KUMARAGURU college of technology

NEWSLETTER

Electrowaves

Technical Magazine *Jan - March 2019*

Department of Electrical and Electronics Engineering

Editorial Message

The Department of Electrical and Electronics has recorded consistent improvement in its academic, research and placement performance. It offers a range of innovatively designed programs whose curricula are constantly updated to meet the changing requirements of the industry and to meet the needs of major stakeholders.

When sketching out a plan for Electrowaves the only thing we had in mind was that the Newsletter should reflect the outlook of the department. Hereby, we the editors take the responsibility of ensuring the continuity of the issue in the years to come with improvements and richness every time. We are pretty sure that you will get lot of useful information reading it. However, our work does not end here. We consider that our endeavors will be successful only when after reading these articles you get motivated to contribute more such articles in future issues.

"The world is yours, Aspire big"

Dr. K MALARVIZHI
Head of the Department

Vision

To be a Centre of Excellence in Globalizing Education and Research in the field of Electrical and Electronics Engineering

Mission

The mission of the department is to

- **E**mpower the students with state-of-art knowledge to excel as eminent electrical engineers with multi-disciplinary skills.
- **E**mphasize social values and leadership qualities to meet the industrial needs, societal problems and global challenges.
- **E**nable the technocrats to accomplish

Programme Specific Outcomes (PSOs)

Apply the knowledge acquired in Electrical and Electronics Engineering to technological advancements.

Identify suitable solutions for design and control of electrical and electronic systems

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

Our graduates will be able to

- Pursue a diverse range of careers in engineering, consultancy, and entrepreneurship.
- Contribute to continuous professional development through higher studies and life-long learning.
- Demonstrate their technical proficiency with ethical values and social responsibility.
- Innovate and provide solutions for ever-changing global environments with

Programme Outcomes (POs)

- **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 modelling to complex engineering activities with an understanding of the limitations.

Programme Outcomes (POs)

- **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, and 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 TEAM WORK**
  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.

Programme Outcomes (POs)

- **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.

- **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.

INKJET SOLAR PANELS

KIRUTHIKA.J(17BEEO95)

PREETHIKA.S(17BEE109)

The 36 years old great physicist and business woman made our dream come true by developing a inject processing method for perovskites (cheaper solar cells) the lower temperature solar cells can be produce at lower cost by this method.

This perovskite technology is going to revolutionize the world of solar power. Mohammed khaja Nazeeruddin, a professor at Switzerland's federal institute of technology, which is an institution on the cutting edge of the solar energy research said that "world energy poverty can be changed by the perovskite solar cells".

These solar panels are light, flexible, efficient, low cost and come in varying hues and degrees of transparency which can be fixed to almost all surfaces like laptop, cars, drone, space craft or building to produce electricity since it is coated with minerals.

In 1830's, perovskite was first identified by German mineralogist Gustav rose while researching in Ural mountains and named after Russian mineralogist lev perovski.

Initially minerals like glass are coated over perovskite cells to withstand ultra-high temperature during the process in 2013, Malinkiewicz has found a way to coat flexible foil with perovskites by evaporation method while doing her PhD at university of Valencia, Spain. Later, she designed an inkjet printing procedure which gives mass production at economically feasible lower production cost. Malinkiewicz said "high temperatures are not required to coat things with photovoltaic layer".

The European commission has honoured her with student innovation award and also grasped media attention by photonics 21 and an article in journal "nature" in 2015, MIT technology reviews selected her as one of its innovators.

FUEL SYSTEM IN MARS ROVERS

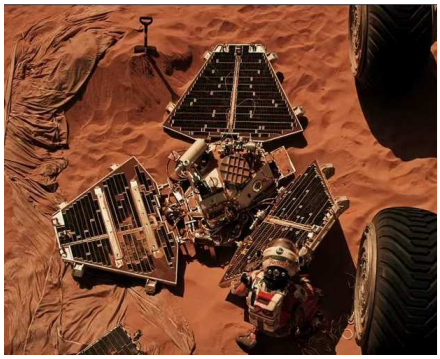
NITHISHKUMAR R 17BEE213

GOKUL E 17BEE215

Early Days

Photovoltaics

In the early days Martian Rovers prior to the Curiosity made use of photovoltaic cells.Energy is absorbed through solar arrays on panels that sit atop what look like the rover's "wings." They were designed to maximize the area of solar cells that collect the sun's energy.Another innovation for the rovers is the addition of Triple Junction Gallium Arsenides. These three-layered solar cells made their first trip to Mars aboard the twin rovers. Used on NASA's Deep Space 1 mission, these cells are able to absorb more sunlight than the single cell versions sent on Sojourner. The solar cells are stacked in three layers on the rover's solar arrays and, because they absorb more sunlight, can supply more power to the rover's re-chargeable lithium batteries.



The Sojourner rover on the Pathfinder mission carried one 40-amp-hour lithium battery. The Mars Exploration Rovers carry two 8-amp-hour lithium batteries. During the rovers' prime missions, their solar arrays were able to produce about 900 watt-hours of energy per martian day, or sol. Well into the extended mission, efforts to drive Spirit and Opportunity strategically through and toward solar-rich areas is providing up to 410 watt-hours per martian sol.

Using solar power limits the places on Mars that landed rover missions can explore. They are restricted to landing and traveling around the equatorial region where they can get enough sunlight to re-energize their batteries. For future missions, NASA is considering alternate power sources to increase the area on Mars that might be studied, opening up the whole planet to exploration.

Current Technology

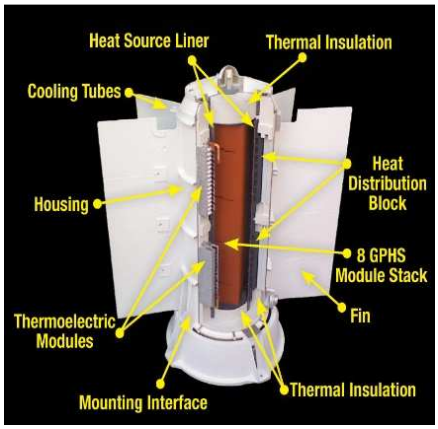
Multi-Mission Radioisotope Thermoelectric Generator (MMRTG)

RTGs work by converting heat from the natural decay of radioisotope materials into electricity. RTGs consist of two major elements: a heat source that contains plutonium-238 (Pu-238) and solid-state thermocouples that convert the plutonium’s decay heat energy to electricity. Conversion of heat directly into electricity is a scientific principle discovered 150 years ago by German scientist Thomas Johann Seebeck. He observed that an electric voltage is produced when two dissimilar, electrically conductive materials are joined in a closed circuit and the two junctions are kept at different temperatures. Such pairs of junctions are called thermoelectric couples (or thermocouples).The power output from such thermocouples is a combination of the temperature of each junction and the properties of the thermoelectric materials. The

thermocouples in RTGs use heat from the decay of Pu-238 to heat the hot side of the thermocouple, and the cold of space or a planetary atmosphere to produce a low temperature at the cold side.

