

## State the Vision and Mission of the Department and Institute

### Vision and Mission of the Institute

#### VISION

- ❖ To become a globally recognized Institution in Engineering Education, Research and Entrepreneurship.

#### MISSION

- ❖ Accomplish quality education through improved teaching learning process.
- ❖ Enrich technical skills with state of the art laboratories and facilities.
- ❖ Enhance research and entrepreneurship activities to meet the industrial and societal needs.

### Vision and Mission statements of the Department

#### VISION

- ❖ To produce globally competitive Electronics and Communication Engineers and Entrepreneurs with ethical values.

#### MISSION

- ❖ Impart quality education through student centric teaching and learning process.
- ❖ Equip students with Industry driven skills by providing excellent Infrastructure and continuous interaction with academia and Industry.
- ❖ Empower students towards research, entrepreneurship and lifelong learning to meet societal needs.

### State the Program Educational Objectives (PEOs)

#### PEOs of ECE Department

PEO	Keywords	Description
PEO 1	Core Competency	Graduates will have strong foundation in Engineering, Science and Technology for a successful career in Electronics and Communication Engineering.
PEO 2	Professionalism	Graduates will have effective communication skills, interpersonal skills and ethical values to exhibit professionalism in multidisciplinary environment.
PEO 3	Higher studies and Entrepreneurship	Graduates will pursue professional development through higher studies and have entrepreneurial attitude to address technological changes and societal needs.

## INSPIRATION OF THE CENTURY

### **Mahatma Gandhi**

Mahatma Gandhi is well known as the “Father of the Nation or Bapu” because of his greatest contributions towards the independence of our country. He was the one who believed in the non-violence and unity of the people and brought spirituality in the Indian politics. He worked hard for the removal of the untouchability in the Indian society, upliftment of the backward classes in India, raised voice to develop villages for social development, inspired Indian people to use swadeshi goods and other social issues. He brought common people in front to participate in the national movement and inspired them to fight for their true freedom.

He was one of the persons who converted people’s dream of independence into truth a day through his noble ideals and supreme sacrifices. He is still remembered between us for his great works and major virtues such as non-violence, truth, love and fraternity. He was not born as great but he made himself great through his hard struggles and works. He was highly influenced by the life of the King Harischandra from the play titled as Raja Harischandra. After his schooling, he completed his law degree from England and began his career as a lawyer. He faced many difficulties in his life but continued walking as a great leader.

He started many mass movements like Non-cooperation movement in 1920, civil disobedience movement in 1930 and finally the Quit India Movement in 1942 all through the way of independence of India. After lots of struggles and works, independence of India was granted finally by the British Government. He was a very simple person who worked to remove the colour barrier and caste barrier. He also worked hard for removing the untouchability in the Indian society and named untouchables as “Harijan” means the people of God.

He was a great social reformer and Indian freedom fighter who died a day after completing his aim of life. He inspired Indian people for the manual labour and said that arrange all the resource ownself for living a simple life and becoming self-dependent. He started weaving cotton clothes through the use of Charkha in order to avoid the use of videshi goods and promote the use of Swadeshi goods among Indians. He was a strong supporter of the agriculture and motivated people to do agriculture works. He was a spiritual man who brought spirituality to the Indian politics. He died in 1948 on 30<sup>th</sup> of January and his body was cremated at Raj Ghat, New Delhi. 30<sup>th</sup> of January is celebrated every year as the Martyr Day in India in order to pay homage to him.

## **TECHNOLOGY EXPERTISE ZONE**

### **VEHICLE-TO-VEHICLE COMMUNICATION USING WIFI**

Nowadays the number of vehicle in the roadways are increasing day by day and hence when happens any unfortunate situation, there exists huge traffic congestion in the transport system. Under such road transport conditions, when people on emergency situations travelling on the same road they need to find easy way without the cause and much distance to both. To further the transportation, an intelligent system is needed to be incorporate in all vehicles. In the proposed system work, vehicle communications is carried out using Arduino ATMEGA328 for processing and communication in recent day Wi-Fi from one vehicle to other. The software used in embedded C tool for editing in done by Arduino IDE. Hence, the designed project will make a further transportation for people under emergency conditions and thereby this designed work will compositely gives a high end and very effective transport solution.

