of the workshop is to impress upon the participants, the usefulness of teaching basic electrical and electronic course.
- ➔ In IARE the proficiency of the students is increased by conducting the following programs.

- ❖ Awareness program on "Introduction to High Voltage Engineering"
- ❖ Workshop on "Modernization of Distribution System"
- ❖ Workshop on "Industrial Automation System Using PLC"
- ❖ Workshop on "Manufacturing of Power Transformer and Trends in Power Transformer Market."

3 RESEARCH AND DEVELOPMENT

- -creating new knowledge

- ➔ IARE accords pivotal status to research and development in pursuit of excellence.
- ➔ The institute plays a vital role in diverse facets of research and development addressing the needs of the nation and contributing to global development.
- ➔ Its distinguished cutting edge research is reflected in the research projects funded by national and international organizations and industries.
- ➔ The synergy of academics and research has catapult IARE into the illustrious circle of world-class institutions.

RESEARCH CENTERS OF R&D

CREST (Center for Renewable Energy and Sustainable Technology)

It is a leading center for deployment of renewable energy based efficient devices and dissemation of system to people in the region and promote wide spread use of renewable energy sources. It provides comprehensive and cost effective renewable energy solutions through projects and consultancy services.

CAPER (Center for Advanced Power Engineering Research)

It is a center to develop and promote research related to reliable and efficient management of power grid. Here we develop and demonstrate grid modernization technologies and enhance the educational experience for students in electric power engineering. As a collaborative effort, CAPER will develop research and demonstrate advanced technologies to meet the operational and expansion needs under uncertainties with an increased penetration of distributed renewable generation

4 PLACEMENTS:

- -endeavour to achieve excellence

- IARE provides an interface / platform for companies to interact with the bright and motivated students in their second and third year.
- Helps in building and sustaining relations with companies and social organizations who wish to recruit students from IARE for internships and research opportunities.
- Notifies students about excellent internship opportunities in various companies and universities worldwide.
- Our students have obtained prestigious placements at leading core and software companies such as General Electronics, BDL, Infosys, Tech Mahindra, CYIENT, NTT DATA, Amara Raja, TATA Motors, TATA Technologies, Hyundai R & D, Wind care India Pvt. Ltd. And many more.

5 SPECIAL TRAINING

- -beyond the class room

- Students take up special training to gain first-hand experience of the professional world.
- These training sessions prepare the candidates for their future. Students are being trained on special software's like PLC, LabVIEW etc.
- Faculty stays beyond the working hours to train our students on specialized softwares.

EETA (Electrical Engineers Technical Association)

- -the technical hub of electrical department

- It has been established with an objective to infuse a technical fervor and make the students more innovative.
- To establish talents and innovative ideas in the students that transforms fast growing modern world.
- To encourage the participants, prizes will be awarded to the winners of various technical events.