This power system provides several advantages:

- The 14-year operational lifetime of an MMRTG provides significant reserve for Mars 2020 prime mission duration of 1.5 Mars years (three Earth years)
- It gives the rover greater mobility over a large range of latitudes and altitudes
- It allows scientists to maximize the capabilities of the rover's science instruments
- It provides engineers with a lot of flexibility in operating the rover (e.g., day and night, and through the winter season)



AICTE MODROBS - ELECTRICAL MACHINES LABORATORY

The scheme aims to modernize and remove obsolescence in the Laboratories, so as to enhance the functional efficiency of Technical Institutions for Teaching, Training and Research purposes. It also supports new innovations in Class Room and Laboratory / Teaching Technology, development of Lab Instructional Material and appropriate Technology to ensure that the practical work and project work to be carried out by students is contemporary and suited to the needs of the Industry. The equipment financed under the scheme could be ideally used for up-gradation of equipment in existing laboratories, enhancement of performance parameter specification of existing equipment, incorporation of latest development in the field and replacement of old depreciated equipment by modern equipment.

In addition to above major objectives, the equipment installed through MODROBS can be used for indirect benefit to Faculty / Students through Continuing Education programmes, Training programmes for local industry and consultancy work.

We, Kumaraguru College of Technology, Department of Electrical and Electronics Engineering received an amount of Rs. 8.4 Lakhs from AICTE under Modernisation and Removal of Obsolescence (MODROBS) for Modernization of Electrical Machines Lab.

Grant Received: Rs.8.4 Lakhs

Total Cost of Laboratory: Rs. 20 Lakhs

Project Co-ordinators:

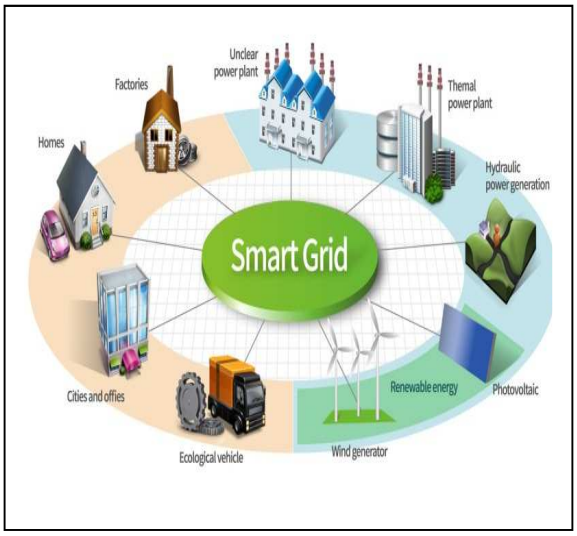
Dr.V.Kandasamy

Dr. N.Prakash

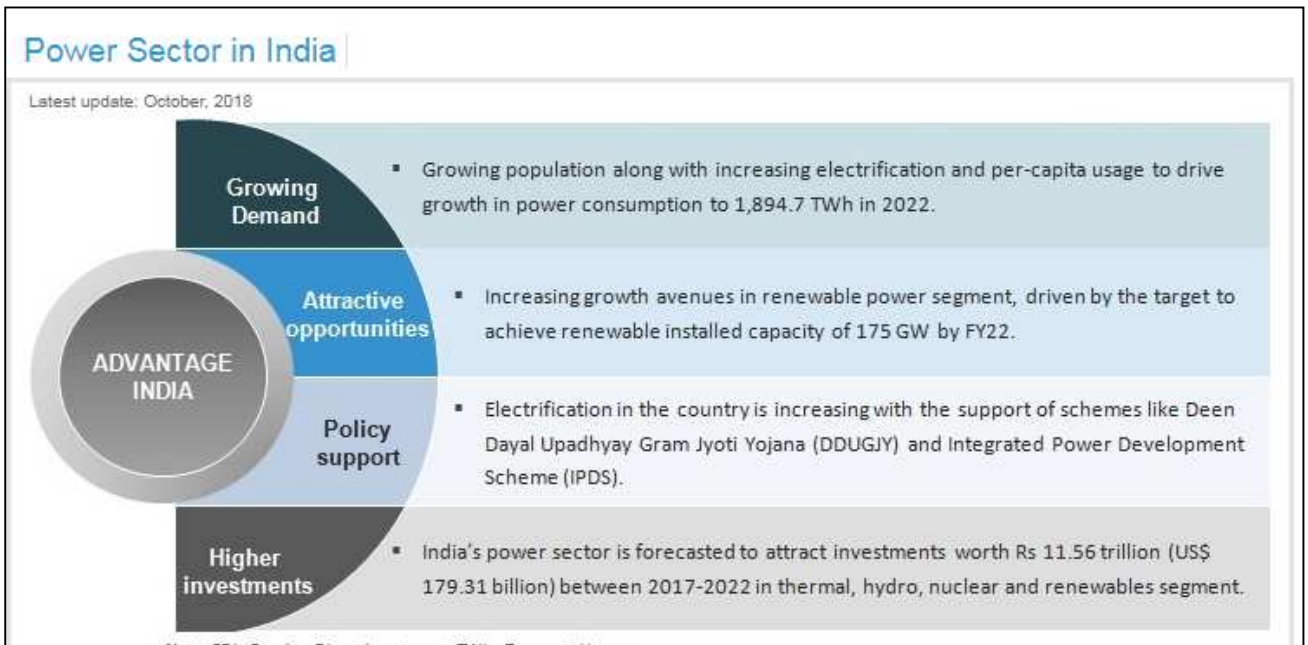
SMART GRID

DEEPTHY E (17BEE040)

KAVINA K (17BEE043)



Smart grid technologies can be defined as self-sufficient systems that can find solutions to problems quickly in an available system that reduces the workforce and targets sustainable, reliable, safe and quality electricity to all consumers. In this respect, different technological applications can be seen from the perspective of researchers and investors. Even though these technological application studies constitute an initial step for the structure of the smart grid, they have not been fully completed in many countries. Associations of initial studies for the next step in smart grid applications will provide an economic benefit for the authorities in the long term, and will help to establish standards to be compatible with every application so that all smart grid applications can be coordinated under the control of the same authorities. In this study, a review has been made of technological methods of data transmission and the energy efficiency in smart grids as well as smart grid applications. Therefore, this study is expected to be an important guiding source for researchers and engineers studying the smart grid. It also helps transmission and distribution system operators to follow the right path as they are transforming their classical grids to smart grids.



