DEPARTMENT OF ELECTRONICS AND COMMUNICATION

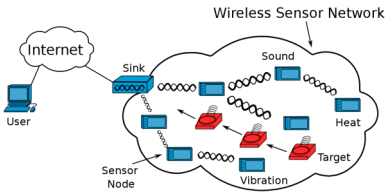
The Connect

DEPARTMENT OF ELECTRONICS AND COMMUNICATION

Issue 14 ,Jan 2022

Wireless Sensor Network

Wireless communication technologies are undergoing rapid advancements. The last few years have experienced a steep growth in the area of Wireless sensor networks. WSNs necessitate the development of innovative algorithms for power management, sensor communication, ranging, localization, distributed processing and dynamic routing. Wireless sensor networks are a class of networks where the nodes are sensor nodes, which are capable of collaborating with one another and measuring the condition of their surrounding environment (light, temperature, sound, vibration). The sensed measurements are then transformed into digital signals and processed to reveal some properties of the phenomenon around sensors. Due to the fact that the sensor nodes in WSN have short radio transmission range, intermediate nodes act as relay nodes to transmit data towards the sink node using a multi-hop path. Sensor networks can be classified broadly into 2 types. One is the stationary sensor networks where all the nodes in the network are stationary, none of the nodes in the network moves. Whereas in a mobile sensor network, It is essential that some or in the extreme case all the nodes in the network would move. Sensor nodes are multi functional, depending on the type of sensor that is embedded in these nodes, they can sense different parameters. Combining static and mobile sensor nodes in an integrated network is a promising approach that allows the deployment of advanced surveillance systems to provide area monitoring. Tiny OS is a very popular operating system that is used in the sensor nodes, as the nodes are battery operated they have a very limited lifetime. The sensor nodes are very small in size typically less than a cubic centimeter.,



Caption describing picture or graphic.

they are designed to operate in an unattended manner in a highly dense area. There are different applications of sensor networks, measurement of temperature measurement of humidity levels, lighting condition air pressure soil makeup noise level vibration, agriculture , health care and so on. Some of the common challenges behind implementing sensor networks are scalability, Quality of service, energy efficiency and security. scala-

Inside this issue:

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Different component of sensor webs are Sensor modeling language, transducer modeling language, sensor observations service, sensor planning services , sensor alert services and so on.

Low power consumption is a key factor in ensuring long operative horizons for non power fed systems. Power efficiency in WSNs is generally accomplished in three ways– low duty cycle operation, local/in-network processing to reduce data volume, multihop networking which reduces the requirement for long range transmission. Each node in the sensor network can act as a repeater, which reduces the transmission power. Design of efficient communication and network protocols for WSNs is crucial for wireless sensor nodes to carry out the mission successfully for which they are deployed. Communication in wireless networks is achieved in the form of electromagnetic signal transmission through the air. This common transmission medium must be shared by all sensor network nodes, for this a medium access control protocol is used. The choice of the medium access control protocol is the major determining factor in WSN performance. An efficient design of a MAC –layer protocol must be energy efficient to extend the lifetime of the network. It must be scalable to accommodate changes in the network. Routing and Data Dissemination issues deal with data dissemination mechanisms for large scale wireless networks, directed diffusion, data centric routing , adaptive routing and other specialized routing mechanism. Routing protocols for WSNs can be divided into three groups, data centric, hierarchical and location based. Data centric combines the data arriving from different sources along the way.

Several applications have been envisioned for wireless sensor networks. WSN can form a critical part of military command, control, communications, computing, intelligence, surveillance, reconnaissance, targeting systems. By deploying wireless sensor networks in critical areas, enemy troop and vehicle movements can be tracked. By embedding a wireless sensor network within a natural environment habitat monitoring, animal tracking, forest fire detection, precision farming, disaster relief can be done. Potential health applications abound for wireless sensor networks. Hospital patients could be equipped with wireless sensor nodes that monitor the patients vital sign and track their location. Wireless sensor networks are also used for incident monitoring, which improves the response of firefighters and police to an unexpected situation. For an early detection of incidents acoustic sensors can be used to detect the spike in the noise or termic sensors can be used to detect a possible fire. The wireless sensors network market was valued at USD 46.76 billion in 2020 and is expected to reach USD 123.93 billion by 2026, at a CAGR of 17.64% over the forecast period of 2021-2026.The growing automation and robotic industry, increasing demand for wireless sensor network in asset monitoring, security , transportation and improved reliability with the communication technology advancements are the significant factors driving the market for wireless sensor network.

