DEPARTMENT OF ELECTRONICS AND COMMUNICATION

THE CONNECT

TECHNICAL ARTICLES

RECENT TRENDS IN VIRTUAL REALITY

3D SCANS OF BUILDINGS

To help the people to plan out the placement of furniture this was developed. IKEA partnered with HTC to create an app called the IKEA VE Experience, which allows interior decorators and designers to create custom kitchens, while Lowe's Home Improvement has rolled out the Low's Holoroom that gives the customer a 3D view of a room redesign before actually building it.

To give the fully immersive experience, a 3D scan requires a special camera. Erika Dalager, marketing and communication manager for roOomy, which specializes VR room design, said 3D cameras are coming to make this happen. There's Matterport, which does 3D scams of homes for both realtors and home design, and Google Tango, due later this year. These new cameras will make VR more realistic and immersive.

3D SCANS OF A BUILDING

SPACE

VIRTUAL MARS EXPEDITION

NASA's been using VR for years, especially in training situations. One recent use has more to do with improving the quality of life and mental health of astronauts on longer term missions. The idea is a Virtual Space Station, which would be "a set of interactive behavioral health training and treatment programs with support from NASA's National Space Biomedical Research Institute", according to a release. And Dartmouth's Digital Arts Leadership and Innovative lab got $1.6 grant for the project.

MOHAMMED SHABAZ

ECE 5th sem 'B' sec

THE CONNECT

CONNECT   COMMUNICATE   CONTROL

ROBOT THAT EATS WATER POLLUTION AND PRODUCES ELECTRICITY AS IT SWIMS

The latest novel and potentially revolutionary use of robotic technology comes from Bristol University in the UK, where academics have developed the Row-Bot: place it in water and the little machine can clean up pollution and generate electricity from it at the same time. As the company reports, Row-Bot floats on the surface of the water and is powered by a small artificial stomach that runs on bacteria.

Because Row-Bot produces power from dirty water, it can go on moving and swimming for as long as there's cleaning to do, and it could one day be a hugely useful tool in the fight to limit our impact on the environment around us.

"The work shows a crucial step in the development of autonomous robots capable of long-term self-power," write the report's authors, who also say that the basking shark and the water boatman beetle were taken as an inspiration for their design. The basking shark opens its mouth and it swims through the water collecting plankton.

Key to the robot's operation is the Microbial Fuel Cell (MFC) that acts as its digestive system. The stomach area contains microbes that digest the bacteria in the water. By putting the right kind of microbes the pollution present in the water can be treated. This digestion produces electrons as a result, electrons that can be harvested to give the 'oars' of the bot another push. In this way the Row-Bot can happily paddle around foraging for its own food and without having to rely on an external energy source or refueling it.

One of the key innovations in the design of the Row-Bot is the way the electrons are sent directly to the battery rather than requiring another chemical reaction first – this improves the efficiency of the robot's internal systems enough for it to be able to propel itself across the water unaided. There's actually some energy left over which could be used elsewhere.

ROBOT CONTROLLING WATER POLLUTION

It's going to be a while before the Row-Bot is deployed to clean up sewage pollution but it's a promising development in autonomous robotics that can refuel themselves rather than having us do it for them. The same concept could eventually be used for robots moving on land and through the air too.

**Keerthana R**

ECE 7thsem 'B' sec

THE CONNECT

CONNECT   COMMUNICATE   CONTROL

Solar Paint

This is the idea behind photovoltaic paint, a radical new application for solar cells that is easy to apply, can be installed almost anywhere, and is cost-effective. Sounds like something in the distant future, right? Not quite. Numerous universities and research groups have been working on solar paint over the last 5 years, one even going as far as crowd sourcing for commercial production.
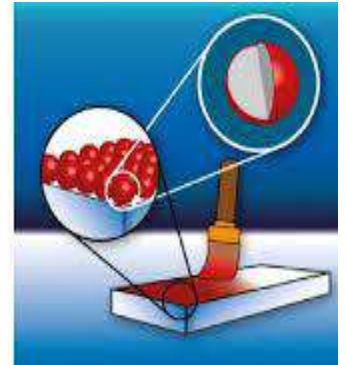
WHAT IS SOLAR PAINT?