Smart Grid Structure – India and Germany – A Review

- C. Sasikumar, Assistant Professor

The detail discussion of smart grid benefits, it is significant to discuss the smart grid technologies implications in the different countries. The important point is that the basic layout and topology of smart grid matched with traditional grid systems. To clarifying this point, there is a need to examine some design implications for these technologies. The smart grid system offered digital metering with two-way communications capabilities. These digital meters have remotely operation capabilities to control voltage and current with record waveforms, real-time rate structures. Furthermore, these new meters are deployed in same traditional meter places without any design implications. In addition, smart meters have more data for processing and lead to efficient asset management operations. The different review chapters in this article are listed.

Starting point	• Initial situation • Why consumer matters? • Why different structures?
Comparison between India and Germany	• What are the Smart Grid drivers • Issues of transmission to a Smart Grid • Challenges that has to be managed
Requirements of a Smart grid	• General requirements • Social-economic issues • Differences in different type of countries
Recommendation of a architecture	• Architecture model • Analysis of SGAM model
Conclusion and outlook	• Findings of this project • Further promising research approaches

The integration of renewable energy sources arises issues in the traditional system and has to integrate the consumer needs

A. INITIAL SOLUTION

- Transformation of primary traditional grid to smart grid structures.
- Second step ahead of integration of decentralize power generation and its resulting load pattern.
- Climate Legislation (CO2)
- Changing in Generation, Transmission and Distribution and consumer to Prosumer.
- Increase the new market participants.

B. IMPORTANCE OF CONSUMER

Customers are the center of the transition towards smart grids

- Consumer becomes prosumer.
- Prosumer is the part of value chain.
- Increase the level and size of market power and Net-Social Benefit.

C. DIFFERENT STRUCTURE

The main need for a proper Smart Grid architecture that allows managing the new challenges

- Different Drivers for the introduction of Smart Grid

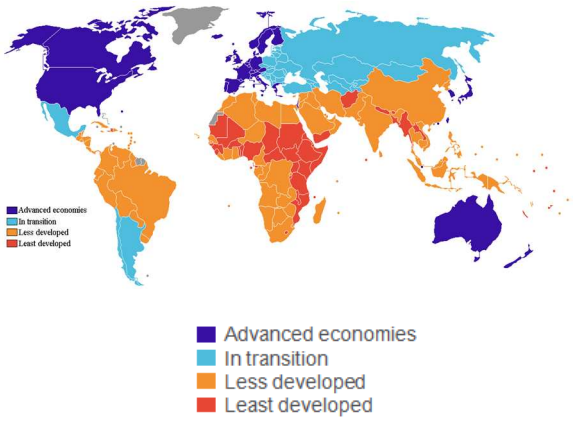
- Different issues depending on geographical, economical and social factors

Criteria to Define the Status of the Country –

- Per capital Gross Domestic Product (GDP)
  - Developed: above $12.000 ($25.000) per capital GDP
  - USA 2016 : $57.000
- Life expectation
- Infant mortality
  - Developed less than 10 infants per 1000 live birth

Source Refernce : UN, 2018; the balance 2018

Global Statics of Energy Consumption Source Refernce : Wikipedia and global market 2018



The geological, cultural and technical differences affect the drivers of the smart grid technology in Germany

Category	**Targets and operations**
Clean Energy	System efficiency, DER (targets/ EU2020), Electrical Vehicles
Markets	European power markets, European super-grid, Customer participation
Liberalization	Deregulation Competition Service innovations (DR)
Operations	Reduce Operation Costs (opex) Energy efficiency/ Reliability

The geological, cultural and technical differences affect the drivers of the smart grid technology in India.

Category	**Targets and operations**
Reliability	Improve SAIDI System stability
Operations	Reduce Operation Costs (opex) (losses 25%) Improve asset management
Grid Extension	Electrification of rural areas Demand Growth/ new Loads PV power plants (RE targets)

The different drivers derive different technical needs to fulfill the smart grid requirements

India	**Germany**
Advanced Metering Infrastructure	Condition Based Monitoring
Demand Response	Advanced Metering Infrastructure
DER Integration	Outage Management Systems

Smart Bike

Mr. S. Naveen kumar, IV Year EEE

In present scenario the uses of mobile phones are increasing, the people attend the phone even while driving without their knowledge, this cause distraction and leads to accident. This project detects and avoids the usage of mobile phones automatically while riding two wheelers and in case of any accident occurs GSM module fixed in the bike communicates to the concerned mobile number which is stored.

- *EXISTING SYSTEM*

At present the vehicle based projects comprises automatic speed control system, detecting the tire pressure and monitoring the tire whether the tire is puncture. And other project is based on smart helmet with the alcohol sensor and the bike is allowed to start if the alcohol is not sensed.

- *PROPOSED SYSTEM*

By rejecting incoming calls this system prevents from accidents while riding bike. The bike is secured by the reply from the phone. In case any accident occurs, this system reduces the manual process and avoids delay. The location tracking of accident spot is very fast.

- METHODOLOGY

This project starts after the initialization of the key the bike starts only after verification of the user through message reply. If the reply is not received from the owner the bike is not allowed to start without password and it authenticate the person by alarm if the password is not correct. While riding, if any call comes to the rider's mobile the call is automatically detected by the mobile sniffer and the reply message is sent to the caller about the riding information by the GSM fixed in the bike. The vibration sensor fixed in the bike is used to sense the vibration if any accident occurs based on defined conditions. The GSM module sends a message with the location indicated by the GPS of accident spot to the specified mobile number. The LCD display is used to indicate the incoming call.