FACULTY ACHIEVEMENTS

Name of the Staff	Name of the award/achievements	Year of Award	Awarding Agency
Dr. Nisha K C R	Fastest Member-Get Member Award	Nov-Dec 2020	IEEE
	Best Researcher Award	Nov-Dec 2020	IEEE
	Coordinator—Earth Observation for Carbon Cycle Studies	21st -25th June 2021	ISRO
Dr. Arvinda K.	P.hd. Thesis shortlisted	Apr-21	ComSoc GraTE-7
Dr. A.B. Gurulakshmi	Best Faculty Member	28th Feb 2021	Indian Technology Congress Association/WCRC
Dr. Mohan Kumar Naik B	External Session Chair	10th December 2020	IEEE TEASMET
Dr. Piruthiviraj P	Technical Program Committee member -Recent Trends in Computer Science and Electronics (RTCSE 2021)	5th-7th January 2021	University of Hawaii (Manoa Campus), Hawaii

Brain teaser

There are ten boxes containing some balls. Each of the ball weighs exactly 10 grams. One of those boxes have defective balls (all the defective balls weigh 9 grams each).

An electronic weighing machine is provided to you and you are allowed only one chance of weighing on it.

How will you find out which box has defective balls ?

Answer to Brain teaser

Let us simplify boxes by naming them from 1 to 10.
Now the trick here is to pick different number of balls from different boxes. So to simplify things, we will pick balls corresponding to box number.

Thus, pick 1 ball from Box 1, 2 balls from box 2, 3 balls from box 3 and so on. You will have 55 balls altogether. Now, put them all in the balance.

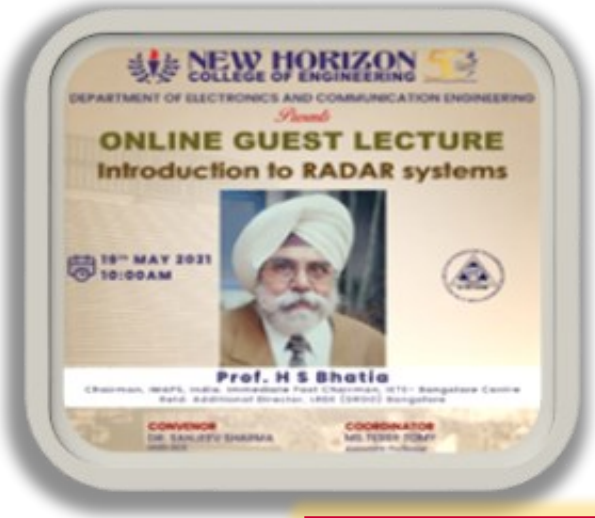
If all balls were weighing accurate 10 grams, the total weight of the 55 balls would have been 550 grams. But one of the box must have had the defective balls.

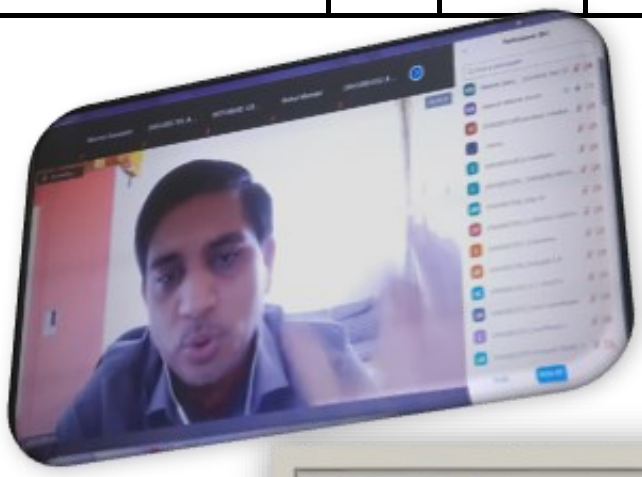
Suppose if the defective balls were in box number 2, then the total weight will be 2 grams less than 550. If the defective balls were in box 8, the total weight will be less than 8 grams from 550. In this way, you will be able to identify which box has the defective balls