Solar paint, also known as paint-on solar or paintable solar, works the same as any other photovoltaic cell by collecting the energy from the sunlight and converting it to electricity.

The basic idea is that billions of tiny pieces of light-sensitive material are suspended in a flexible liquid, like an ink or paint, which can be sprayed on to various shapes and sizes. Traditional solar cells use wafers made of light-sensitive silicon, an abundant element found all over the earth. Unfortunately, refining raw silicon to the pure silicon that solar panels require is expensive, labor intensive, and uses and produces numerous hazardous chemicals. In the end, though, this process is worth it, because silicon solar panels are fairly efficient.

WHY IS SOLAR PAINT GAME CHANGER?

It is cheaper to produce than silicon solar panels. This means that, in the future, solar will be attainable to a broader audience due to the lower cost. Solar paint can also be applied to surfaces of almost any shape or size, and to numerous surface types including plastic, fabrics, and even car bodies.

WHAT'S GOING ON NOW?

Solar paint is a very new technology and, as you can see materials currently being experimented with, we've yet to find that perfect system that increases the efficiency to cost-effective levels. But don't worry! The solar industry has always been quick to change, adopting new materials, faster processes, and new financial models. Once solar paint is out of the research and development phase and if it's everything the researchers have promised – namely cheap, easy, and efficient – the industry is sure to adopt it and run with it!

YADUGURI SRAVANI

ECE 7thsem 'B' sec

THE CONNECT

CONNECT   COMMUNICATE   CONTROL

FACULTY DEVELOPMENT PROGRAM

(Coordinators : Prof. Naveen H, Prof. Jagadish, Prof. Ashutosh, Prof. Mayur)

Topic	Conducted by	Highlights of FDP
Model Based Design for Electronic Engineering Applications	Mr Sreeram Mohan (Director, Product Development) and Mr Chandra Kumar M (Sr. Application Specialist) from Altair Engineering	• Usage of SolidThinking Embed, for model based development of embedded systems. • Development of complex models using HyperMesh. • Evaluation of multiple curves or mathematical equations using HyperGraph • Conversion of control diagrams into C-Code using SolidThinking Embed
MATLAB	Mr Parameshwara Naik L (Manager – University program Team) and Mr Pramod Kumar Naik (Senior Application Engineer for Mathworks products) from CoreEL Technologies	• Introduction to MATLAB Toolbox and Apps • Conversion of MATLAB code to Verilog code • Introduction to Communication Toolbox and Z-board • Demo on Simulink • Introduction to Filter design App and features of boards that can be used for image processing, signal processing etc.

FDP ON MODEL BASED DESIGN FOR ELECTRONIC ENGINEERING APPLICATION

FDP ON MATLAB

THE CONNECT

CONNECT   COMMUNICATE   CONTROL

INDUSTRIAL VISIT:

(Coordinators : Prof. Monika Gupta, Prof. Divya Rajan, Prof. Ashutosh)

Place of Visit	Date	Semester
IISc	27-10-2017	Fifth
CSIR Platinum Jubilee Techno fest held at CSIR-NAL	26-10-2017	Seventh
ISRO	16-10-2017	Third

INDUSTRIAL VISIT TO IISc

INDUSTRIAL VISIT TO NAL

THE CONNECT

CONNECT   COMMUNICATE   CONTROL

GUEST LECTURES:

(Coordinators: Dr. Mohan Kumar, Prof. Dharmambal, Prof. Sheeba Kumari, Prof. Jayanthi M, Prof. Jagadish R K, Prof. Neethu Johny, Prof. Apeksha Prabhu, Prof. Naveen H)

Expert	Topic	Date	Semester
Ms.Bhavana Chandrashekar, BOSCH India	Campus to Corporate Transition	10-11-17	Third
Mr VinodhPalanivelu, CISCO	Internet of Things	05-09-2017	Seventh
Prof. V. Prithviraj RIT, Chennai	Satellite Communication	07-09-2017	Seventh
Mr.Damodara MS, Business Head at Entuple Technologies	Electronic System Design and IOT	24-08-2017	Fifth and Third
Mr. Lakshmi Narasimha from Schemazen Technologies	Product design and PCB board design	17-08-2017	Fifth