The figure shows the methodology of the smart bike. This process starts after the insertion of the key and automatically message is sent to the user, if the reply is positive the bike starts and if the reply is negative the alarm authenticated and if call receives while riding the riding information is sent to the user and in case of accident occurs message is sent with accident location to specified number.

This chapter is about the existing system, proposed system, and overview of the project and methodology of the smart bike. The components used are Global System for Mobile Communication (GSM) Module, Microcontroller (Atmega 162), Global Positioning System (GPS), Mobile sniffer, Vibration Sensor, Bluetooth, Buzzer, Relay and Liquid Crystal Display (LCD). The figure 2 shows block diagram of smart bike.

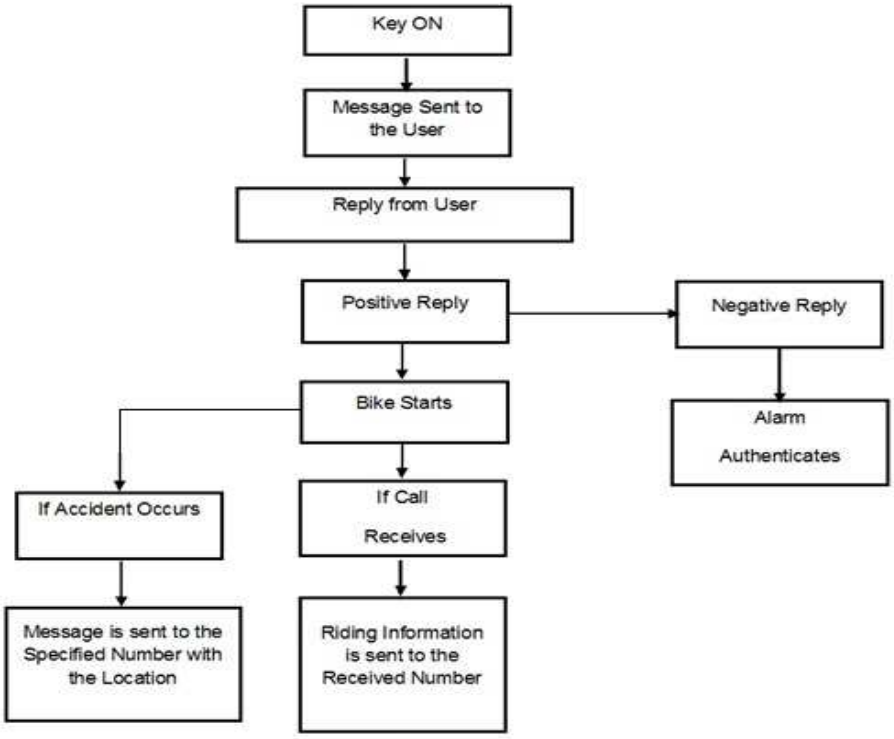


Figure. Methodology of Smart Bike

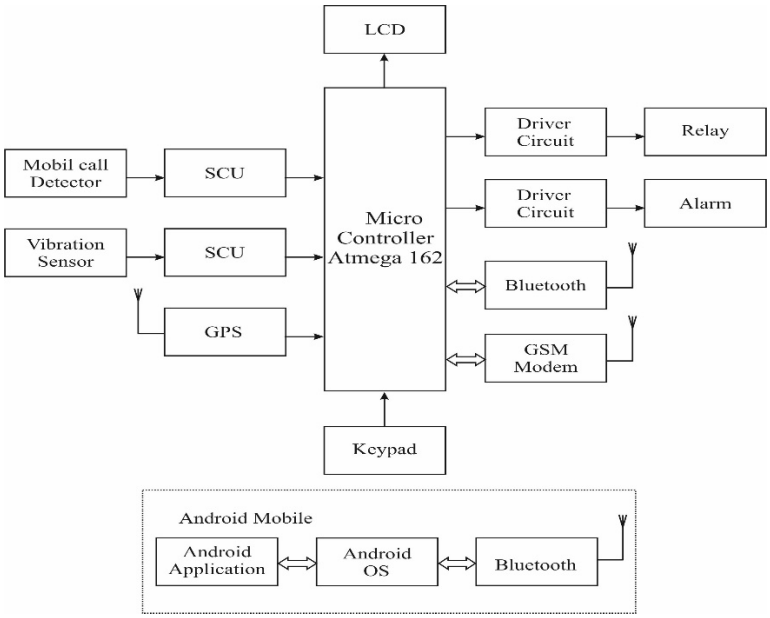
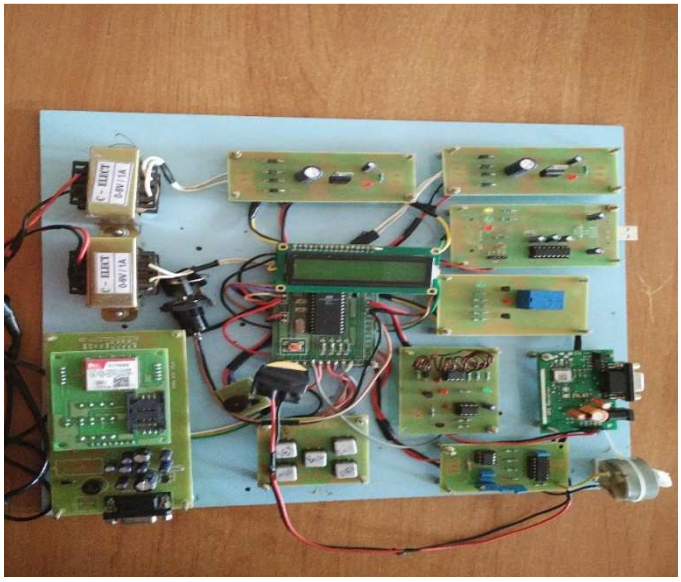


Figure. Block Diagram Smart Bike

• HARDWARE MODULE

The hardware module of the GSM based bike security and mobile call detection system and the module consists of power supply, GSM module, Atmega 162v, Buzzer, relay, mobile sniffer, 16X2 LCD and keypad. The figure 3 shows the Module of smart bike.