EXPERT LECTURES

(Coordinators : Prof. Tessy Tomy)

Name of the Industrial Expert	Company/Organization	Topic/ Subject	Semester	Hours engaged	Date
Mr. Tejas Dunakhe, **GM,Sales and Marketing**	Hytech Automation	Artificial Intelligence in Robotics	VII	3	14-12-2020
Mr.Prafulla Galphade Senior principal program manager	Cadence design system	Finite State Machine	III	3	21-12-2020
Mr. Kundana Lal President	Vitti Research Foundation	Rise of Artificial intelligence and its impact on social and economic fabric	V	4	22-12-20
Mr. Manas Guptha Head	wealth Technology, Australia New Zealand Bank	Innovations in AI and ML	VII	3	24-12-20
Ms. Soumya Agarwal Software engineer	Cisco	Chaotic Images	VII	6	29-12-20





EXPERT LECTURES

(Coordinators : Prof. Tessy Tomy)

Name of the Industrial Expert and Designation	Company/Organization	Topic/ Subject	Semester	Hours engaged	Date
Prof H S Bhatia Chairman	IMAPS, India	Introduction to RADAR Systems	IV and VI	3	19-5-21
Mr. Ganesh Attarde Founder	GB Electronics	Singly Linked List Data Structure	VI	3	21-5-21
Dr. P.Subbanna Bhat chief mentor	Anvation labs ,Bangalore	OP-AMP APPLICATION	IV	3	01-6-21
Ms. Priyanka .B. Gaikwad software developer	Welldoc, India	Introduction to Android App Development	VII	3	12-6-21
Mr. Ashish Khachane Assistant Manager	Xilinx Productline Excelpoint Systems India Pte Ltd	FPGA ARCHITECTURES	IV	3	10/7/21
Mr.Prafulla Galphade senior principal program manager	cadence Design systems(india)pvt Ltd	FPGA ARCHITECTURES	IV	3	17/7/21

ALUMNI TALKS

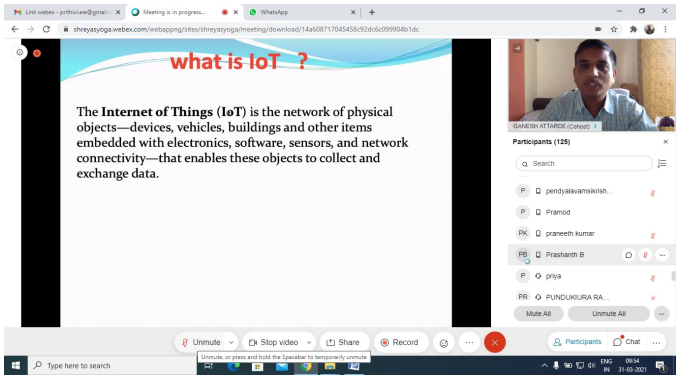
Name of the Alumni and Current Designation	Date of the Event	Contribution
Priyanka M (Year of Graduation- 2014) Project Manager VMWARE	26/6/21	Motivational talk on" Catalyst -The ultimate strategies on how to win at work and in life"
Akshara Murali N (Year of Graduation- 2017) Physical Design Engineer, FrenusTech Pvt Ltd	12/6/21	Technical talk talk on" How to reach the world of ICs"
Denzel George (Year of Graduation- 2019) Founder and Director of TSC technologies	13/3/21	Delivered technical talk talk on "LoRa Communication"
Mohamed Ahmed Shariff (Year of Graduation- 2016) Sub-Editor,Deccan Herald	13/2/21	Delivered motivational talk on "Thinking Beyond Academics"
Abhijnan Mitra (Year of Graduation- 2018) BI, Application Developer, NTT Data	16/1/2021	Delivered technical talk talk on "Business Intelligence-Data Warehousing"