**-Vaigai Valli.P/III year**

### **CONTROLLER AREA NETWORK (CAN)**

CAN or Controller Area Network is a two wired half duplex high speed serial network technology. It is basically used in communication among different devices in a low radius region, such as in an automobile. A CAN protocol is a CSMA-CD/ASM protocol or carrier sense multiple access collision detection arbitration on message priority protocol. CSMA ensures each node must wait for a given period before sending any message. Collision detection ensures that the collision is avoided by selecting the messages based on their prescribed priority. It provides signaling rate from 125kbps to 1 Mbps. It provides for 2048 different message identifiers. It is ISO-11898 standard and makes use of the 7 layer Open Systems Interconnection model. It was developed by Robert Bosch in 1982 and officially released by the Detroit's society of Automotive Engineers in 1986. The first car integrating CAN bus was manufactured by Mercedes Benz in 1992.

**-Priyadarshini.N/III year**

## **Data Hiding and Compression Scheme Using SMVQ**

In order to guarantee communication efficiency and save network bandwidth, compression techniques can be implemented on digital content to reduce redundancy, and the quality of the decompressed versions should also be preserved.

The two functions of data hiding and image compression can be integrated into one single module, which can avoid the risk of the attack from interceptors and increase the implementation efficiency. On the sender side, the blocks in the leftmost and topmost of the image are compressed by main codebook, each of the other residual blocks in raster-scanning order can be embedded with secret data and compressed simultaneously by SMVQ according to the current embedding bit.

SMVQ is developed to alleviate the block artifact of the decompressed image and increase compression ratio, because the correlation of the neighboring block is considered and the indices of the sub codebooks are stored. After segmenting the image compressed codes into a series of sections by the indicator bits, the receiver can achieve the extraction of secret bits and image decompression successfully according to the index values in then segmented sections. On the receiver side image edge based harmonic in painting is used for reconstructing lost or deteriorated parts of images.

The proposed scheme shows the performances for hiding capacity, compression ratio and decompression quality. We proposed a joint data-hiding and compression scheme by using SMVQ and image edge based harmonic in painting.

The blocks, except for those in the leftmost and topmost of the image, can be embedded with secret data and compressed simultaneously, and the adopted compression method SMVQ according to the embedding bits. VQ is also utilized for some complex blocks to control the visual distortion and error diffusion

**-Stefi Benita.S./III year**

## **Traffic Light System Controller using Microcontroller**

Traffic congestion is a major problem in cities. Due to this heavy traffic, routine commuters often get delayed for their day-to-day activities, and as a result the productivity of the workers, their timings and routine work schedules get affected. Particularly for the 4travellers and tourists travelling thus become a menace, and thus affects their activities as well. To overcome this traffic related congestion, the implementation of a microcontroller based mini project on traffic signal light system controller is being discussed here. This particular system is designed to reduce the demand for a vehicle use and to improve the mobility and safety.

The project is developed to meet the requirements of a solid state traffic light controller by using a microcontroller as the main controlling element, and LEDs for indication purpose. The microcontroller

is programmed such that the time and phrase are adjusted and displayed using seven-segment LED display. A seven-segment display is used as a counter display, and three LEDs are used for traffic light operation. A Microcontroller is the brain of this entire project and is used to initiate the traffic signal at the junction. This circuit makes use of a crystal oscillator for generating clock frequency pulses. The LEDs are connected to the Port zero of the microcontroller and are powered with 5v battery supply. Seven-segment display is connected to the port2 of the microcontroller with a common anode configuration.