- *OUTPUT OF THE MODULE AFTER INSERTING THE KEY*

The prototype consist of a 16x2 Liquid crystal display, displays the message sending from the bike. Here the motor is considered as a bike. The message sending from the bike is done by the GSM module present in the bike. The message sent from the module is sent to the number which is stored. The message received to the number which is stored replies the response message to turn on the vehicle. If the reply message is negative the bike authenticates by alarming. The figure 4 shows the Output of the Module after Inserting the Key. The figure 5 shows that the bike gets turned on after the positive reply from the rider.

Figure Warning Message

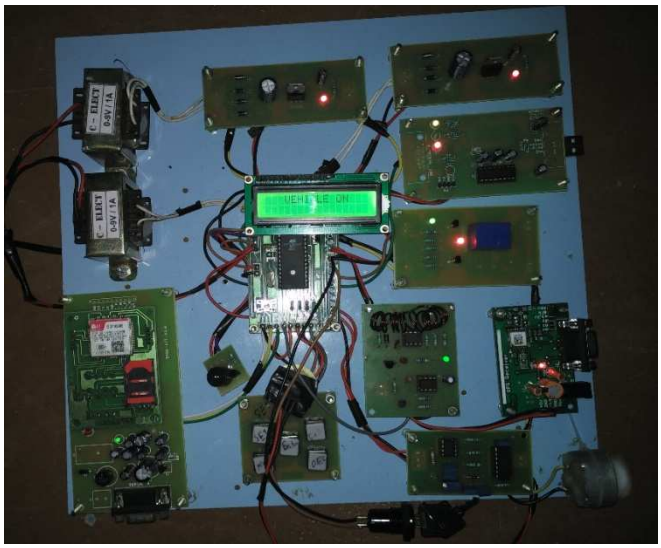


Fig.Vehicle ON Indication

- *OUTPUT OF THE MODULE WHEN THE CALL IS DETECTED*

When a call comes to the phone near to the module the mobile sniffer circuit which will detect radio signal and indicates in the LCD display as receiving call. The figure 5.8 shows the Output of the Module When the Call is detected

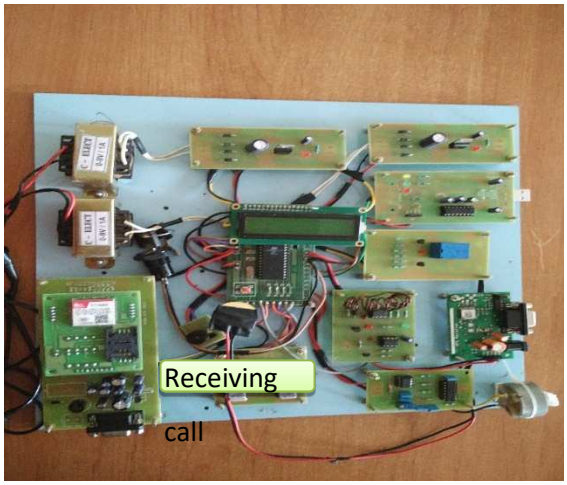


Figure Output of the Module When the Call is Detected

- ACCIDENT ALERT

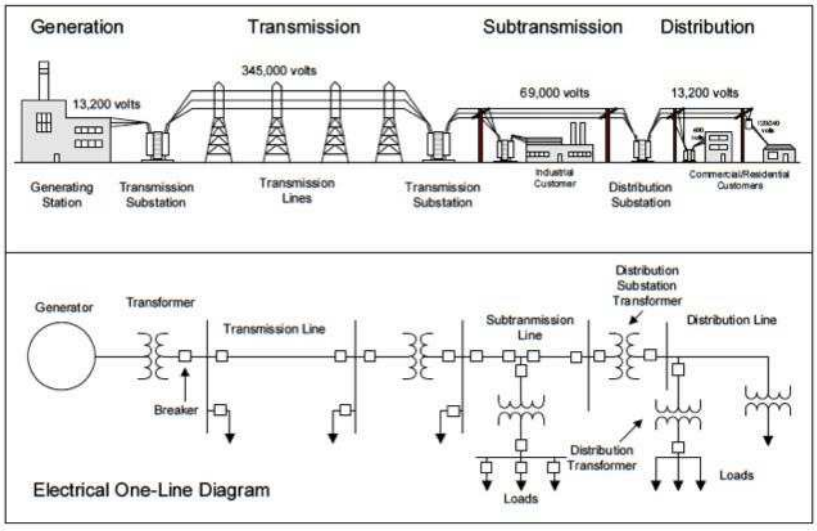
In case of any accident occurs to the person who is riding on the bike the vibration sensor fixed in the bike will sense the vibration of the accident and at the instant the GPS tracks the location of the accident spot and sends message to the required person which is stored with the help of the GSM module.

Indian Smart Nano Grid Network structure Advanced Metering

- **Viveka. S IV Year**

Smart grid is an economical system to distribute power and investigate load and demand power process with in their network. Intelligent Electronic devices playing a major role to monitor and control the power systems. However the traditional hardware dependent communication infrastructure was not defined and developed to send the content of data. To unravel this problem, wireless sensor network is being considered to develop the communication network between power system devices and metering their consumer usage. In this paper we introduced and investigate the state of the art of communication network and information system for smart grid metering network and its potential trends. This network helps to diminish man power, reduce power consumption and provides better performance. The paper come within reach of Automatic Metering Infrastructure system should convince the requirements as follow the Integrity, Confidentiality, Availability, Accountability.

