NEW HORIZON COLLEGE OF ENGINEERING
AUTONOMOUS COLLEGE Permanently Affiliated to VTU, Approved by AICTE & UGC
Accredited by NAAC with 'A' Grade

The Connect

DEPARTMENT OF ELECTRONICS AND COMMUNICATION

Issue 16,Dec 2022

All About 5G: The Next Big Thing After WiFi

5G is the next buzzword in the field of wireless technology networking. It is the foundation and future of connectivity, will meet the demand of billion connected devices. Simply said, it is wireless technology's fifth generation. The fifth generation of technology is expected to be bigger, faster, and better. 5G architecture is based on a considerably higher next-generation technology plane, with the goal of connecting everything and everyone – people, buildings, cities, sensors, smartphones, robots, and drones. As compared to the existing wireless technology, it will have higher data rates, reduced latency, higher capacity system, energy savings and cost reductions. It will bring new capabilities and create opportunities for society and business.

What is 5G capable of?

Imagine living in a world where people, gadgets, buildings, and infrastructure talk to each other. In this world, doctors can conduct surgeries from thousands of miles away; cars drive on their own; buildings, factories and cities can interact with you; and you can shop and watch live sports events in VR!5G runs on the same radio frequencies that are using in smartphones , on Wi-Fi networks and in satellite communications, but it enables technology to go a lot further. 5G is really about connecting things everywhere , reliably without lag. 5G can be significantly faster than 4G, delivering up to 20 Gigabits-per-second (Gbps) peak data rates and 100+ Megabits-per-second (Mbps) average data rates.5G has more capacity than 4G. 5G is designed to support a 100x increase in traffic capacity and network efficiency.

What makes 5G different?

So far, with technologies like 4G, we have mostly imagined connectivity as human-to-human, or human to the internet. But, with 5G, that will no longer be enough. The next natural evolution of connectivity is to not only connect everyday machines and devices to humans but machines to other machines. In fact, the entire promise behind 5G lies in connecting our entire environment with

5G– The future of Technology

each other! With the number of connected devices globally set to triple by 2030 to 25.4 billion, terms like Internet of Things (IoT), Virtual Reality (VR), and Artificial Intelligence will no longer be just fanciful connotations of what will happen in the future. All these amazing experiences will be unlocked on the back of 5G.A small but significant difference exists between speed and latency, which is the time it takes for devices to communicate with each other or with the server that's sending them information

Evolution of 5G

1G, or the first generation of mobile networks, was established in the 1970s and 1980s and carried only speech data. They were transmitted unencrypted across radio waves.

Inside this issue:

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The term "2G" first appeared in the 1990s. The communications were digital and encrypted.Data of higher quality could be shared. Text, photo, and multimedia communications could be sent. This resulted in a revolution in telecommunications. Mobile cell towers appeared, and consumers and companies quickly adopted them. Smartphones were invented. 3G was constructed in the early 2000s. Because online connectivity was standardized in this age, people could access data from anywhere in the world. This was four times quicker than two gigabits per second.

3G enhanced data transfer capabilities as well as video conferencing, video streaming, and voice quality.

4G: Apple, Google, and Facebook were instrumental in the introduction of 4G technology. Consumers now have access to high-quality video streaming thanks to 4G technology. Currently, the most widely utilised technology, 4G technology, provides high-definition videos, conferencing, and gaming services. Switching from 2G to 3G was as simple as swapping sim cards. However, a change in mobile devices is required for 4G.

5G: We are at the cusp of the 5th generation revolution. This generation promises higher speed, reduced latency, energy savings and higher capacity systems. The superior connectivity offered by 5G aspires to equal access to the network regardless of location or social status in society. 5G offers the possibility of innovations such as remote surgeries, telemedicine, self-driving cars, smart cities, smart buildings and smart factories, virtual reality experience while gaming, shopping and viewing sporting events. It looks to expand wireless services from the internet to the Internet of Things and communication sectors.

How is 5G better than 4G?

5G offers many advantages over other wireless technologies. The biggest difference between 4G and 5G is latency. 5G promises low latency under 5 milliseconds, while 4G latency ranges from 60 ms to 98 ms. In addition, with lower latency comes advancements in other areas, such as faster download speeds.