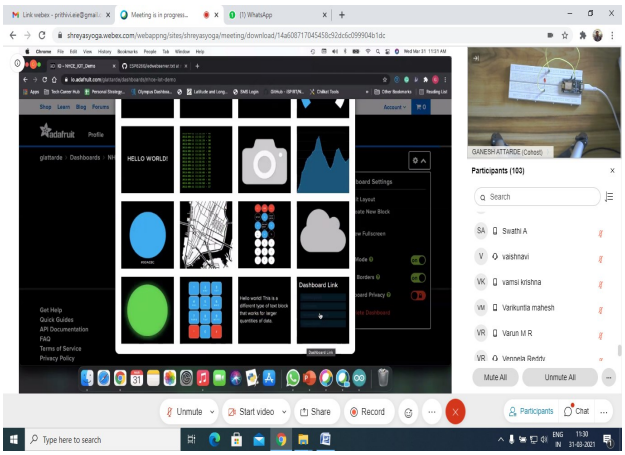
WORKSHOPS:

(Coordinators: Dr. Piruthiviraj)

WORKSHOP

Date	Resource person	Title	Semester
31-03-2021	Mr Ganesh Attarde CEO,GB Softronics Solutions	Workshop on Practical Approach on Internet of Things	VI





TECHNOLOGY SHARING CLUB

(COORDINATORS : PROF. DEEPAK KUMAR S N , PROF. VANSHA KHER)

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

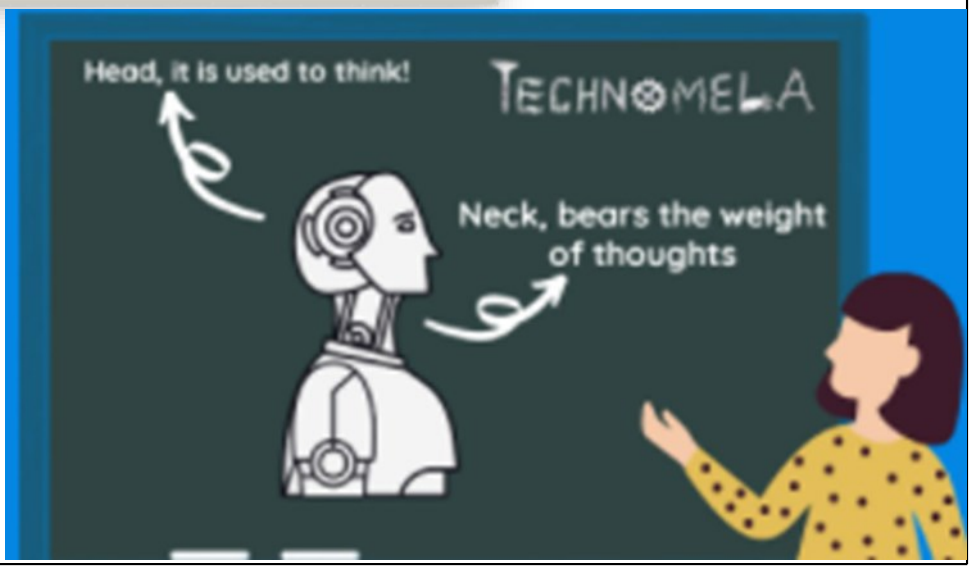
ROLE	NAME
President	Mahammad Ghassan
Vice-president	Suraj Suresh
Secretary	Shiva S
Treasurer	Aathira V
Committee Member	Shakthi A
Committee Member	Kiran J
Committee Member	Kamala vennela V
Committee Member	Melita Rose
Committee Member	Vyshak Shetty
Committee Member	Devanshi S
Committee Member	Bhargav Dayal

IEEE NHCE STUDENT BRANCH

IEEE BANGALORE SECTION

TECHNOLOGY SHARING CLUB

EVENT	DATE	DESCRIPTION
Design and Doodle (Online Event)	04-06-2021	1. Design logos for apps/software's or companies. 2. Design based on technical themes To encourage fun based learning.
PRESENTO	05-06-2021	To showcase ideas and solutions to real life problems Project Modelling and technical approach to solve problems



ELECTRONICS HOBBY CLUB

(COORDINATORS : Prof. Richard, Prof. Rajesh)

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.