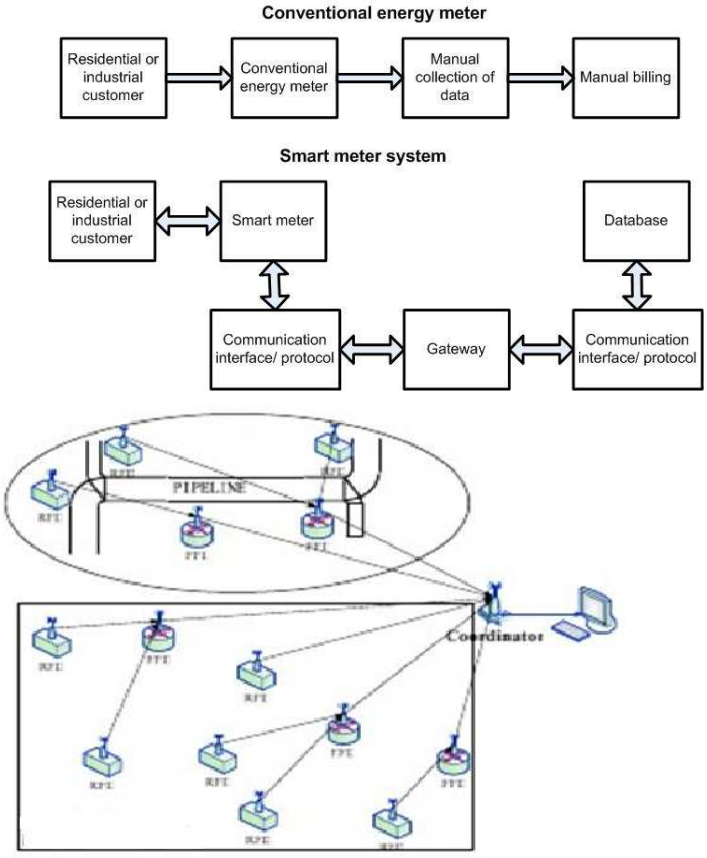
The continuous rapid infrastructure growth of the speed, smart grid advanced metering is an universal combination of communication networks, information administration system and power grids, which deliver to cost efficient energy generation and green. Smart grid advanced metering integrated with an electrical grid and base station. Intelligent Electronic Device comes with an IEEE Standard and linked with common Protocol Devices. It is hard too hard to connect the devices through wired network, to overcome this crisis, WSN is used because of which absolute superiority and low power consumption. A typical Indian power grid from generating station, Transmission and giving out to end-users as revealed in ***figure ****. Conventional Meters had problem for real time data measurement monitoring and load forecasting. Advanced Metering Infrastructure has Prepaid Billing System, Net Metering, User Alarm, Load Limiter, Time of Use.



Glance of Advanced Metering Infrastructure versus Conventional Meters.

Advanced Metering Infrastructure (AMI) module consists of Communication infrastructure, Smart Meters, Meter Data Management System (MDM), Head End System, Web application, on-line data of consumers etc. Data Collection System are classified into workstation nodes, Router, Power Controller Coordination system (PCCS). Fully functioned device (FFD) and Reduced function device (RFD) placed at end users metering systems based on area coverage and functionality

location. Reduced function device functioned only get hold of data and forward to cluster node. FFD acts as router and end device, gathering sensor information and forward the message to client from other header nodes.



AMI Communication System

MATLAB Certification Course

A one day Certification Course on, "Hands on Training program on MATLAB", has been organized for Outside Students on 5th January 2019, at B Block Simulation Lab, with a sum of 30 participants.

The course mainly focused on providing hands-on training experience in MATLAB programming. Basic syntax and its features are discussed and students are trained to execute simple programs on their own. Dr.R.Kavitha, Associate Professor, Dr.D.Rajalakshmi, Associate Professor handled the session and given hands on training to the students. Students will be able to apply MATLAB and simulate circuits for projects.

PLC in Industrial Automation Certification Course

A five day Certification Course on, "PLC in Industrial Automation", has been organized for II Year and III Year Students on 29th January to 2nd Feburary 2019, at B Block Embedded Systems Lab, with a sum of 36 participants.

The course mainly focused on providing hands-on training experience in PLC programming and Hardware. Session handled by industrial experts to get knowledge on Industrial Automation using PLC.

Interaction with Outside World

Joint Confernce with CODISSIA

International Conference jointly organized with CODISSIA, mainly focused on Energy and Industrial 4.0 on 25th January to 26th January at CODISSIA Trade Fair Complex, Coimbatore.

Passport Awareness Program

Passport Awarness Program has been organized for III Year Students and Faculty Members on 15th March 2019. Session handled by Uma Murali, Passport Seva Project, Tata Consultancy Service Limited.

The awareness program mainly emphasis to facilitate the awareness for importance of passport and registration process.

One Credit Course

1-D MODEL BASED SYSTEM DESIGN FOR CONTROL SYSTEM APPLICATIONS

Course offered & handled by: **Altair Engineering India Pvt. Ltd., India**

Software Tool used - **Altair ACTIVATE Software**

Course offered to UG_EEE_SIXTH SEMESTER STUDENTS

(Course includes Theory + Lab session)

02.03.2019 (SAT) & 03.03.2019 (SUN)

COURSE OUTCOMES:

At the end of the course, the student will be able to

CO1: Access the open architecture simulation platform used in the industries for designing simple control applications

CO2: Understands the process of modelling, simulation and validation of basic control applicatios

