Nanotechnology

Nanotechnology can be said a small solution to big problems. The term "Nano-technology " had been coined by Norio Taniguchi in 1974. It is the study of manipulating matter on an atomic scale. A nanometer is one billionth of a meter, roughly the width of there or four atoms. Nanotechnology is much smaller than anything

we can see with the human eye. One nanometer is 100,000 times smaller than one single human hair. Capturing images at a nanoscale requires special tools to visualize and manipulate materials at a scale far beyond what human beings can see. As nanoscale tools these microscope use electrons, photons or other probes to gather data, then with the help of advanced computing, these instruments then transform the signals into images. Matter can exhibit unusual physical, chemical and biological properties at the

nanoscale, differing in important ways from the properties of bulk materials, single atoms and molecules, one such example is graphene which is modified carbon harder then steel, lighter then aluminum and almost transparent used in areas such as electronics, energy, biomedicine or defense. Nanotechnology encompasses nanoscale science, engineering and technology in field such as chemistry, biology, physics, material science and engineering. Recent advancement in nanotechnology has bring revolution in many technologies and industrial sector, from invisible particles that fight cancer cells, faster microprocessors that consume less energy, batteries that last 10 times longer or solar panels that yield twice as much energy. These are some of many applications of nanotechnology which turns out to be next industrial revolution. There are two approaches to the synthesis of nanomaterials: bottom-up and top-down. In the bottom up approach, molecular components arrange themselves into more complex assemblies atom-by-atom, molecule-by-molecule, clus-

ter-by-cluster from the bottom. In then top-down approach, nanoscale devices are created by using larger, externally controlled devices to direct their assembly. The top down approach often uses microfabrication methods in which externally controlled tools are used to cut, mill and shape materials into the desired shape and order. Attrition and milling for making nanoparticles are typical top-down processes. An approach where both these techniques are employed is known as hybrid approach. Lithography is an example in which the growth of thin film is a bottom up method whereas itching is a top down method. There are two types of nanotechnology one is dry nanotechnology and other is wet nanotechnology. Dry nanotechnology is used to manufacture structures in coal, silicon, inorganic materials, metals and semiconductors that do not work with humidity. Wet nanotechnology is based on biological systems present in an aqueous environment including genetic material, membranes, enzymes.

EDITORIAL BOARD:

Dr ARAVINDA K

(HOD-ECE)

FACULTY COORDINATOR:

Prof. ANEETA S ANTONY
Prof. SWATI NIGAM

Nanotechnology

One example of nanotechnology in electronics is carbon nanotubes which are close to replacing silicon as a material for making smaller, faster and more efficient microchips and devices, as well as lighter, more conductive and stronger quantum nanowires. Graphene properties make it an ideal candidate for the development of flexible touchscreens. With the help of nanotechnology it is possible to manufacture solar panels that double the amount of sunlight converted into electricity and it also makes solar panels cheaper and more efficient. In the field of biomedicine, properties of nanomaterials make them ideal for improving early diagnosis of cancer. They are able to attack cancer cells selectively without harming other healthy cells. Waste water purification or Nano filtration of heavy metals are some of the environment friendly applications. Nano biosensors could be used to detect the presence of pathogens in food. This technology has the potential to improve food processes that uses enzymes to confer nutrition and health benefits. For example, enzymes are often added to food to hydrolyze anti-nutritive components and hence increase the bio-availability of essential nutrients such as minerals and vitamins. To make these enzymes highly active, long-lived and cost-effective, nanomaterials can be used to provide superior enzyme support systems due to their large surface-to-volume ratios compared to traditional macroscale support materials.

Nanoscale materials are beginning to enable washable, durable "smart fabrics" equipped with flexible nanoscale sensors and electronics with capabilities for health monitoring, solar energy capture and energy harvesting through movement. Nanostructured ceramic coatings exhibit much greater toughness than conventional wear-resistant coatings for machine parts. Nanotechnology enabled lubricants and engine oils also significantly extend the lifetimes of moving parts in everything from power tools to industrial machinery.

Nanoparticles are used increasingly in catalysis to boost chemical reactions. This reduces the quantity of catalytic materials necessary to produce desired results, saving money and reducing pollutants. Two big applications are in petroleum refining and in automotive catalytic converters.