Energy efficiency power consumption reduced by 90%. Massive connections 100– fold increase of supportive devices to 1mn devices/ square km . For start-

ers, think of 5G as not the natural evolution of 4G but a new, more advanced technology itself. While earlier generations used cell towers to transmit signals, 5G will use small cell technology. This means that carriers will deploy high band 5G smalls cells in multiple locations. Additionally, as part of its OFDM coding, 5G technology is built to use 100 to 800 MHz channels instead of 4G's 20 MHz. Remember, the higher the channels, the more the download speed. Thus, 5G is 20 times faster than the previous generation, has much lower latency and tremendously improved reliability. It allows a higher number of users to connect simultaneously, while lower latency will ensure greater download speed.

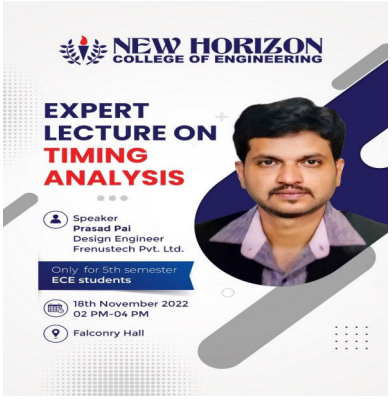
FACULTY ACHIEVEMENTS

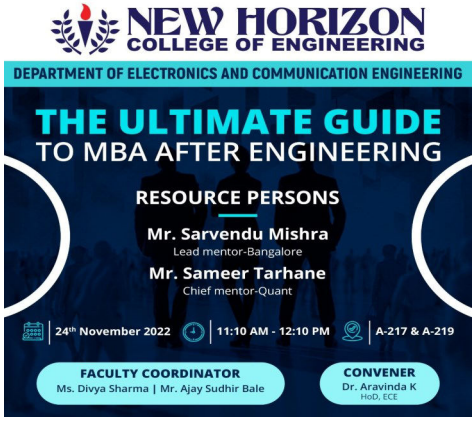
Name of the Staff	Name of the award/achievements	Year of Award	Awarding Agency
Dr. Aravinda K.	Reviewer	Dec-2022	Journal of Bodywork & Movement Therapies
	Reviewer	Dec-2022	International Journal of Computing Digital Systems
Dr. Rajesh G	Judgement Certificate	Nov-2022	SUNHACKS-2022 School of Engineering, Sandip University, Nashik
	Reviewer	Nov-2022	IEEE IAS Shardha School of Engineering and Technology, Greater Noida
	Speaker	Oct-2022	Sree Venkateshwara College of Engineering, Anantpur
	Reviewer	Oct-2022	International Journal of Embedded and Real time Communication Systems (IJERTCS)
	Reviewer	Nov-2022	IEEE Nkcon-2022 BLDEA'S V.P Dr. PHCET, Vijayapura Karnataka
	Technical Reviewer	Sep-2022	4th International Conference on Artificial Intelligence in Engineering and Technology (IICAIET 2022)
	Session Chair	Oct-2022	IEEE Mysore Sec, JSSCTU Mysuru
	Reviewer	Sep-2022	ICT Express
Dr. A.B Gurulakshmi	Reviewer	Nov-2022	IEEE Nkcon-2022 BLDEA'S V.P Dr. PHCET, Vijayapura Karnataka
	Reviewer	Oct-2022	Computer Communications
Ms. Monika Gupta	Reviewer	Dec-2022	The Jounal of Supercomputing
	Reviewer	Sep-2022	The Jounal of Supercomputing
	Reviewer	Sep-2022	Scientific Reports

EXPERT LECTURES

(Coordinators : Prof. Divya Sharma & Prof. Ajay Sudhir Bale)