Guest Lecture on Campus to Corporate Transition

Guest Lecture for Satellite Communication

Report on Guest lecture for 5th Semester Students

Guest lecture on Internet of things

Guest lecture on Electronic System Design and IOT

THE CONNECT

CONNECT   COMMUNICATE   CONTROL

Workshops:

(Coordinators: Prof. Monika Gupta, Prof. Naveen, Prof. Parul)

Topic	Conducted by	Highlights	Date
Raspberry Pi	Enthu Technology Solutions India Pvt Ltd	1) An introductory session on Raspberry Pi and IOT, IOT architecture and its application. 2) Interfacing ADC, Sensor with simple IOT application code with Raspberry Pi 3) A mini Project competition was conducted for the participants	28-10-17
Cypress PSOC 5LP	Mr Naveen, NHCE	1) An introductory session on PSOC 5LP and Procedure, Installation of PSOC Creator 2.2. 2) Interfacing of LED,LCD and ADC Sensor with PSOC 5LP.	18-11-2017
Arduino Uno	Sun Softronic system (S3)	1) Introductory session on Arudino, its Architecture and functional block diagram. 2) Interfacing of Switch, buzzer, serial communication, ADC, Sensor with Arduino Uno kit. 3) A mini Project competition was conducted for the participants	16-09-2017

One day workshop on Raspberry Pi   **One day workshop on Cypress PSOC 5LP**   **One day Workshop on Arduino Uno**

THE CONNECT

CONNECT   COMMUNICATE   CONTROL

EXPERT LECTURES:

Semester	Subject	Resource person	Title	Date
3rd	Digital Electronic Circuits	Ms Shanti N (livewire)	State Machine design	30/10/17
	Analog Electronic Circuits	Mr AksharaMurali (Frenstech Pvt Ltd)	Oscillators and Feedback	17/11/17
	Network analysis	Mr AksharaMurali (Frenstech Pvt Ltd)	Laplace Transform	17/11/17
	Signals and Systems	Mr Arun (Harman Technologies)	Intro to signals and systems of audio signal processing	28/10/17
5th	Analog communication	Mr D Suresh (Renesas Electronics Pvt Ltd)	Industrial application in communication	31/10/17
	Microcontroller	Mr Bharat Gabise (Tata Elxsi)	8051 Interfacing	28/10/17
	CMOS VLSI Design	Mr Harish K (Intel Technologies)	VLSI Design	30/10/17
	Information Theory and Coding	Mr Praveen Kumar	Industrial applications of ITC	2/11/17
	Engineering Electromagnetics	Mr Rakesh C R (Broadcom)	Uniform plane waves and propogation	4/11/17 & 11/11/17

THE CONNECT

CONNECT   COMMUNICATE   CONTROL

Technical seminar

(Coordinators : Prof. Mani Laxman Aiyar, Prof. Madhukar, Prof. Sumathi, Prof. Rama)

Department of ECE organized **Technical Seminar** for B.E (3rd, 5th and 7th semester) students on '**Recent advances in electronics and communication**' on 4th October 2017. 7 batches of students participated enthusiastically.

Winners:

1st Prize	Mr. Mohammed Musaveer & Mr. Faizullah	V sem
2nd Prize	Mr. Naveen K R & Mr .Subramanya G	V sem
3rd Prize	Mr. Denzel & Mr. Nikhil and Ms.Amrutha	V sem

Technical Quiz

(Coordinators : Prof. Jayanthi, Prof. Smitha, Prof. Arun, Prof. Parul, Prof. Karthik)

The technical quiz contest was organized in the department of ECE on 10th November, 2017.There was good participation of students from 3rd and 5th semesters. A preliminary round of written test was conducted and 5 teams, each of 3 members were retained.