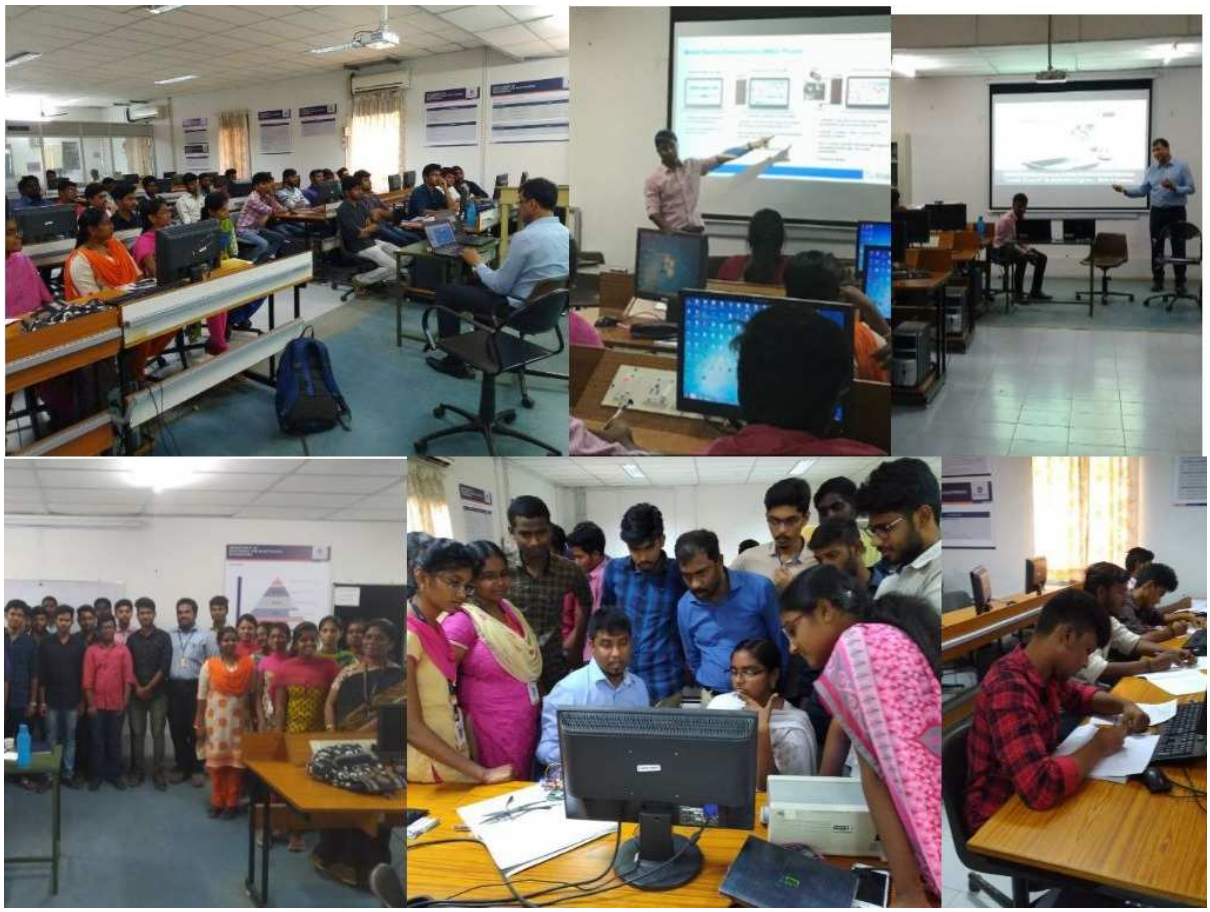
CO3: Acquires the skills to design innovative solutions to complex engineering problems.

Course Syllabus:

Introduction to Altair ACTIVATE: Verification of Basic Network Theorems like KVL, KCL - Superposition theorem, Thevenin's theorem, Inverting & non-inverting Op-amp circuit - Realizing RLC, RL circuits in Signal based /State space and Physical Based modelling - Hybrid simulation of continuous and discrete blocks - Co-simulation - with Multi body dynamics with Activate software - Co-simulation - of Electromagnetic Devices with Control Systems to perform System Simulation - Custom Block creation - Model Exchange and Co-simulation with FMI (Functional Mock-up Interface) - Application Case study using Altair Activate Software.

Introduction to Altair Embed - Simulation Environment - Building blocks and software features - Model based design steps - SIL/MIL (Model in the loop) - PIL (Processor in the Loop) - HIL (Hardware in the loop) - Hands on Embedded Application development exploring on launchpad - F28027/F28069M Configuration - LED Blinking/GPIO – ADC -PWM - SPI/I2C Introduction to Motor Control and Capabilities in Embed Open loop control/Close loop Motor control using BOOSTXL DRV8301, F28069M Launch pad.

Total Duration: 15 hours



Session Handled By Industrial Team

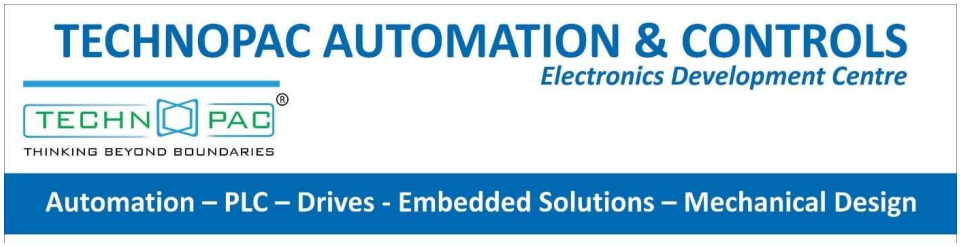
Mr. M. Chandra Kumar Sr.Application Engineer Math & System design Altair Engineering India Pvt Ltd Bangalore 560103, India	**Mr. Syed Aarif Hashmi** Business Head-India Maths & Systems Altair Engineering India Pvt. Ltd., Bangalore-560103

One Credit Course

U15EEIN02 Industrial Embedded Systems and Communication Protocols

2nd March & 3rd March, 2019

Resource persons: Mr.J.Senthil Prakash & Mr Karthikeyan Technopac Automation and Controls, Coimbatore.



Coordinators: Dr C Udhayashankar, Associate Professor, Mr.M Mathankumar, Assistant Professor, Mr.S Suryaprakash, Assistant Professor.

Outcome of the course:

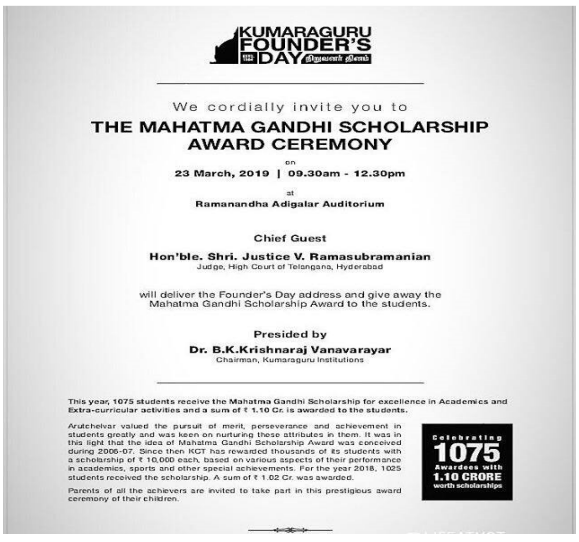
- To understand the fundamentals of embedded system and its communication protocols
- To acquire the architectural features of microcontrollers and apply the interfacing concepts
- To build the real time prototypes based on the knowledge acquired

Glimpses of the Events

KCT Institute Innovation Council

MAHATMA GANDHI SCHOLARSHIP

FOUNDER'S DAY



Connect and share with women
at this free event that is designed to improve your health and enrich your knowledge through Yoga!!!