ACTIVITIES IN EETA

SEMINARS

QUIZ PROGRAMS

INDUSTRIAL VISITS

PAPER PRESENTATIONS

GROUP DISCUSSIONS

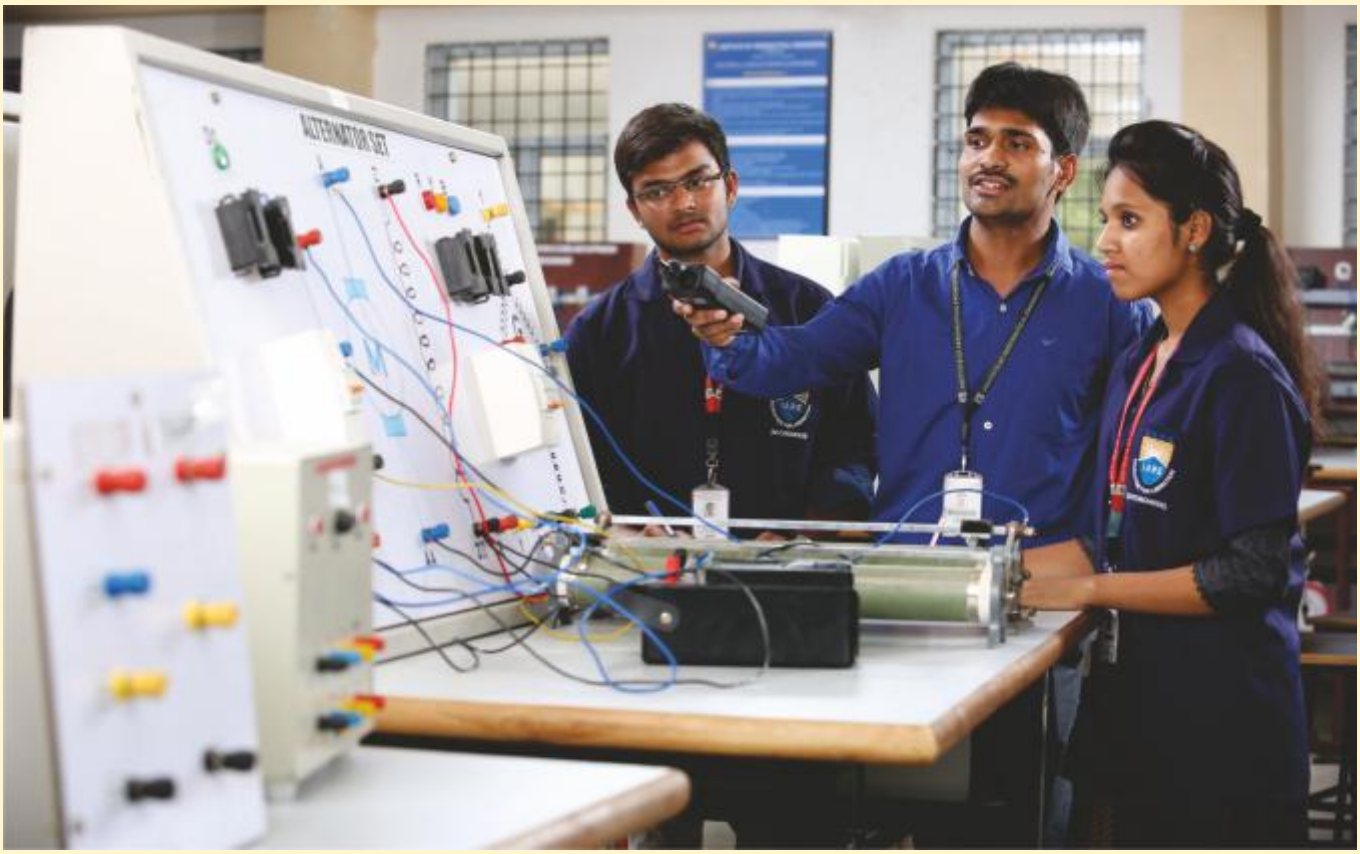
GUEST LECTURES

CAREER GUIDANCE

EVENTS IN EETA

Apart from technical events EETA encourages social activities, such as:

- National Service Scheme- blood donation campaign in the year 2012 and 2014.
- Youth convention in the year 2014.
- Aids awareness program in the year 2010.



ADD ON COURSES FOR STUDENTS

For enhancing and enriching the students engineering knowledge, our department provides certain courses to impart advanced training on engineering technologies. These special courses have been successfully utilized for assessing the curiosity of the students and their minds in research. We have organized following courses to familiarize students to latest technologies like PLC, PSCAD, and Lab VIEW etc.

6 days course on "Fundamentals of PSCAD and Application"

Objective

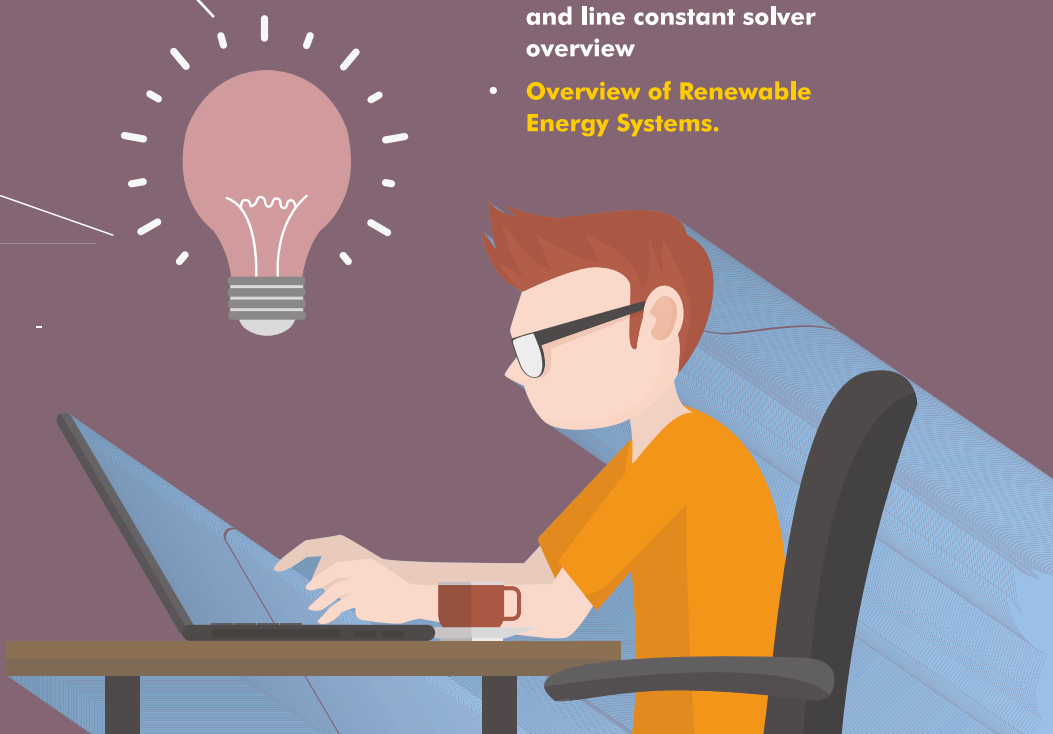
To make them capable of analyzing simple electrical problems and enable them to gain knowledge on PSCAD simulation