Winning Team: Harsha E, Mithun V & Keerthi U M

Technical quiz 1st round

THE CONNECT

CONNECT   COMMUNICATE   CONTROL

CLUB ACTIVITIES

Technology sharing club:

Faculty Coordinators: Prof. Neetu Johny,Prof. Divya Sharma

What we're about:

We as a club will provide the right platform to develop your thoughts to innovations which will suffice the need of the hour. Also gives you sorted insight on technology be it former or newfound. An open forum will also be provided for discussions. Lack of Knowledge often leads to mishaps, here at our club we aim to prevent any such mishaps by enhancing your knowledge through fun-learning. We will also provide adequate opportunities for you to share technical thoughts and technical symposiums.

Objective:

To provide insight into existing and evolving technology and product

ROLE	NAME
President	Muheed Pasha
Vice-president	Sushmitha M A
Secretary	Nanditha S
Treasurer	Karthik V
Committee Member	Riny Alex
Committee Member	Harish P
Committee Member	Rohith Prasad
Committee Member	Mohammed Musaveer
Committee Member	Nagarjun K S
Committee Member	Rakshitha

THE CONNECT

CONNECT   COMMUNICATE   CONTROL

EVENT	DATE	DESCRIPTION
CATCH THAT ELECTRON	18/08/2017	**ONLINE COMPETITION:-** 　　The event started on 18th August and ended on 24th August 2017! All the presentations were mailed to our official E-mail and best presentations were featured on our YouTube channel!
VIDEO CONFERENCE SESSION	24/09/2017	**VIDEO CONFERENCE SESSION ON PRESENT AND FUTURE TECHNOLOGY-** *As a part of Club activity video conference session was conducted on 24th of September which mainly focused on present/future technology covering all the fields of engineering!*
WORKSHOP ON IOT	24/10/2017	*The workshop on IOT was conducted on 24th of October collaborating with a private Institute(workshop) called MODULE143.*

IOT WORKSHOP

VIDEO CONFERENCE SESSION

THE CONNECT

ELECTRONICS HOBBY CLUB:

Faculty Coordinators: Prof. Aravinda K, Prof. Dharmambal

What we're about:

The goal of this club is to implement and demonstrate electronics-based hobby projects and products. By motivating the enthusiasts in trying out the avenues of hardware and software domains of the electronics and communication, this club is aimed at enriching the intelligence as well as wisdom of the technical community.

The Club aims to cater to the various needs to keep in pace with the ever evolving field of electronics Innovation, Imagination and Application is the motto of the club. We aim to provide a platform for the students to showcase their innovative ideas. The Club deals from basics of electronics till the latest developments The Ideas learnt in theory classes can be applied in the real world.

Our Objective:

To implement and demonstrate electronics-based hobby projects and products.

ROLE	NAME
President	Amrut N G
Vice-president	Sonal Hegde
Secretary	Janardhan S P
Treasurer	Subramanya G
Committee Member	Hariraj
Committee Member	Chandana S M
Committee Member	Amrithnath V
Committee Member	Nikhil R
Committee Member	Naveen K R
Committee Member	Mohit R
Committee Member	Praveen K R

THE CONNECT

CONNECT   COMMUNICATE   CONTROL

EVENT	DATE	DESCRIPTION
PCB design and circuit etching using EAGLECAD	25/10/2017	Electronics Hobby Club conducted a workshop on 25.10.2017 on PCB design and circuit etching using EAGLECAD, Twenty two participants actively participated and designed the PCB using EAGLECAD