Nano-engineered materials make superior household products such as degreasers and stain removers, environmental sensors, air purifiers, antibacterial cleansers, specialized paints and sealing products such as self cleaning house paints that resist dirt and marks. Nanoscale materials are also being incorporated into a variety of personal care products to improve performance. Nanoscale titanium dioxide and zinc oxide have been used for years in sunscreen to provide protection from sun while appearing invisible on the skin.

Nanotechnology is an emerging science which is expected to have rapid and strong future developments. It is predicted to contribute significantly to economic growth and job creation in the coming decades. According to scientists, nanotechnology is predicted to have four distinct generations of advancement. We are currently experiencing second generation of nanomaterials.

FACULTY ACHIEVEMENTS

Sl.No	Name of the Staff	Name of the Award/Achievements	Year of Award	Awarding Agency
1	Dr. Rajesh G	NPTEL Motivated Learner	Jan-Apr 2022	IIT Madras
		Editorial Board Member	24th Jan 2022	Americac Journal of Electrical and Computer Engineering, Science PG
2	Dr. M. Dhivya	Reviewer	31st Jan-2022	Archieves of current Research International Journal 2022
4	Dr. Gurulakshmi A B	Elsevier Reviewer	Mar-22,Jul 22	Alexandria Engineering journal
		Outstanding Performance in E-Quiz	26.04.2022	MES college, Kerala
11	Ms. Monika Gupta	NPTEL Topper	Jan-Feb 2022	IIT, Kharagpur
12	Mr. Parag Jain	Topper Award	Jan-Feb 2022	NPTEL
14	Ms. Divya Sharma	5 years of Active Participation	2022	CISCO
15	Mr. Sabitabrata Bhattacharya	Training completion	01.06.2022	MathWorks
		Training completion	02.06.2022	MathWorks
		Training completion	03.06.2022	MathWorks
		Certificate of Merit	Jul-22	Chitkara University,Punjab
		Topper Award	Jan-Apr 2022	IIT Kharagpur
16	Mr. Avinash N.J	Reviewer	23-24 April 2022	Ballari Institute of Technology and Management,Ballari
17	Ms. Mamta B Savadatti	completion of course	08.02.2022	Skillup by Simlilearn

STUDENT CORNER

By B. SRIHARSHITA (1NH20EC020)

EXPERT LECTURES
(Coordinator : Prof. Divya Sharma)

S.NO.	NAMEOF THE EX-PERT/GUEST SPEAKER	COMPANY/ ORGANISA-TION	DESIGNATION	TOPIC/ SUBJECT	SEM	DATE
1	Mr. Rishi Jain	Schneider Electric	People Analytics Manager	AI and it's Applications	VII	22-12-2021
2	Mr. Suman Gangopadhyay	Noodle.ai	Engineering Manager	Emerging Industrial Trends in Data Science Python & R Programming	VIII	26-03-2022
3	Mr. Robinson Rajasekaran	Robert Bosch Engineering & Business Solution Pvt Ltd, Bangalore	Hardware Architect	Embedded Systems in Automotive	VI	14-5-2022
4	Ms. Vijayalakshmi	T.I.M.E	Manager Academics	Career Guidance on Higher Studies	VI	13-6-2022
5	Mr. Prafulla Galphade	Cadence Design Systems (I) Pvt Ltd, Bangalore	Senior Principal Program Manager	Introduction to Programmable Logic Devices	IV	15-7-2022

ALUMNI TALK (Coordinator: Prof. Ishani Mishra)