Topics covered

- **PSCAD overview**
- **Hierarchical blocks**
- **AC and DC analysis**
- **Switching transients**
- **Transmission line, cables and line constant solver overview**
- **Overview of Renewable Energy Systems.**

OVERVIEW

PSCAD is the professional's simulation tool for analyzing power systems transients. It is also known as PSCAD/EMTDC. EMTDC is simulation engine, which is now integral part of PSCAD.



6 days course on
"Industrial Automation System Using PLC"

Overview

Industrial PLC programming knowledge has become a fundamental requirement for engineer to be successful in industries. This course provides comprehensive training on basic skill required for programming and management of PLC and HMI systems.

Objective

To make aspiring engineers acquainted with conceptual as well as practical knowledge of industrial automation and the latest technologies being used to achieve the same and to inculcate basic fundamentals of automation in students and provide them platform to work on near future.

Topics covered

- Recent trends in industrial automation and PLC-SCADA.
- Detail study of PLC and SCADA.
- PLC I/O's basics, burning and interfacing concepts.
- Hands on LC training kit.

6 days course on "Future Challenges and Issues of Photo Voltaic and Wind Energy Sources in Power Sector"

Overview

Of late there has been phenomenal growth in Solar and Wind power generation not only in India but also globally. There has been an increased interest in research, product development and establishment of manufacturing and testing facilities. The main objective of this course is to make the aspiring engineers acquainted with the conceptual as well as practical knowledge of MATLAB and Simulink programming.

Objective

The objective of the workshop is to bring to focus areas of technology development that aim to take renewable energy into the main stream.

Topics covered

- Over view of PV technology.
- Different PV system configurations.
- Inverters for solar PV systems
- Selection of components of Grid connected PV system.
- Field testing and analysis of large scale solar power plant.
- Introduction to Renewable Energy Technology.
- Design and simulation of solar PV systems.

6 days course on LabVIEW

Overview

Lab VIEW software and National Instruments hardware provide, engineers and scientists around the world to solve application challenges throughout the entire product development life cycle. This course helps the students learn how to use Lab VIEW to create simple applications, understand front panels, block diagrams, icons, and connector panes.

Objective

The objective of the course is to expose and acquaint the participants with the various tools and applications of Lab VIEW in various fields.

Topics covered

- Familiarization with LabVIEW.
- Important components of LabVIEW.
- Application development using LabVIEW.

- **Inter College Tech fest CONSORTIUM:**

  The annual technical fest of electrical and electronics engineering department CONSORTIUM was organized on April, 2017. In this monotonous academic schedule of students, fests show certain degree of fluctuations in the excitement level of students. As the festive season slowly marches closer and closer with time every student can taste the sweet scent of hard work with incessant practices to win the victory title. We provide platform to the young minds organizing certain events like.

- **Electrical view with Lab VIEW**
- **Technical quiz**
- **Technical dumcharades.**
- **Power point presentation**

METE Project

EXPO

IARE sponsors few competitions with the aim to encourage students to be involved in a profession that is crucial to ensure a sustainable future for our technology. It provides a platform where young minds come together to share knowledge and widen the horizon of their own technical knowledge and skills.