PCB design and circuit etching using EAGLECAD Workshop
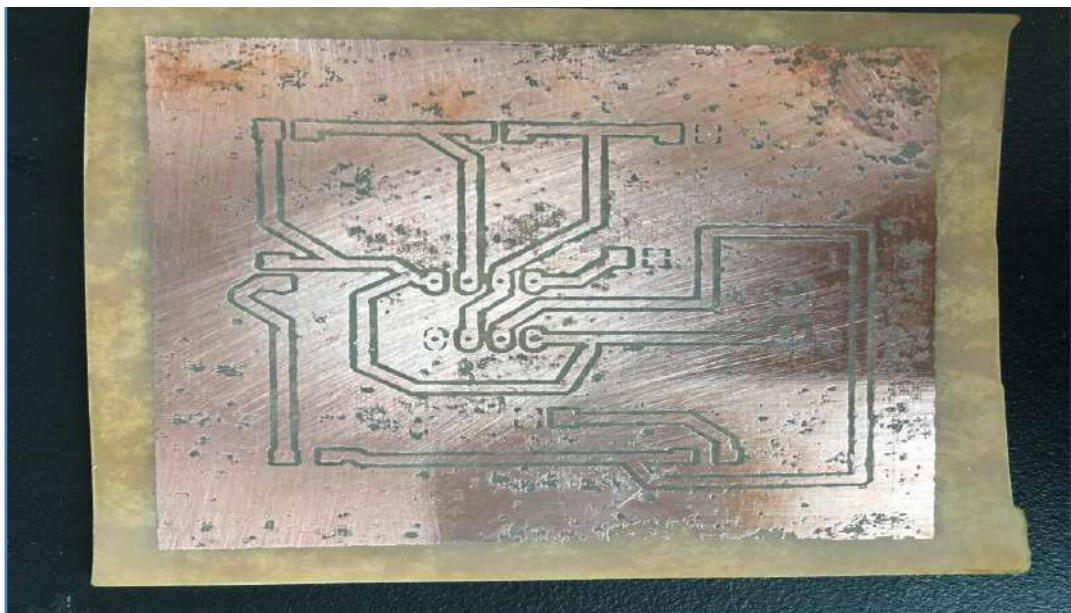
THE CONNECT

CONNECT   COMMUNICATE   CONTROL

PROFESSIONAL CONNECT CLUB:

Faculty Coordinators: Dr. K C R Nisha, Prof. Sheeba Kumari

What we're about:

We help you connect with professionals, professional bodies, research organizations and companies.
We organize guest lectures, seminars, workshops, conferences and competition on technologies, projects and products.
We organize field trips to companies, research institutions and industry exhibitions.
We help to facilitate active participation in external technical events.

Our Objective:

To connect with engineering professionals and conduct technical events.

ROLE	NAME
President	Alankrit Mishra
Vice-president	Akshay Kumar
Secretary	Denzel George
Treasurer	Namratha B R
Committee Member	Bhavani R
Committee Member	Shraddha Kiran
Committee Member	Bhavana Savanth
Committee Member	Gowtham Shetty P
Committee Member	Akhilesh Verma
Committee Member	Dinesh Chandra
Committee Member	Sanjana Ranjan

THE CONNECT

CONNECT   COMMUNICATE   CONTROL

EVENT	DATE	DESCRIPTION
A visit to NIOT	2/11/2017	During trip to National Institute of Ocean Technology(NIOT) we observed many of our ocean observatory system. Also we observed ocean's activity using buoys. observation system used by NIOT to observe ocean is ADDRESS(Advanced Data Reception and analysis System) The team included few students from the ECE and CSE department along with Dean of Research and Development
A visit to ISRO	21/9/2017	NHCE team meeting with Director, ISRO Satellite Centre, Dr. Annadurai M today. Two hours of interaction with Director and Students' Satellite program Nodal officer Mr. Kannan S A has sharpened our focus on opportunities in Satellite Imagery and Data Analytics. It is a real icebreaker in our own Satellite Program.

VISIT TO NIOT

VISIT TO ISRO

THE CONNECT

ACHIEVEMENTS

Congratulations!