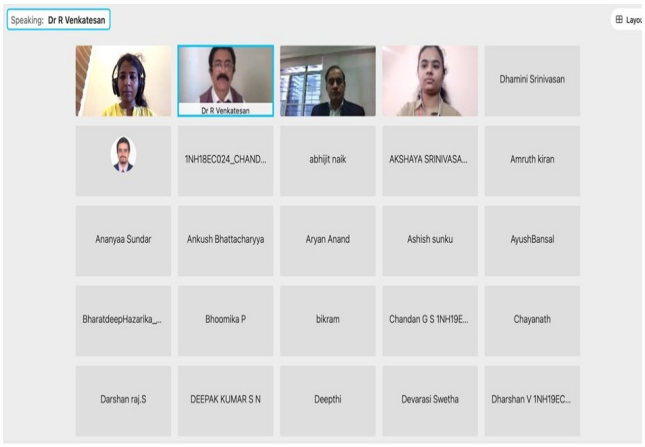
Objective:

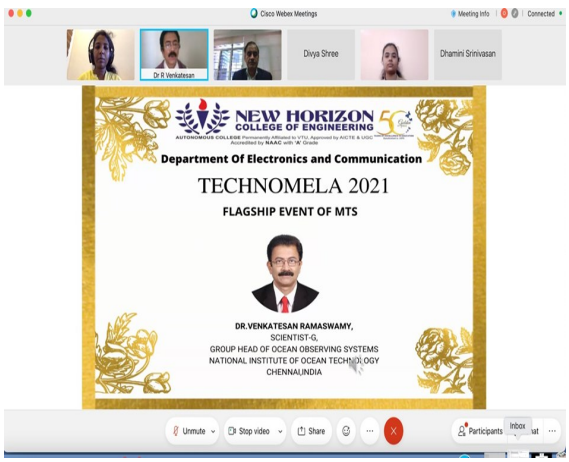
To implement and demonstrate electronics-based hobby projects andproducts.

Role	Name
President	Yaseer Faiz Ahmed
Vice-president	Jerin
Secretary	Sushma
Treasurer	Kishan Kumar
Committee Member	Manoj
Committee Member	Bharath
Committee Member	Srinidhi
Committee Member	Suraj
Committee Member	Sanskruth
Committee Member	Varun
Committee Member	Rohit
Committee Member	Akash

ELECTRONICS HOBBY CLUB

EVENT	DATE	DESCRIPTION
Technomela (Inter– Club Event)	4th & 5th June 2021	The technical fest involved application based concepts which tests the participants technical skills.





PROFESSIONAL CONNECT CLUB

(COORDINATORS : Dr. Gurulakshmi , Prof. Divya Sharma)

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.

Professional Connect Club

Objective:

To connect with engineering professionals and conduct tech-

ROLE	NAME
President	Denzel George
Vice-president	SanjanaRanjan
Secretary	Shuvam Pal
Treasurer	Rahul S
Committee Member	Nikhil Riyaz
Committee Member	KushiPonnamma
Committee Member	Bhavana Savanth
Committee Member	Gautham Sinha
Committee Member	Saleh Junaid Ahmed
Committee Member	UditBahuguna
Committee Member	VidhyaJhadav
Committee Member	Rishita S

