2024-25

Babu Banarasi Das Institute of Technology & Management

AKTU College Code - 054

Department of ELECTRONICS & COMMUNICATION ENGINEERING

NATIONAL BOARD OF ACCREDITATION

A NBA ACCREDITED DEPARTMENT

ECE NEWSLETTER

VOLUME I, DEC-2024

(2024 - 2025)



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MR. PANKAJ VERMA
ASSISTANT PROFESSOR, ECE BBDITM

STUDENT COORDINATORS



MUKESH SHARMA (EC4)
(2100540310018)



ANURADHA YADAV (EC4)
(2100540310005)



SANJAY GUPTA (EC2)
(2300540310036)



ANSHIKA SINGH (EC2)
(2300540310011)

"Excellence is a continuous process and not an accident."

– Dr. A.P.J Abdul Kalam

WORDS OF THANKS

We are highly thankful to every member for their dedications and hard work. It is the team work that made this Newsletter possible. We on behalf of our team would also like to express our gratitude towards our readers.

THANK YOU

BABU BANARASI DAS
Institute of Technology & Management, Lucknow
Department of Electronics & Communication Engineering

Newsletter
DEC, 2024
Volume I
2024-25

VISION OF INSTITUTE

"To become a leading institute of providing professionally competent and socially responsive technocrats with high moral values"

MISSION OF INSTITUTE

M1: To create an eco-system for the dissemination of technical knowledge, to achieve academic excellence.
M2: To develop technocrats with creative skills and leadership qualities, to solve local and global challenges.
M3: To impart human values and ethics in students, to make them socially and Eco-friendly responsible.

VISION OF DEPARTMENT

"To emerge as a globally recognized center of excellence in engineering education, fostering innovation, ethical values, entrepreneurial spirit and leadership qualities to create professionals who contribute meaningfully to society and industry"

MISSION OF DEPARTMENT

M1: To achieve global standards of excellence through continuous synchronization with the latest technologies and innovation.
M2: To adopt effective pedagogical methods that bridge theoretical concept with practical applications for deeper understanding.
M3: To inculcate professional ethics, self learning abilities, entrepreneurial skills and leadership qualities for holistic professional success.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO 1: Graduate of the program shall be adaptive to emerging technologies to pursue their career in hardware and software industry.

PEO 2: Graduate of the program shall have technical excellence to augment their proficiency towards higher education and progress in research.

PEO 3: Graduate of the program shall have professional and ethical attitude to uphold team work skills and multidisciplinary approach.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1: In depth theoretical & practical knowledge of modern engineering in electronic circuitry.

PSO 2: Design and analyze modern communication systems to meet the present and future needs of industry with cost effective solutions.