The LEDs get automatically switched on and off by making the corresponding port pin of the microcontroller high, which is set while programming the microcontroller. At a particular instant of time, only the green light holds and the other lights remain off, and after sometime, the changeover from green to red takes place succeeding the yellow LED to glow. This process continues as a cycle and the timing for changing the LEDs can be displayed with the help of a seven-segment LED display.

**-Sowndravalli.G/III year**

### **FUZZY LOGIC – A WAY TO ACHIEVE CONTROL BASED ON IMPRECISE INPUTS**

Fuzzy logic works on the concept on deciding the output on the basis of assumptions. It works on the basis of sets. Each set represents some linguistic variable defining the possible state of the output. Each possible state of the input and the degrees of change of the state are a part of the set, depending upon which the output is predicted. It basically works on the principle of If-else-the, i.e. If A AND B Then Z.

Suppose we want to control a system where the output can be anywhere in the set X, with a generic value x, such that x belongs to X. Consider a particular set A which is a subset of X such that all members of A belong to the interval 0 and 1. The set A is known as fuzzy set and the value of  $f_A(x)$  at x denotes the degree of membership of x in that set. The output is decided based on the degree of membership of x in the set. This assigning of membership depends on the assumption of the outputs depending on the inputs and the rate of change of the inputs. These fuzzy sets are represented graphically using membership functions and the output is decided based on the degree of membership in each part of the function. The membership of the sets is decided by the IF-Else logic. Generally the variables of the set are the state of the inputs and the degrees of changes of the input and the membership of the output depends on the logic of AND operation of the state of the input and the rate of change of the input. For a multi input system, the variables can also be the different inputs and the output can be the possible result of the AND operation between the variables.

**-Roomathi.R/III year**

## **SCADA FOR REMOTE INDUSTRIAL PLANT**

In large industrial establishments many process occur simultaneously and each needs to be monitored, which is actually a complex task. The SCADA systems are used to monitor and control the equipments in the industrial processes which include water distribution, oil distribution and power distribution. The main aim of this project is to process the real time data and control the large scale remote industrial environment. In the real time scenario, a temperature logging system for a remote plant operation is taken.

The temperature sensors are connected to the microcontroller , which is connected to the PC at the front end and software is loaded on the computer. The data is collected from the temperature sensors. The temperature sensors continuously send the signal to the microcontroller which accordingly displays these values on its front panel. One can set the parameters like low limit and high limit on the computer screen. When the temperature of a sensor goes above set point the microcontroller send a command to the corresponding relay. The heaters connected through relay contacts are turned OFF and ON.

**-Punithavalli.P /III year**

## **IR IMAGING DEVICES**

IR image device is one of the major applications of IR waves, primarily by virtue of its property that is not visible. It is used for thermal imagers, night vision devices, For examples Water, rocks, soil, vegetation, an atmosphere, and human tissue all features emit IR radiation. The Thermal infrared detectors measure these radiations in IR range and map the spatial temperature distributions of the object/area on an image. Thermal imagers usually composed of a Sb (indium antimonite), Gd Hg (mercury-doped germanium), Hg Cd Te (mercury-cadmium-telluride) sensors. An electronic detector is cooled to low temperatures using liquid helium or liquid nitrogen's. Then the Cooling the detectors ensures that the radiant energy (photons) recorded by the detectors comes from the terrain and not from the ambient temperature of objects within the scanner itself an IR imaging electronic devices.

**-Priyadarshini.N/III year**

## **PICK N PLACE ROBOT**

The basic function of a pick and place robot done by its joints. Joints are analogous to human joints and are used to join the two consecutive rigid bodies in the robot. They can be rotary joint or linear joint. To add a joint to any link of a robot, we need to know about the degrees of freedom and degrees of movement for that body part. Degrees of freedom implement the linear and rotational movement of the body and Degrees of movement imply the number of axis the body can move. A simple pick and place robot consists of two rigid bodies on a moving base, connected together with rotary joint. A rotary joint is a one which provides rotation in 360 degrees around any one of the axes.