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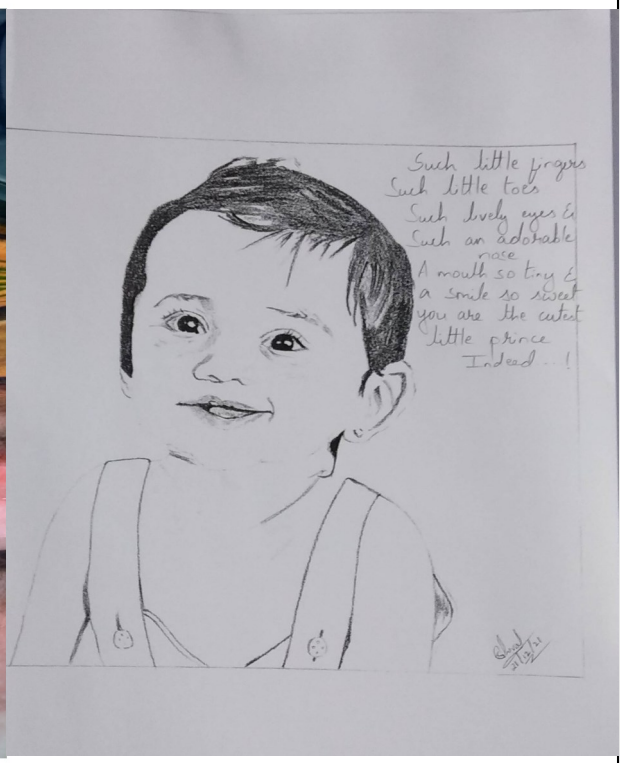
STUDENT CORNER—*A GLIMPSE TO THE CREATIVITY OF STUDENTS*

1NH18EC135—Greeshma M N



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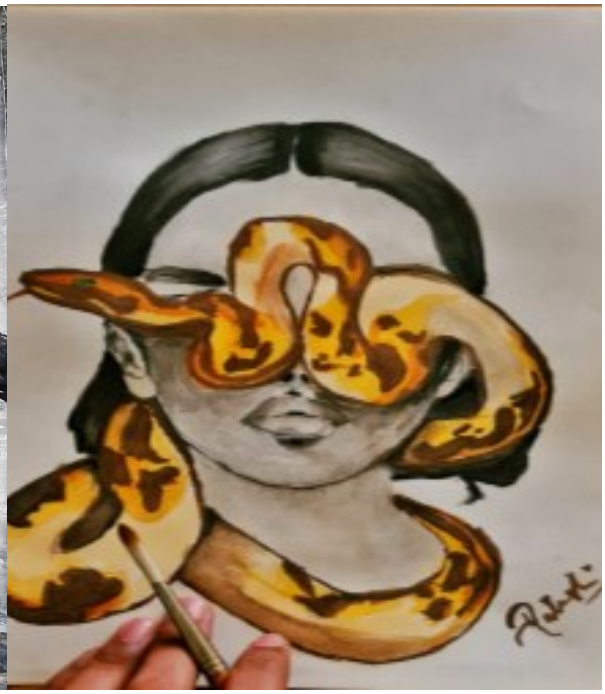
1NH18EC725 -Kavyashree



1NH18EC094 RAKSHITH MV

ISSUE 14 ,JAN 2022

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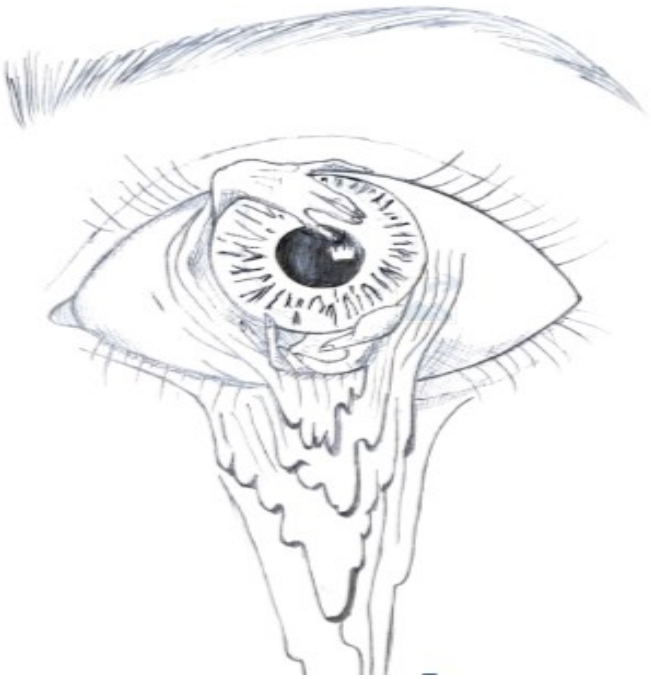