KUMARAGURU Institutions

அகம் AGAM Body-Mind-Spirit

Yoga For All 4

Importance of Yoga in Women's Life

26th March 2019, Tuesday, Sharada Maiyam

Chief Guest:
R.SIVAGAMI
Founder and Director of YOGAM Institute

The necessity for a woman to cope with stress and health conditions is caused by work load, poor nutrition and biological features. It is a time and space to release your energy, thoughts and ideas from relieving stress and to stay fit and healthy. The goal of yoga is to calm the mind, ensure better co-ordination of mind and body.

The event is open for Housekeeping women, mess workers and Girl students.

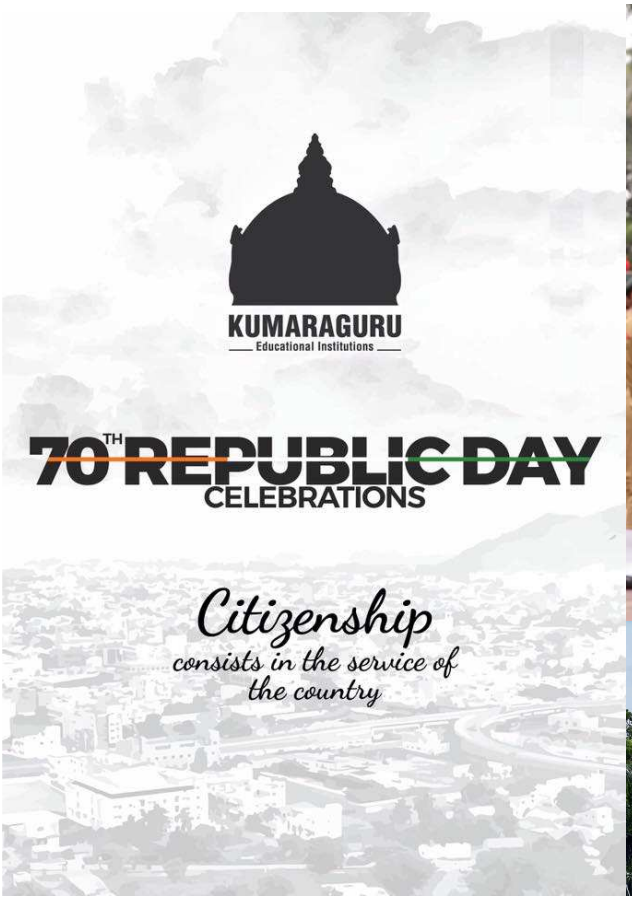
Session1	Session2
3.00 - 4.30 pm (for house keeping women and mess workers)	5.00 - 6.45 pm (for girl students)

K.Pavithra - 9865561182 | Priya Dharshini - 88706 92138
agam@kct.ac.in.

WOMEN'S DAY CELEBRATION

Glimpses of the Events

Republic Day Celebration



Students Project Demonstration

KUMARAGURU college of technology

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

PRESENTS

PROJECT LAB –

HARDWARE FACILITIES & MENTORING

FOR YOUR VALUABLE PROJECTS

The department of Electrical and Electronics Engineering provides hardware facilities for all kind of projects in the stream of EEE. The Students with project ideas in the stream of EEE can do their own projects using the hardware components available at project lab. They are also provided with guidance from leading Industrialist and alumni to clarify their projects doubts during development phase of his/her idea. This hardware lab can be used by UG & PG students to do their project which evokes their research skill in the field of EEE.

OBJECTIVE

To make the students to improve his/her project design and development skills for implementing their own ideas in real time.

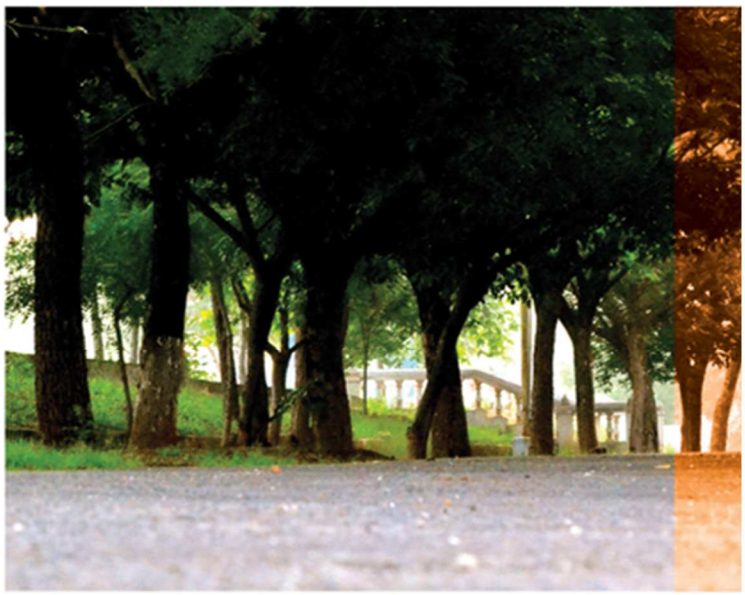
PREREQUISITES

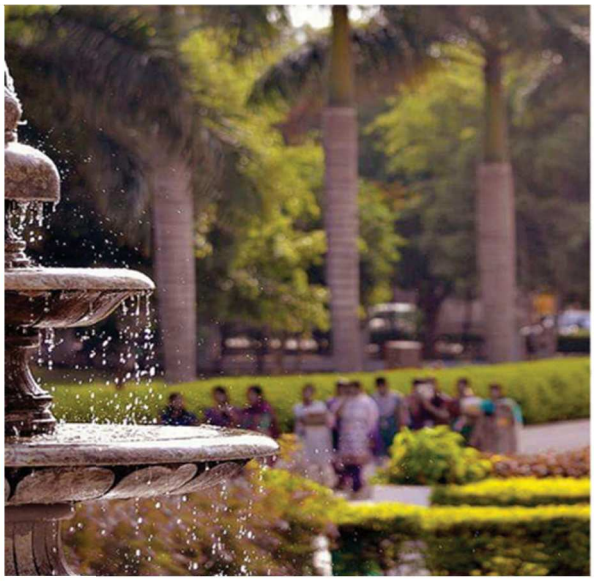
Basics of EEE, project idea with circuit diagram & knowledge of component specifications

ALL THE WORKING DAYS 4.30 PM TO 8 PM THROUGHOUT THE YEAR

FOR MORE DETAILS CONTACT

Mr.J.Ramprabhu	9150067999
Ms. J.J Nandhini	99521 75800
Mr.S.Surya Prakash	98940 65306





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