- The bottom or the base is attached with wheels which provide linear movement.
- The 1<sup>st</sup> rigid body is fixed and supports the second rigid body to which the end effector is provided.
- The 2<sup>nd</sup> rigid body is provided with movement in all 3 axes and has 3 degrees of freedom. It is connected to the 1<sup>st</sup> body with a rotational joint.
- The end effectors should accommodate all 6 degrees of freedom, in order to reach all sides of the component, to take up position to any height.

**-Roobini.S/III year**

## **I2C bus protocol**

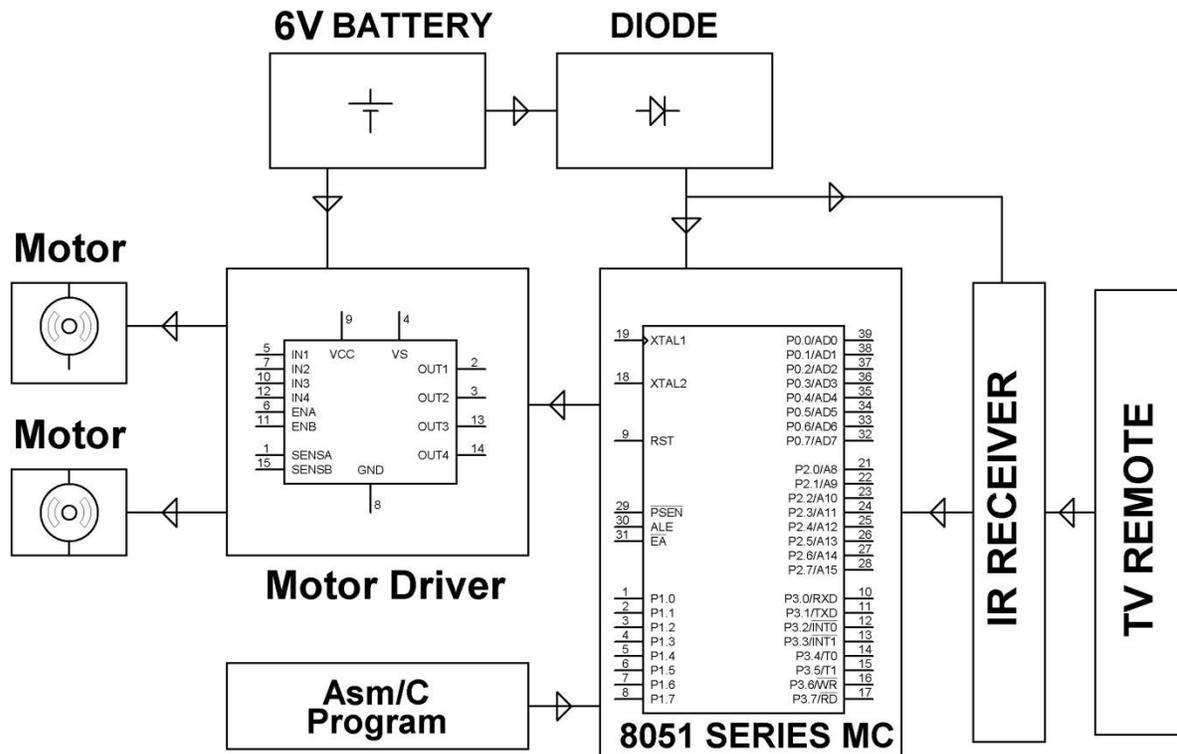
Nowadays the protocols play an essential role in the embedded system design. Without going to the protocols, if you want to expand the peripheral features of the microcontroller, the complexity and power consumption will increase. There are different types of bus protocols available such as USART, SPI, CAN, I2C bus protocol, which are used for transferring the data between two systems. To add a joint to any link of a robot, we need to know about the degrees of freedom and degrees of movement for that body part. Degrees of freedom implement the linear and rotational movement of the body and Degrees of movement imply the number of axis the body can move.