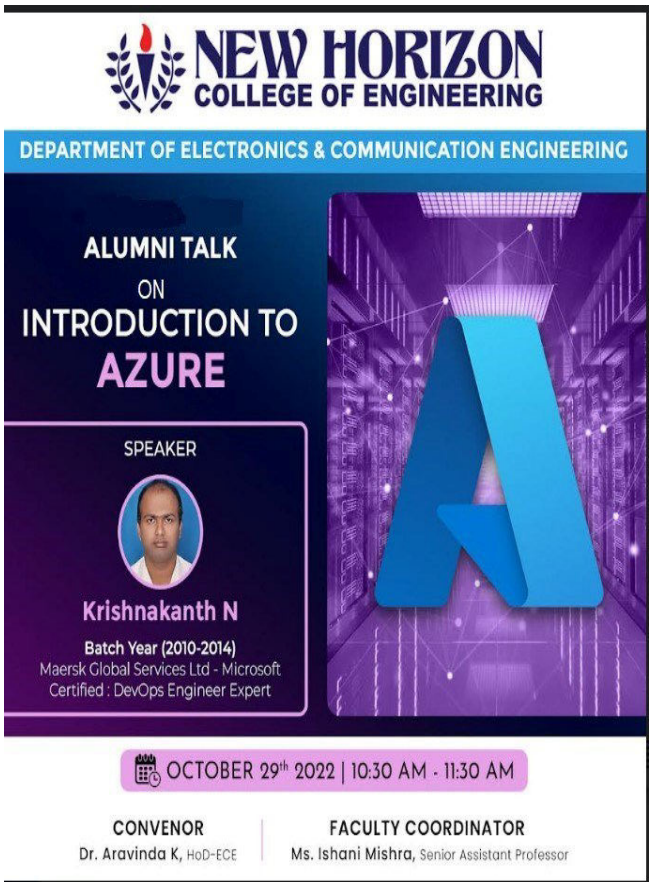
Name of the Industrial Expert	Company Organization	Topic/ Subject	Semester	Hours engaged	Date
Mr. Mukesh Manu, Senior Engineer	Cambium Networks	Wireless Technologies	VII	3	21-10-2022
Mr. Sagar Somashekhar, Senior Architect	Nokia	OFDM & MIMO	VII	3	18-11-2022
Mr. Prafulla Galphade Senior Principal Program Manager	Cadence Design Systems (I) Pvt Ltd.	Introduction to Programmable Logic Devices and Designing with FPGA	IV	3	15-07-2022
Mr. Prasad Pai, Design Engineer	Frenustech Pvt Ltd.	Timing Analysis	V	3	18/11/2022
Mr. Sarvendu Mishra Lead Mentor	Quant	The Ultimate Guide to MBA After Engineering	V	3	24/11/2022





ALUMNI TALKS

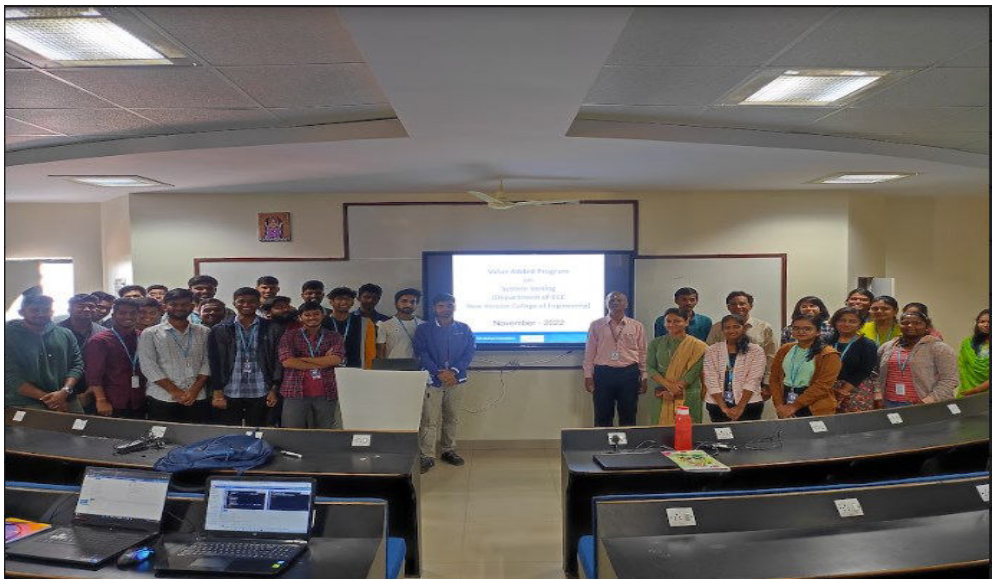
Name of the Alumni and Current Designation	Date of the Event	Contribution
Anju Gopinath (Year of Graduation- 2020) Python Developer Hexaware Technologies	24/09/2022	Motivational talk on “Unexpected Career Path and Do’s and Don’ts Of Switching from Campus to Corporate Life”
Krishnakanth N (Year of Graduation- 2014) DevOps Engineer Maersk Global Services Ltd	29/10/2022	Technical talk talk on” “Introduction to Azure” ”
Ravi Shanker K N (Year of Graduation- 2010) Global Logic (Hitachi Company)	02/12/2022	Delivered technical talk talk on “Video Service Overview”