Serial No.	Name of the Alumni and Current Designation	Date of the Event	Contribution
1.	Naveen K H (2015-2019 Batch),Physical design engineer, Soctronics Pvt Ltd.	17-01-2022	Placement Opportunities in Core Companies
2	Akshara Murali, (2013-17 Batch),Senior Design Engineer with Frenus Tech Pvt Ltd	12-06-2021	How to Reach the world of ICs
3	Priyanka M,(2010-2014 Batch),Project Manager,VMWare	26-06-2021	Catalyst –The ultimate strategies on how to win at work and in life
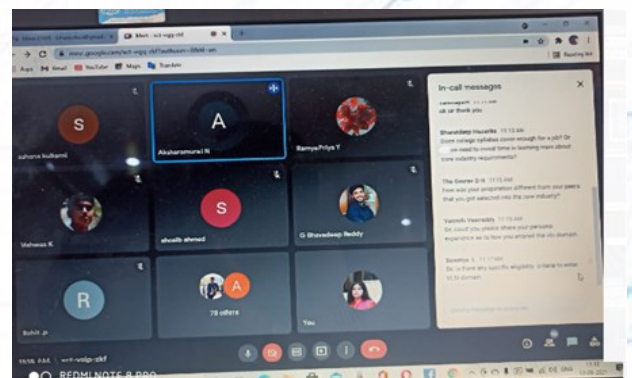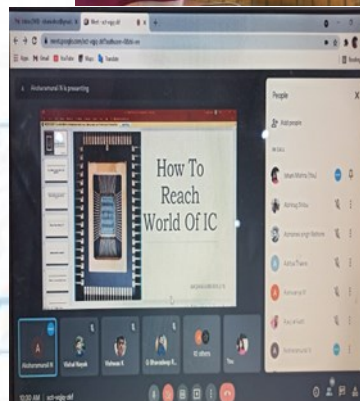
The Connect

WORKSHOPS:
(Coordinator: Dr. Piruthiviraj)
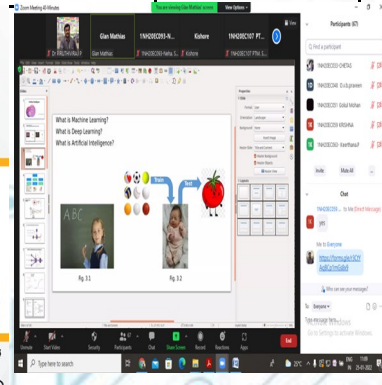
WORKSHOP

SI.NO	Workshop Topic	Date	No. of Participants	No. of Days
1	Online Workshop on Machine Learning Algorithms	25-01-2022	60	01
2	Workshop on Trends in Electronics and Its Career Opportunities	26/04/2022	160	01
3	Workshop on Python Programming	28/05/2022	150	01
4	Workshop on Network Elements Management System for Switches and Routers	07/06/2022	150	01

TECHNOLOGY SHARING CLUB
(COORDINATORS : PROF. SABITABRATA 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 new-found. 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	VIKAS R
Vice-president	TARUN SURYA
Secretary	AKSHAYA SRINIVASAN
Treasurer	SHIVA SHANKAR L
Committee Member	NANDANA P
Committee Member	NITHYA BHARADWAJ
Committee Member	CHETAS B ACHAR
Committee Member	SUPREETH G V
Committee Member	AKASH MANGLUR
Committee Member	A V S UTTEJ
Committee Member	RENUKA HEBBALI

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TECHNOLOGY SHARING CLUB

EVENT	DATE	DESCRIPTION
Workshop on TCL (VLSI Physical Design)	22-04-2022	Hands on workshop on Tool Command Language (TCL) for VLSI Physical Design. Introduction to the cutting-edge technology in the domain of industrial VLSI Design .
The Game of Clairvoyance	02-06-2022	Technical Team Event to test aptitude skill and team effort. Consists of two Rounds. Fun based Technical Knowledge Sharing Activity.

ELECTRONICS HOBBY CLUB
(COORDINATORS : Prof. Richard ,Dr. 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	Manoj N
Vice-president	Santhosh H M
Secretary	Divya Shree R
Treasurer	Rohit P
Committee Member	Shivani Yadav
Committee Member	Srinidhi Damodhar
Committee Member	Vishwas
Committee Member	Tanushree Aravind Kumbhare
Committee Member	J Dhanush
Committee Member	Likitha R
Committee Member	Santhosh Kumar