- The I2C protocol operates three modes such as: fast mode, high-speed mode and standard mode wherein the standard mode data speed ranges 0Hz to 100Hz, and the fast mode data can transfer with 0Hz to 400 KHz speed and the high speed mode with 10 KHz to 100KHz. The 9-bit data is sent for each transfer wherein 8-bits are sent by the transmitter MSB to LSB, and the 9<sup>th</sup> bit is an acknowledgement bit sent by the receiver.

The I2C bus protocol is most commonly used in master and slave communication wherein the master is called “microcontroller”, and the slave is called other devices such as ADC, EEPROM, DAC and similar devices in the embedded system. The number of slave devices is connected to the master

device with the help of the I2C bus, wherein each slave consists of a unique address to communicate it. The following steps are used to communicate the master device to the slave

## TV REMOTE CONTROLLED ROBOTIC VEHICLE PROJECT



The project is designed to control a robotic vehicle using a standard TV remote. IR sensor is interfaced to the control unit on the robot for sensing the IR signals transmitted by the remote. This data is conveyed to the control unit which moves the robot as desired. An 8051 series microcontroller is used in this project as control device. Transmitting end uses a TV remote through which IR commands are transmitted. At the receiver end, these commands are used for controlling the robot in all directions such as forward, backward and left or right etc. At the receiving end the movement is achieved by two motors that are interfaced to the microcontroller. RC5 based coded data sent from the TV remote is received by an IR receiver interfaced to the microcontroller.

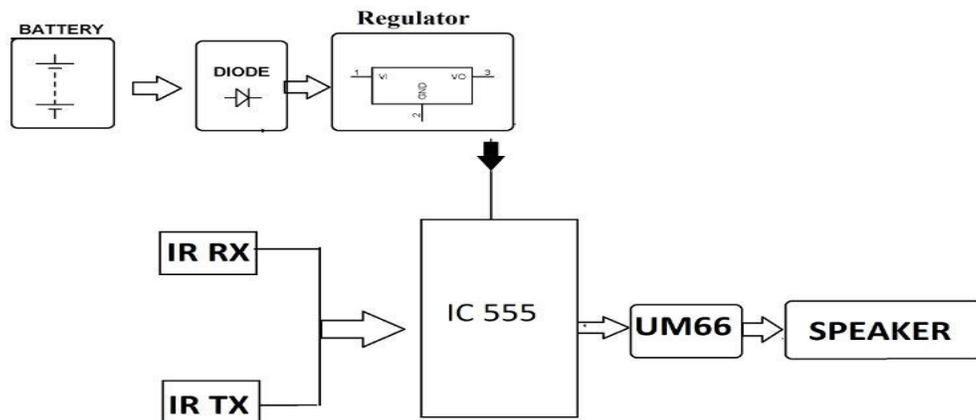
-Vishali.A/III year

## ELECTRONIC WATCH DOG PROJECT

Traditionally and even now many people have pet dogs stationed at their entrance. The purpose of the dogs is that they bark whenever a person enters through the door. This is what names this project as Electronic Watch Dog Project as it performs the same task of detecting the presence of a person at the entrance of premises. A pair of IR sensor transmitter and receiver is placed at the entrance of the premises that needs to be secured. This is what does the trick in our case in this project.

When a person or an intruder who doesn't know about the security device installed at the entrance enters through the door, the IR rays get cut. This cutting of IR rays triggers a series of events in the circuit eventually ringing a burglar alarm. Hearing the alarm the owner of the premises can come to know that someone has entered through the door. Similarly, this device can be installed whichever perimeter is needed to be secure from intruders. The IR rays from transmitter reaches the IR receiver making it signal to the 555 IC knows that currently there is no present in between the sensors. But as soon as an intruder cuts the IR rays, the receiver output changes resulting the 555 IC to trigger.