WORKSHOPS:

(COORDINATORS : DR.JAYANTI , PROF. MONIKA GUPTA)

Date	Resource person	Title	Semester
21/11/2022	Mr. Ravi Subramanian	Workshop on Verification using System Verilog	VI



TECHNOLOGY SHARING CLUB

(COORDINATORS : PROF. S. BHATTACHARYA , PROF. ISHITA DEB)

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	R Vikas
Vice-president	Tarun M
Secretary	Akshaya Srinivasan
Treasurer	Shiva Shankar L
Committee Member	Nandana P
Committee Member	Chandan Gowda M
Committee Member	Karthik S
Committee Member	Nithya Bharadwaj
Committee Member	M Manasa
Committee Member	Chetas E Achar
Committee Member	Snehal

IEEE NHCE STUDENT BRANCH

IEEE BANGALORE SECTION

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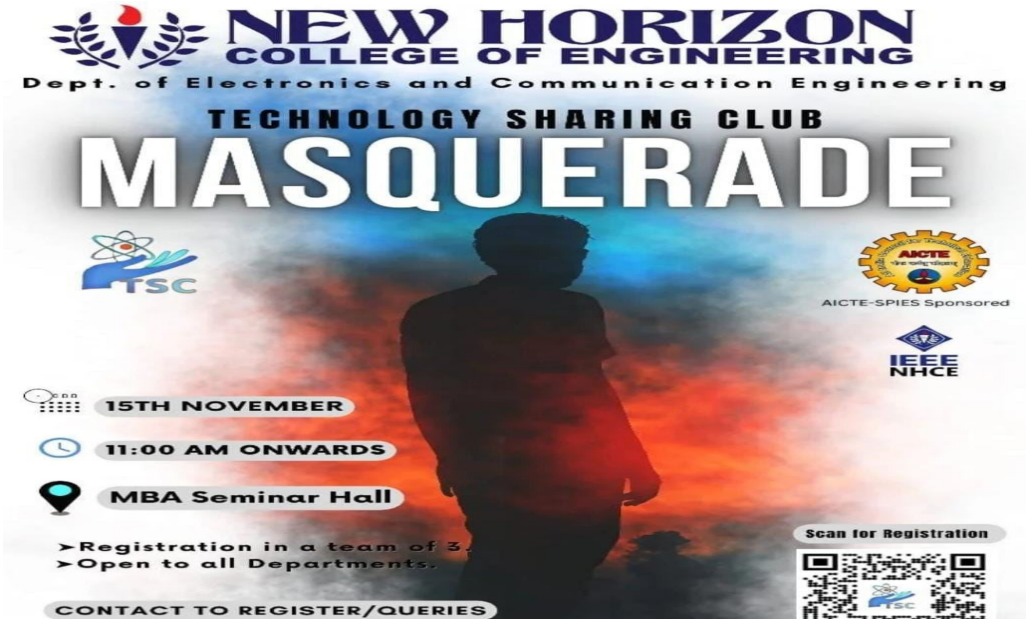
TECHNOLOGY SHARING CLUB

EVENT	DATE	DESCRIPTION
Masquerade	15-11-2022	To test the technical knowledge. To showcase Acting and thinking skills. Usage of communication and critical thinking for problem solving