Objective:

The objective of conducting this event is to encourage students to develop basic working models related to electrical engineering applications in process of "Learning by Doing" mechanism. We have proposed some projects based on designing of transformers, motors, switch boards, series and parallel connection of sources and also projects based on solar energy. We also encourage students show up their innovative ideas by discovering new projects.

Research Facilities

HIGH VOLTAGE ENGINEERING LABORATORY

High Voltage Engineering laboratory is one of the newly established laboratories of Electrical Engineering Department with capacity to handle maximum voltage of 100kV. High Voltage laboratory is a leading research and development laboratory in the areas of breakdown phenomenon in insulating medias, withstand voltage in different types of air gaps, surface flashover studies on equipment and also electrical interference studies due to discharges from the equipment operating on high voltages It provides test facilities for testing high voltage equipment as per various international standards to electric utilities and industries. It is one of the most research intensive and a well featured state of the art technology.

Faculty in charge: **Prof. P. Sridhar.**

SOLAR ENERGY

IARE houses a solar energy lab for dedicated research towards development and testing of thin films for solar cells. It provides demonstration unit for efficient use of solar energy, characterization and study of photo voltaic module, energy spectrum measuring facility. In a unique proposition, IARE has set up a laboratory for providing hands on experience and research facility for students and faculty in this area.

Faculty in charge:

Dr. P. Malikarjunasarma

PROGRAMMABLE LOGIC CONTROLLERS LABORATORY

This is an advanced laboratory that provides all resources needed to deliver comprehensive training program. We include wide range of training kits to enable instructors and students to perform a wide range of experiments and practical troubleshooting tasks. It is specially designed for the control of manufacturing processes, such as assembly lines for producing various products, or robotic devices, or any activity that requires high reliability and precision. They can be programmed and reprogrammed depending on the requirements without changing any hardware. In contrast with purely electronic or relay based systems known as hardwired logic a programmable logic controller provides greater flexibility..

Faculty in charge:

Mr. P Mabuhussain

Consultancy @ EEE

The Department of Electrical Engineering provides consultancy services in the areas of Power Systems, Control Systems, Electrical Machines, Power Electronics, Renewable Energy and Electrical System Design and Estimation applications by experienced and highly qualified faculty. EEE consultancy is a team of eminent people who are working in different verticals. The most important and valuable asset for any organization is to have a right team of people at the right time and at the right place for its success. Faculty members and students actively participate in the consultancy works which helps the students in getting campus & off-campus employment in the power sector. We as a team have gained a lot of experience in all the fields to make the journey fruitful. Our team is completely dedicated to our students in succeeding globally. We aim to be a world-class organization in education, training, research, consultancy and placement services.

The consultancy works are carried out through

Center for Renewable Energy and Sustainable Technology (CREST):

The following works are carried out by research students in this group:

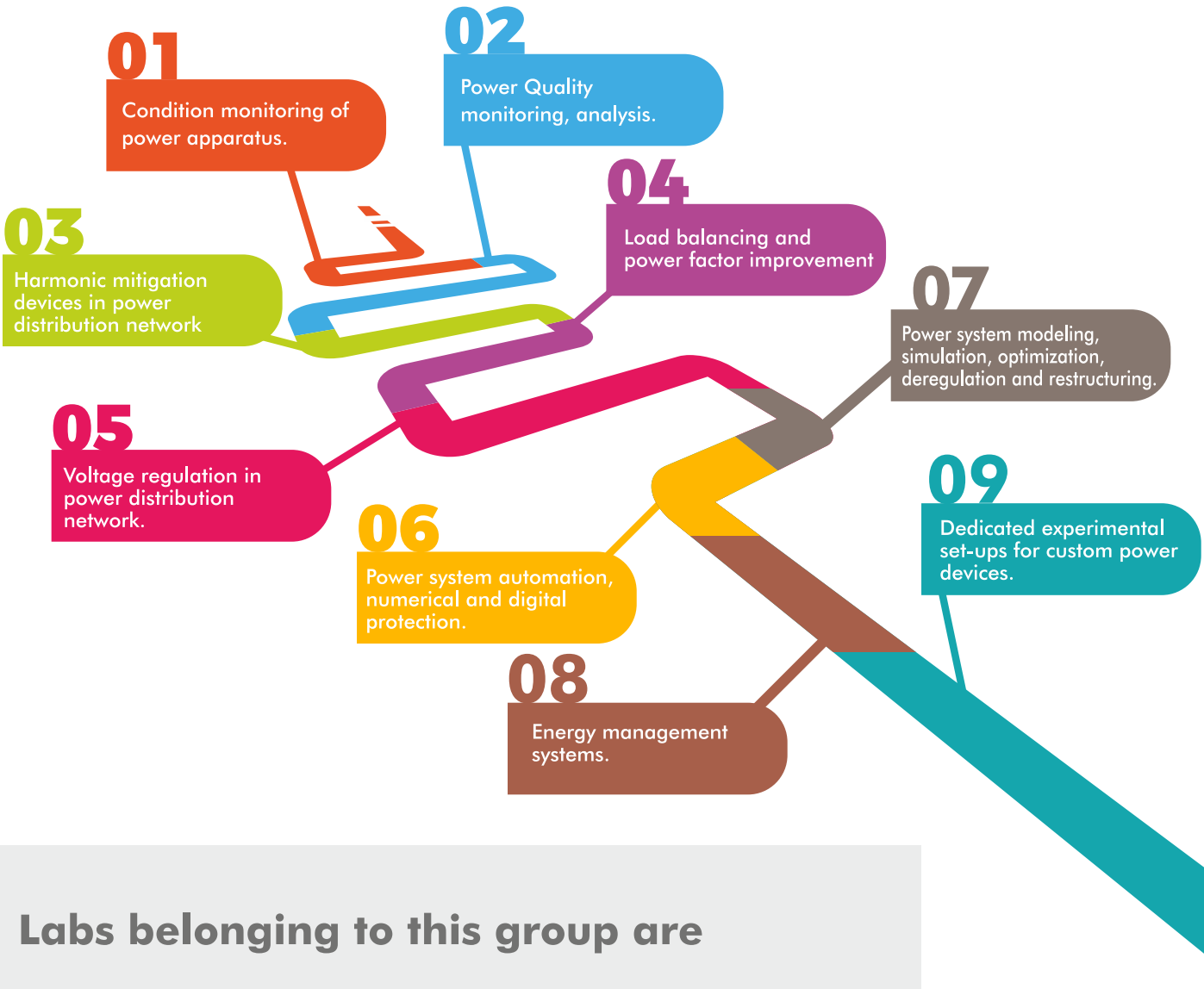
- Hybrid active power filters
- Grid connected inverter control
- Sensor less BLDC motor control
- Position control of PMSM machines
- Harmonic detection for use with Active power filters
- Digital Control of Scalable AC/DC and DC/DC Converters

Labs belonging to this group are:

- Control Engineering Lab
- Machines Lab
- Measurement Testing and Instrumentation Lab
- Static Drives Lab
- Power Electronics Simulation Lab

Center for Advanced Power Engineering Research (CAPER):

The following works are carried out by research students in this group:



Labs belonging to this group are

High Voltage Engineering Lab.

Power Systems Lab.

Static Relays Lab.

Instrumentation Lab.

Consultancy Services Available

Activities taken up by

Energy Management Cell

- Energy Audit.
- Electrical Safety Audit.
- Testing.
- PV Solar.
- Thermal Imaging.
- Electrical Lighting /Wiring Design.
- Training Program.
- EMS Imple-mentation.
- AutomatioN

Major Clients:

TS Transco, GHMC.

Central Govt. Department:

Central Railway, Telecom.

EMINENT PROFESSORS

Prof. P Sridhar

Associate Professor & Head

Prof. P Sridhar is currently working as a professor and head of Electrical and Electronics Engineering. He obtained his B.Tech, M.Tech from JNT University, Hyderabad and is awaiting conferment of PhD degree from JNT University, Hyderabad. He has 15 years of experience in teaching and research and has published over 19 papers in national and international journals.

Dr. S Vathsal is currently working as a professor in Electrical and Electronics Engineering. He received B.Tech in Electrical Engineering from Madras University, Chennai in 1968; M.Tech in Electrical Engineering from BITS Pilani in 1970 and PhD from IISc, Banglore in 1974. After finishing his post-doctoral research in DFVLR, Germany he went to USA as a senior post-doctoral fellow under National Research Council and worked in NASA GODARD Space flight centre. In India, he initially served Vikram Sarabhai Space Centre, Thiruvananthapuram for 10 years as Scientist/Engineer in SLV-3 and VIKAS projects under Late Dr. A P J Abdul Kalam. Subsequently, he moved to DRDO to work as a Scientist E, F and G in DRDL lab under Missile Systems Directorate. He has an overall experience of 13 years in teaching, 4 years in research and 28 years in R & D. He has published 80 technical papers in national & international journals and conferences. He has 2 software patents to his credit.