This eventually leads in triggering UM66 IC. Due to these series of events the speaker connected at the output of the circuit board starts ringing thus notifying about the intruder at the secured parameter.



-Vivek.S/III year

## IMPORTANT WEBSITES

<http://www.engineering.com/>

<http://www.efunda.com/home.cfm>

<http://www.engineeringtoolbox.com/>

<http://www.howstuffworks.com/>

<http://www.eng-tips.com/>

<http://www.discoverengineering.org/>

<http://www.fun-engineering.net/>

<http://www.manufacturingiscool.com/>

<http://pbskids.org/designsquad/>

<http://www.futuresinengineering.com/>

<http://www.engineeryourlife.org/>

<https://www.indiabix.com/>

[www.knowafest.com](http://www.knowafest.com)

<http://www.ece.org/>

<http://www.mathworks.in/products/matlab/>

<http://www.opencircuitdesign.com>

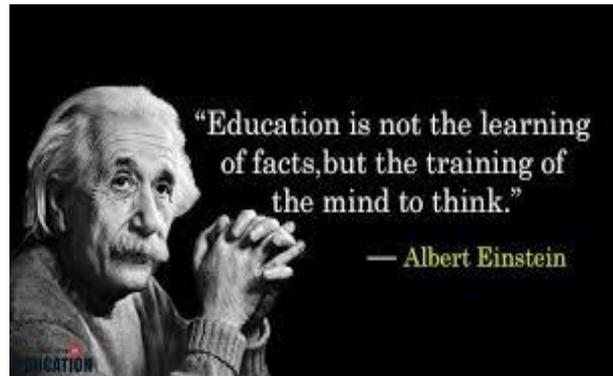
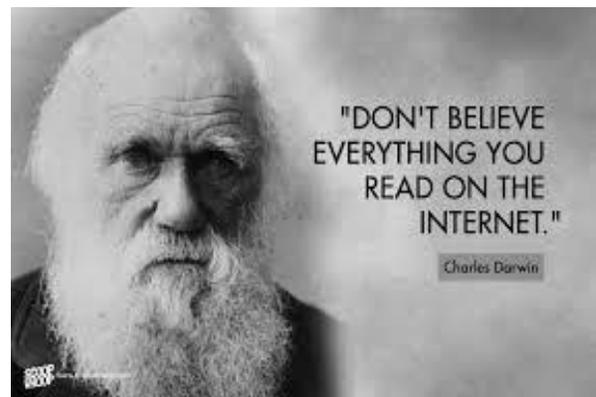
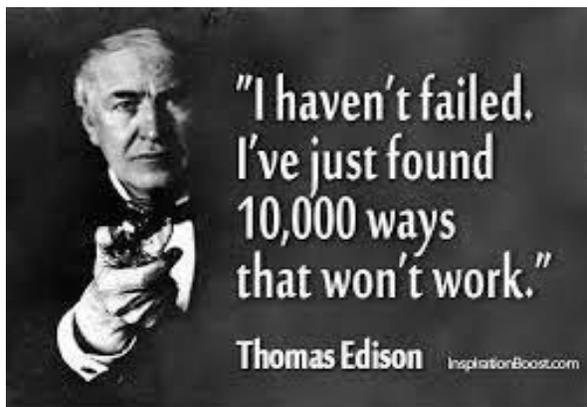
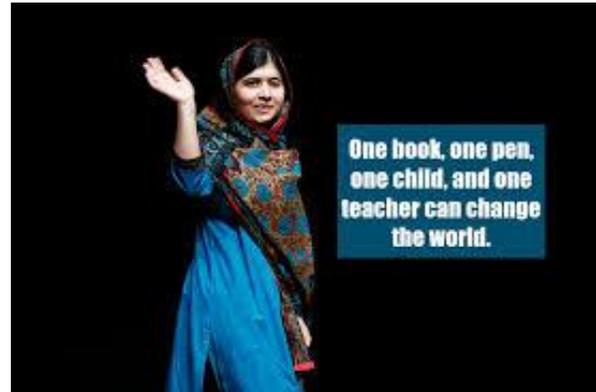
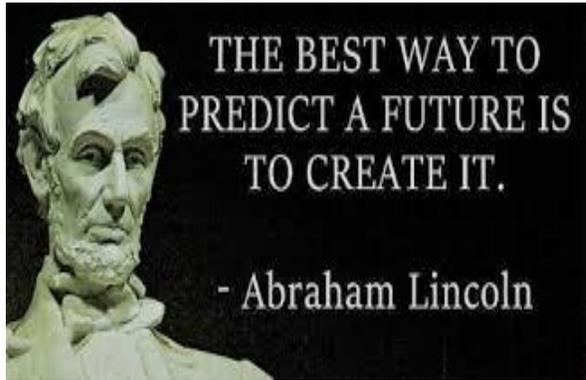
<http://www.nptel.iitm.ac.in>