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ELECTRONICS HOBBY CLUB

EVENT	DATE	DESCRIPTION
Electra-Buzz	19-01-2022	Electra buzz was a quizzical and crossword puzzle based event which tested participants on various but simple topics of electronics
Workshop on Automation with Arduino	10-03-2022 to 11-03-2022	The workshop aimed at providing students with the knowledge on how Arduino codes can be developed and implement the same in various circuits.
How To Electronics	25-03-2022	How to Electronics aimed at providing a dive into the basics of electronics.The participants compromised of students mainly from the 3rd Year of the ECE departments.
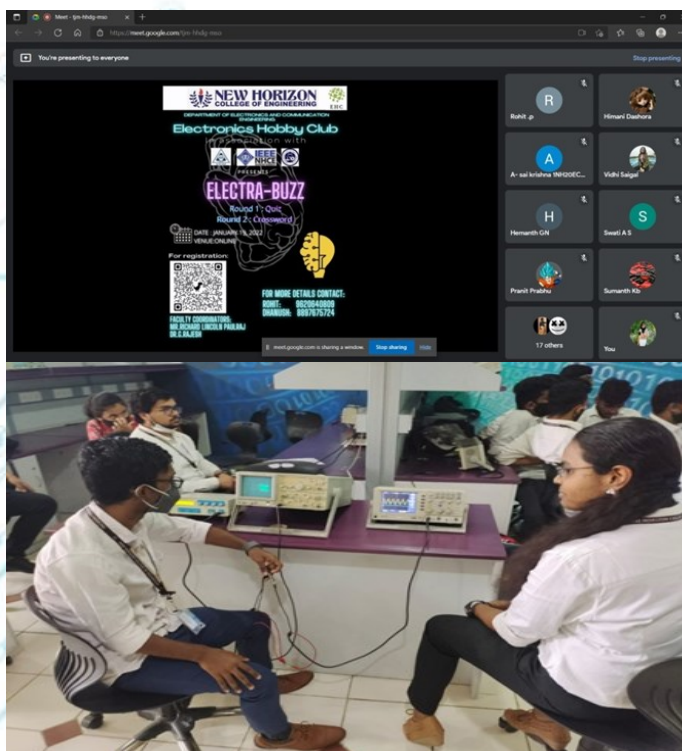
PROFESSIONAL CONNECT CLUB
(COORDINATORS : Dr.Gurulakshmi, Prof. Divya Sharma)

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.

Objective:

To connect with engineering professionals and conduct technical events

ROLE	NAME
President	Lingesh T
Vice-president	Sahana Kulkarni
Secretary	Sahana Yelchuri
Treasurer	Isabella Paul
Committee Member	Lokesh Y
Committee Member	Nikhil A Bhinge
Committee Member	Kavya S
Committee Member	Dhamini Srinivasan
Committee Member	M Suchith
Committee Member	Jayanth S
Committee Member	Mangaldeep

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PROFESSIONAL CONNECT CLUB

EVENT	DATE	DESCRIPTION
CircuiTrick	19-01-2022	Online Fun Filled academic Co-curricular Activity. Two rounds– Simplify with Speed Correct the Incorrect
Pre Requisite of VLSI	02-03-2022	Create Awareness about VLSI Industry. Event included Presentation followed by a Quiz.
S^3 Solve, Save, Search	05-05-2022	A n Activity based event to exnhance Analytical and Tecnical Skills

The Connect

PLACEMENTS
(COORDINATOR : Prof. Sabitabrata Bhattacharya.)

S.NO	Name of the Organization	No of students placed	Salary Offered
1	Anora Semiconductor Labs Private Limited	2	500000
2	Automation Anywhere	2	852000
3	Brillio	6	850000
4	Capgemin(Premier)	15	550000
5	Capgemini (General)	56	400000
6	Ernst & Young	10	637000
7	Eurofins IT Solutions	2	1275000
8	EXL Service	11	400000
9	FTD Automation / Infocom	1	400000
10	HP Inc	1	340000
11	I Exceed technology solutions	3	400000
12	IQVIA	2	700000
13	ITC Infotech Ltd	3	425000
14	Mi Maze Co. Ltd	1	2650000
15	MyCaptain	2	450000
16	Nineleaps Technologies	1	650000
17	Redington	2	400000
18	Torry Harris Integration Solutions	4	450000
19	Wissen Infotech	2	425000
	Total No of students placed	113	
	Total No of offers	126	

The Connect

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 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 engage in independent and life-long learning in the broadest context of technological change.

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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

New Horizon College of Engineering
New Horizon Knowledge park,
Dr. Puneeth Rajkumar Road, Near Marathalli

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.