ELECTRONICS HOBBY CLUB

(COORDINATORS : PROF. RICHARD , PROF. AMARJEET PAL)

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	Rohit P
Vice-president	Tanushree Aravind Kumbhare
Secretary	Praveen Kumar N
Treasurer	J Dhanush
Committee Member	Vishwas
Committee Member	Lokesh Biswas
Committee Member	Siva S
Committee Member	Pratheek KV
Committee Member	Santhosh Kumar
Committee Member	Likitha R
Committee Member	Rohith

ELECTRONICS HOBBY CLUB

EVENT	DATE	DESCRIPTION
Tinkering from scratch: Tinkercard Workshop	08-11-2022	Tinkering from scratch aimed at providing a dive into the basics of building electronic models

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	Sahana Kulkarni
Vice-president	Venkata Bhavana Boggarapu
Secretary	Jayanth S
Treasurer	Abhijeeth Talari
Committee Member	Y Chitra
Committee Member	Rohanth Hari M
Committee Member	Deepak Yadav
Committee Member	Mohammed Hesham Umar
Committee Member	N Shashank Gowda
Committee Member	Deepthi L
Committee Member	Kriti Sujai Kumar Devatha

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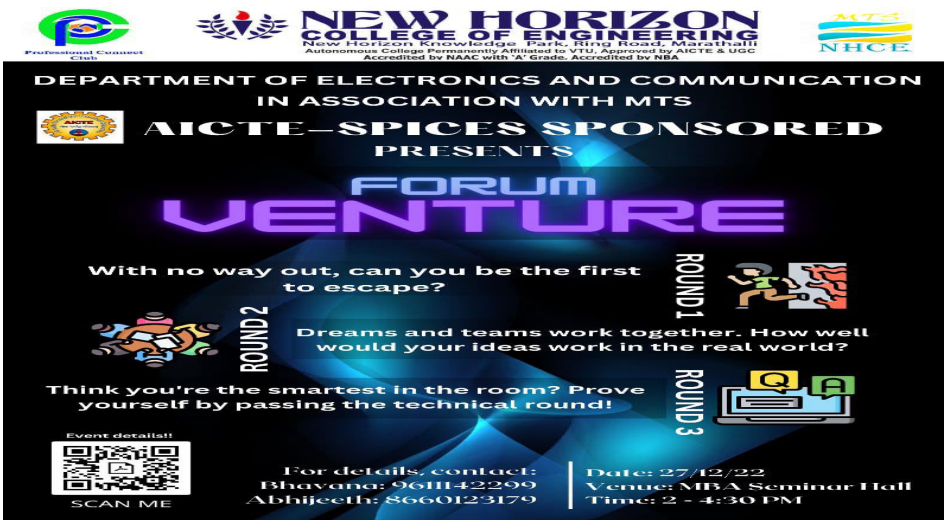
PROFESSIONAL CONNECT CLUB

EVENT	DATE	DESCRIPTION
Forum Venture	27-12-2022	Aptitude test, Group Discussion, Technical HR Round



THE ROCKETRY CLUB

(COORDINATORS : PROF. LIPSA DASH)

What we're about:

Everything begins with an idea and every great idea starts with a spark. Such a spark was to fuse the concepts of aerospace technology with the generic curriculum that gave rise to a student club of its kind, the NEW HORIZON ROCKETRY CLUB, a multidisciplinary workspace for inquisitive minds to brainstorm, collaborate and execute the potential ideas in the field of aerospace technology. The club focuses on gaining knowledge and skills through team projects and works on enhancing these acquired skills by conducting events and workshops for one's peers thereby instigating curiosity in them too. The club intends on creating an open ground for all students to share knowledge and grow together outside the classrooms.

Objective:

To demonstrate and implement the concepts of Aerospace Technology

ROLE	NAME
President	Bharatdeep Hazarika
Vice-president	Sumanth KB
Secretary	Ananya Sundar
Treasurer	Ayush Bansal
Technical Head	Bhargav Dayal
Committee Member	Shambhavi Bhagat
Committee Member	Sowmyashree B
Committee Member	Atharva Kapadnis
Committee Member	Abhishek Bedant
Committee Member	Trisha Chatterjee
Committee Member	B Akhil

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ROCKETRY CLUB

EVENT	DATE	DESCRIPTION
Chemical Rocketry	08-12-2022	The Chemical Rocketry workshop was a collaborative event between the New Horizon Rocketry Club (NHRC) and the Society for Space Education Research and Development (SSERD).