Prof. D Shobha Rani has completed her B Tech from JNTU college of Engineering, Hyderabad in 1991 and M Tech from JNTU college of Engineering, Ananthapur in 1996 in the specialization of Electrical Power systems and pursuing her Ph.D from Sri Venkateshwara university Tirupathi.

She has a vast industrial experience and teaching experience of about 18 years in reputed institutes and colleges. She has to her credit a number of research papers in various journals and conferences. She is an active member of various professional societies like IEEE, ISTE and IETE.

Dr. P Mallikarjuna Sarma works as a professor in Electrical and Electronics Engineering. He finished his B.E in Electrical Engineering and M.E in Power Systems from Andhra University, Visakhapatnam in the year 1971 and 1974 respectively. He received his Ph.D in Power Electronics from JNT University, Hyderabad.

He has earned 25 years of industrial experience as Senior Manager in Steel Authority of India Ltd., Rourkela Steel Plant, Rourkela. In addition, he has gained 16 years of teaching experience. He provides consultancy to various private companies like VEM Technologies, NUCON Aerospace etc. Dr. Sarma has published 6 papers in national & international journals and conferences.

Prof. T. Vigneysh is currently working as a professor in the Department of Electrical and Electronics Engineering. He obtained his B.Tech from Anna University, M.Tech from Annamalai University and is awaiting conferment of Ph.D degree from Annamalai University. He has 2 years of experience in teaching and research and has published over 10 papers in national and international journals and conferences.

EMINENT PROFESSORS

Prof. K. Raju is currently working as a professor in the department of Electrical and Electronics Engineering. He obtained his B.Tech, M.Tech from JNT University, Hyderabad and is awaiting conferment of Ph.D degree from JNT University, Hyderabad. He has 3 years of experience in teaching and research and has published over 4 papers in national and international journals and conferences.

Faculty

Professors

Dr. P Mallikarjuna Sarma - M.E, Ph.D
Dr. S Vathsal - M.E, Ph.D
Dr. M S Raja Murthy – M.Tech, Ph.D

Associate Professors

Ms. D Shobha Rani - M.Tech, Ph.D (Submitted)
Mr. K Raju - M.Tech, Ph.D (Submitted)
Mr. T Vignesh- M.Tech, Ph.D (Submitted)

Assistant Professors

Mr. CH Jaya Prakasa Rao -M.Tech
Ms. Lekha Chandran - M.Tech
Mr. T Anil Kumar - M.E
Mr. P Shiva Kumar - M.Tech
Ms. S Swathi - M.Tech
Mr. K Lingaswamy - M.Tech
Mr. A Sathish Kumar - M.Tech
Mr. G Hari Krishna - M.Tech
Mr. A Naresh Kumar - M.Tech
Mr. S Srikanth- M.E
Mr. K Devender Reddy - M.Tech
Mr. M Diva Kumar - M.Tech
Mr. P Mabuhussain- M.Tech
Mr. T Mahesh – M.Tech
Mr. N Shiva Prasad - M.Tech
Ms. B Manogna - M.Tech
Mr. K Rakesh Kumar- M.E
Ms. B Navothna - M.Tech
Mr. CH Ghaneswar- M.Tech

Associations

1. The department has forged strong associations with leading organization of R & D activities.

2. The department has MoU with MKR Industrial Automation, Hyderabad; High Voltage (India), Bangalore and Aditya Precitech Private Limited, Hyderabad.

3. A Number of Guest Lectures and Training programs were conducted under the EETA (Electrical Engineers Technical Association)

Funded Projects

1. Grid - tied smart multifunctional Solar Inverter funded by Department of Science and Technology (in progress). The Principal investigator is Dr. P Mallikarjuna Sarma, EEE Dept.

2. Kalman filter application to aerospace systes funded by Defence Research and Development Laboratory. The Principal investigator is Dr. S Vathsal, EEE Dept.

Students Achievements

A National level Hybrid Go-kart championship 2014-2015, Participated 6 Students from EEE Department and placed sixth Position.

CONTACT INFORMATION

Prof. **P Sridhar**

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Electrical and Electronics Engineering

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Institute of Aeronautical Engineering

(Autonomous)

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