Nikitha M S (1NH18EC079)

1NH18EC121 Vinay Kumar K

Keerthana S 1NH18EC053

Keerthana S 1NH18EC053

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 and 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.

PROGRAM OUTCOMES

B. E graduate should possess the following Program Outcomes-

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.

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.

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.

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.

Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities in Electronics and Communication Engineering 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 in Electronics and Communication Engineering.

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 sustainabledevelopment.

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.

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 en*gage in independent and life-long learning in the broadest context of technological change.*

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

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.

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http://newhorizonindia.edu/nhengineering/department-of-electronics-and-communication-engineering/

Today the world has shrunk and the global village is marching towards technological revolution predominantly due to innovations in the field of Electronics and Communication. The field of Electronics and Communication opens the doors to a myriad of opportunities and exciting challenges for the go-getters.

The department of electronics & communication engineering is accredited by the National Board of Accreditation (NBA). The vision of the department is to create high quality engineering professionals who can transform society and earn global recognition.

The department is bestowed with well designed and well maintained infrastructure. It is well equipped with interactive classrooms and laboratories with latest equipment for students to experiment and state of the art facilities. The department also offers the VTU research centre for Ph.D. and M.Sc. (Engg.), for research.The enthusiastic teaching fraternity of the department besides being highly qualified, have the acumen to instil in students the urge to do better and bring out the best in them. Most of them have considerable experience in academics and research as.Few of them have industrial experience as well.The Electronics & Communication Engineering Program with its autonomous status is re-designed to cater to the needs of industry. The courses focus on intriguing areas like Embedded Systems, Communication, VLSI, Signal Processing, and Information technologies. Industry-relevant technology courses are a feather on the cap in the department.To run the same technology experts from reputed organization like IBM, HP, Texas Instruments, Sankalp Semiconductors, Audience Communication, Intel, ISRO, IISc. and other reputed institutes visit the department. The interaction of students with the experts gives them a niche over their peers in a world where technological growth and development is fast pacing and prepares them to chalk out solutions for the real world problems.To keep them updated on the technological scale, various workshops, seminars, competitive events, conferences and industrial visits are also organized on a regular basis.

Dr. Sanjeev Sharma
Professor & Head

To give them practical exposure and develop their technical and interpersonal skills the students of ECE department are required to execute various projects throughout their studies. Also they're motivated to publish research papers, and participate in national and international conferences as well. They take the lead in planning and executing various activities through Electronics Hobby Club, Technology Sharing Club, and Professional Connect club which definitely gives them an enthralling experience. Furthermore the students also undergo special placement training through value added programs. Most of them get placed in reputed organizations such as Intel, Texas Instruments, AMD, Qualcomm, ARM, Schneider Electric, Bosch, Cisco Systems, Juniper Networks, Vmware, Sony, Nokia, Accenture, Cap Gemini, IBM, HP, TCS, Infosys, Wipro, Mindtree and many more. Some students pursue higher studies in Indian and foreign universities, while there are quite a few of them who start their own ventures thereby contributing immensely in the growth of our society. As the famous quote goes "All work and no play makes Jack a dull boy. Students also engage themselves in cultural, sports and social activities. Many have taken it one step ahead and won gold medals and several trophies in sports and cultural events organized at different levels and several other institutions.Overall, the department provides a very positive and nurturing environment, for students to develop and grow into into knowledgeable, skilled and productive Electronics & Communication Engineers.