PLACEMENTS

(COORDINATORS : PROF. SABITABRATA BHATTACHARYA)

S.N	Name of the Organization	No of students placed	Salary Offered
1	Accenture	3	₹4.00L
2	Allstate Solutions Pvt Limited	3	₹5.50L
3	BRILLIO	6	₹8.50L
4	Capgemini	68	₹5.88L
5	Cognizant	38	₹5.50L
6	Computacenter (India) Pvt. Ltd.	2	₹5.00L
7	DXC Technology	12	₹4.20L
8	Ernst & Young	10	₹6.37L
9	EUROFINS IT SOLUTIONS	2	₹12.75L
10	EXL Service	11	₹4.00L
11	Genpact	2	₹8.00L
12	Happiest Minds Technologies Pvt. Ltd	6	₹5.40L
13	HEARTCORE	1	₹28.00L
14	Infosys	1	₹4.00L
15	ITC Infotech Ltd	2	₹4.25L
16	KPIT	8	₹5.00L
17	LeadSquared	1	₹6.00L
18	Light & Wonder	3	₹8.76L
19	Mi Maze Co. Ltd	1	₹26.50L
20	Microchip Technology (India) Pvt. Ltd	1	₹10.00L
21	MindTree	10	₹5.25L
22	Musigma	3	₹5.00L
23	Netradyne Technology Pvt Ltd	1	₹9.60L
24	Nineleaps Technologies	1	₹6.50L
25	Oracle	1	₹8.89L
26	Prodapt Solutions Pvt. Ltd	1	₹4.00L
27	SmartSoC Solutions	1	₹6.00L
28	Societe Generale	3	₹6.62L
29	Speridian Technologies	2	₹3.50L
30	Steer Engineering	2	₹4.00L
31	TCS	13	₹3.36L
32	Torry Harris Integration Solutions	4	₹5.00L
33	Tricon Infotech Pvt Limited	4	₹5.50L
34	Visionet System Inc	4	₹4.25L
	Total No of students placed	160	
	Total No of offers	231	

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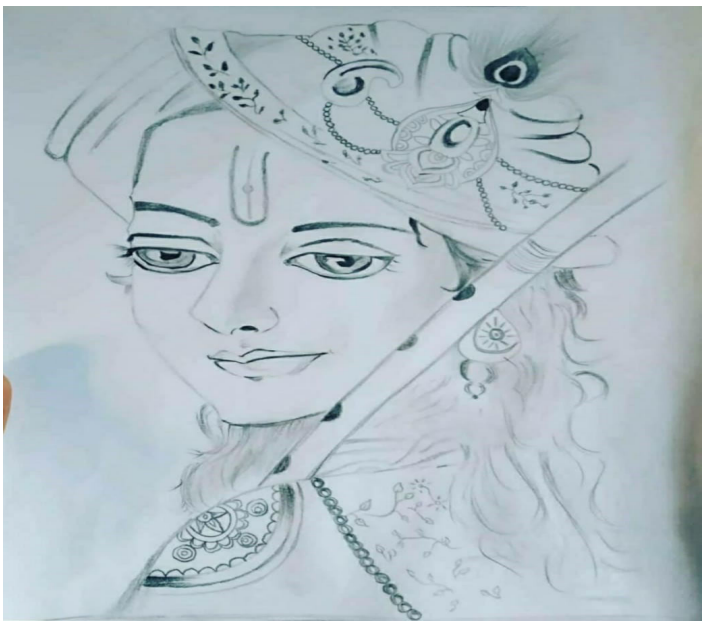
STUDENT CORNER—*A GLIMPSE TO THE CREATIVITY OF STUDENTS*



Shiva Shankar 1NH20EC408

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

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 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.

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.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION

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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.

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.