Prof. Dharmambal had been awarded for her contribution in field of engineering by the institution of engineers, Tamilnadu
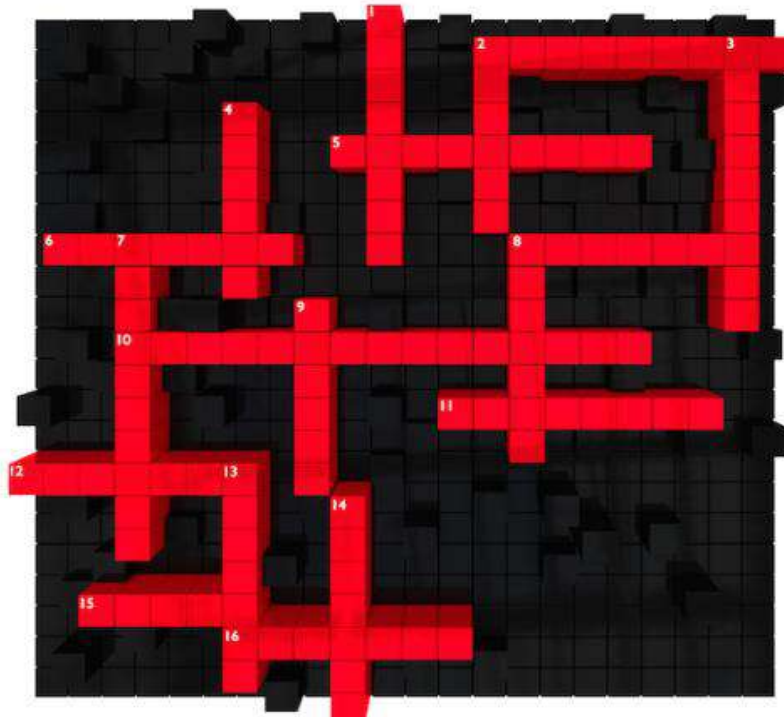
e

Team NHCE has won 1st place in OPEN INNOVATION HACKATHON ON BUILDING SMART VILLAGE under entrepreneur for developing an app for illiterates to sell their products globally

THE CONNECT

CONNECT   COMMUNICATE   CONTROL

CROSS WORD

Across

2. A diagram that shows the electrical connections of the electronic components

5. Current is considered to be the movement of _____.

6. A voltage source that converts chemical energy to electrical energy

8. A flow of electric charge

10. A characteristic of a secondary cell

11. A material that is composed of a mixture of elements

12. The term used to designate electrical pressure

15. A short circuit will have a _____ current flow.

16. The part of an atom that has no electric charge

Down

1. A voltmeter is used in _____ with the circuit.

2. A device that opens or completes an electrical path

3. A material that opposes the movement of free electrons

4. One coulomb passing a point in one second

7. A resistive component that is designed to be temperature sensitive

8. A unit of charge that contains 6.25×10^{18} electrons

9. An atom's atomic number is determined by its number of _____.

13. A substance that is found only in its pure form

14. It is used to measure current.

BY-

Meghana C
1NH14EC022
ECE

THE CONNECT

CONNECT   COMMUNICATE   CONTROL

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Vision

To create high quality engineering professionals who can serve the society and earn global recognition.

Mission

- To build strong foundation in Electronics and Communication Engineering aspects by exposing students to state of the art technology and research.

- To strengthen the curriculum through interaction with industry experts to equip the students with the required competency.

- To mould students to share technical knowledge and to practice professional and moral values.

Program Educational Objectives

PEO 1: To produce graduates with understanding of fundamentals and applications of Electronics and Communication Engineering.

PEO 2: To hone graduates with ability to apply, analyze, design and develop electronic systems.

PEO 3: To enhance graduates with latest technologies to enable them to engineer products for real world problems.

PEO 4: To build leadership qualities, management skills, communication skills, moral values, team spirit and lifelong learning ability for the graduates.

THE CONNECT

PROGRAM OUTCOMES

B. E graduate should possess the following Program Outcomes-

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

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

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

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

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

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 in Electronics and Communication Engineering.

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

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

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

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.

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.

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.

THE CONNECT

CONNECT   COMMUNICATE   CONTROL

PROGRAM SPECIFIC OUTCOMES

Program Specific Outcomes	
PSO1	To demonstrate the ability to design and develop complex systems in the areas of next generation Communication Systems, IoT based Embedded Systems, Advanced Signal and Image Processing, latest Semiconductor technologies, RF and Power Systems
PSO2	To demonstrate the ability to solve complex Electronics and Communication Engineering problems using latest hardware and software tools along with analytical skills to contribute to useful, frugal and eco-friendly solutions.