<http://www.engineering.carrers360>

## COMPANIES FOR EC ENGINEERS

- ✚ ISRO -Indian Space Research Organization
- ✚ BEL -Bharat Electronics Limited
- ✚ ECIL -Electronics Corporation India Limited
- ✚ DRDO -Defense Research and Development Organization
- ✚ BSNL JTO -Bharat Sanchar Nigam Limited Junior Telecom Officers
- ✚ SAIL -Steel Authority of India Limited
- ✚ GAIL -Gas Authority of India Limited
- ✚ HAL -Hindustan Aeronautics Limited
- ✚ NTPC -National Thermal Power Corporation
- ✚ ONGC -Oil and Natural gas Commission Limited
- ✚ Bharat Sanchar Nigam Ltd (BSNL)
- ✚ CMC Ltd
- ✚ Amara Raja Batteries Ltd
- ✚ Bartronics India Ltd
- ✚ Cranes Software International Ltd
- ✚ Datamatics Global Services
- ✚ Dell India Private Ltd
- ✚ Delta Energy Systems (India) Pvt Ltd
- ✚ Educomp Solutions Ltd
- ✚ EMC India
- ✚ Eveready
- ✚ Bharthi Airtel Ltd
- ✚ Industries India Ltd
- ✚ Exide Industries Ltd
- ✚ Bharthi Teletech

## QUOTES



### Editorial Board

<i>Principal</i>	Dr.M.Venkatesan
<i>HOD/ECE</i>	Dr.R.Nandakumar
<i>Association Head</i>	Mr.R.Tamilmani, AP/ECE
<i>Editor</i>	Ms.Devapriya W.,AP/ECE
<i>Associate Editors</i>	Ms. P. Menaka, IV year
	Mr. V. Sabaresh, IV year
	Ms. T. Savitha, III year
	Mr. S. Vivek, III year
	Ms. N. Gopika, II year
	Mr. V. Karthi, II year

## Program Outcome for Electronics and Communication Engineering

**PO 1: Engineering Knowledge:** Apply knowledge of mathematics, science and engineering principles to solve problems in the domain of Electronics and Communication Engineering.

**PO 2: 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.

**PO 3: 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.

**PO 4: 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.

**PO 5: 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.

**PO 6: 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.

**PO 7: Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge and need for sustainable development.

**PO 8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO 9: Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO 10: 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.

**PO 11: 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.

**PO 12: 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.

## Program Specific Outcomes (PSO)

**PSO1: Embedded system design:** Graduates will be able to analyze, design, construct and test electronic and embedded systems for desired specification.

**PSO2 : Simulation Tools:** Graduates will be able to solve emerging real world problems using suitable hardware and software tools.