➢ EVENT ORGANIZED @ ECE DEPARTMENT

1. Circuit Hackathon













2. Lecture on Strategies to Enhance the Project Quality







3. Participation on National Space Day Celebration





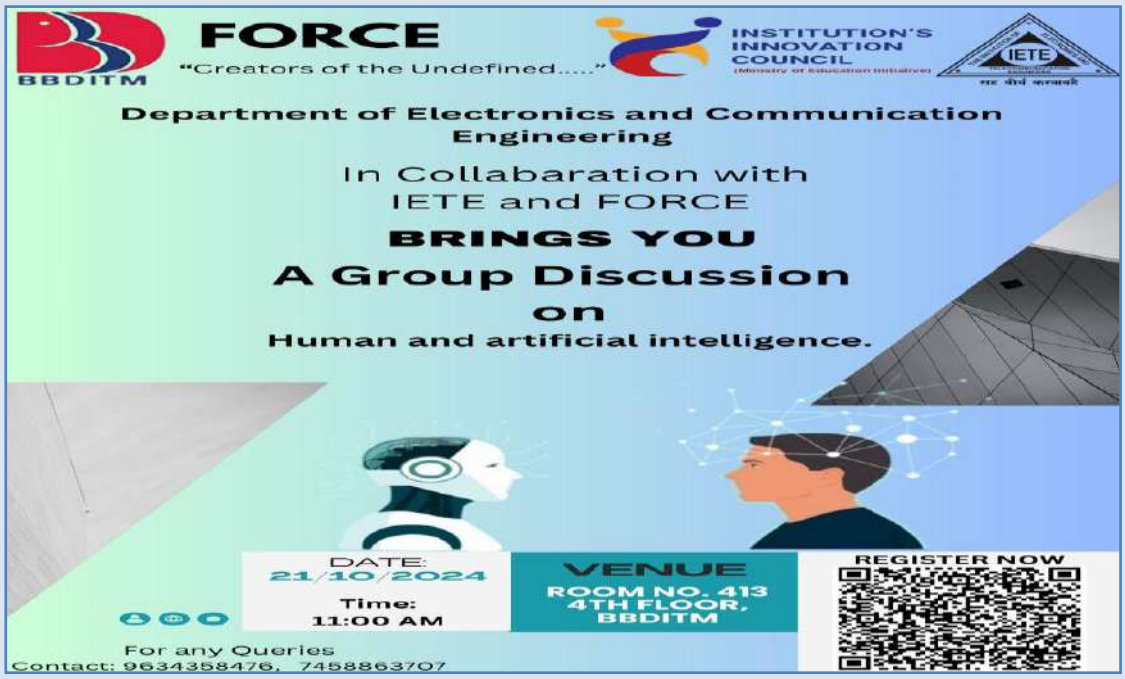








4. **Group Discussion on Human and Artificial Intelligence:**

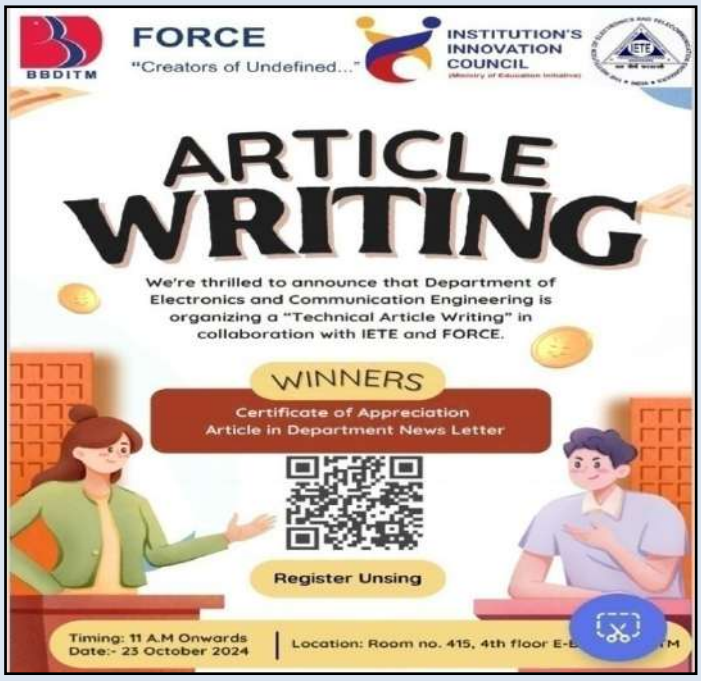








5. Technical Article writing competition :





➢ STUDENT CORNER :

❖ The Rising Role of Solar Energy in Powering Future Technologies

In the race toward a more sustainable and technologically advanced future, solar energy is emerging as a key player. Once considered a niche power source, solar energy has now grown into a cornerstone of clean energy solutions, fuelling innovations across multiple sectors. Among the most promising areas of development is electric vehicle (EV) charging stations, decentralized power systems, and smart grid technologies.

Solar Energy and Electric Vehicle (EV) Charging Stations

As the world shifts away from fossil fuels, electric vehicles are rapidly becoming the new standard. However, the environmental benefits of EVs can be undermined if the electricity used to charge them is derived from coal or natural gas. This is where solar energy steps in.



Solar-powered EV charging stations are now being installed across cities and highways, offering a clean and renewable way to power vehicles. These stations typically feature solar panels mounted on canopies that provide shade while generating electricity. The integration of solar power reduces the carbon

footprint of EVs and lowers operational costs for charging station operators. Some advanced setups also include battery storage systems, allowing energy collected during the day to be used at night or during cloudy weather.

Applications of solar energy

Solar Micro grids and Decentralized Energy Systems

One transformative application of solar energy is in micro grids—small, self-sustaining energy systems that can operate independently or in conjunction with the main power grid. These systems are particularly beneficial in remote areas where traditional infrastructure is lacking.

By combining solar panels with battery storage and smart management systems, micro grids offer reliable, low-cost electricity to homes, businesses, and even entire communities. This decentralization empowers users to take control of their energy needs and reduces dependency on centralized power plants, many of which still rely on fossil fuels.

Smart Homes and Solar Integration

The smart home revolution is also leveraging solar energy for efficient and intelligent energy use. Solar panels paired with home energy management systems allow homeowners to monitor energy production and consumption in real-time. Excess solar power can be stored in home batteries or even sold back to the grid in some regions, creating a dynamic and interactive energy ecosystem. Picture

Moreover, with the rise of Internet of Things (IoT) devices, solar-powered sensors and gadgets are becoming increasingly common. These low-power devices can operate entirely on solar energy, reducing the need for wiring and maintenance, especially in remote or outdoor applications.

Solar in Agriculture and Industry

In agriculture, solar energy is being used to power irrigation systems, drones, and automated machinery, contributing to smarter, more efficient farming practices. Industrial sectors are also adopting solar solutions for onsite energy production, helping to cut costs and emissions in manufacturing processes.

The Road Ahead

As technological advancements continue to drive down the cost of solar panels and improve their efficiency, the integration of solar energy into emerging technologies will only accelerate. Innovations like transparent solar panels, flexible solar fabrics, and solar-powered public infrastructure are already in the pipeline.

The synergy between solar energy and future technologies marks a significant step toward a greener, more resilient world. By tapping into the sun’s unlimited potential, we can power not just our homes and cars, but the very future of innovation itself.

Shreya Dwivedi
2100540310028
EC4

❖ Biomedical Electronics: Bridging Engineering And Healthcare

Biomedical Electronics is an interdisciplinary domain that combines *electrical engineering*, *materials science*, and *medical technology* to improve healthcare delivery. It focuses on the design and of electronic systems that can diagnose, monitor, and treat diseases. With the rising importance of precision medicine and early diagnosis, biomedical electronics is emerging as a critical area of research and application.



Core Technologies Driving Innovation Wearable

Technologies such as the ***Apple Watch Series 9***and***Fitbit Charge*** use ECG sensors, SpO_2 monitors, and low-power micro-controllers for continuous health tracking. In medical imaging, devices like ***GE Revolution CT*** and ***Philips EPIQ*** *Ultrasound* employ high-frequency transducers and DSPs for high-resolution scans. Implantable devices have redefined treatment. The ***Medtronic Micra*** pacemaker, the *world's smallest pacemaker* uses miniaturized circuits and biocompatible electrodes to regulate cardiac rhythm. ***Abbott's Free Style Libre glucose monitor*** employs electrochemical biosensors for painless, real-time glucose readings. Neuro electronic systems like *Boston Scientific's Vercise DBS* provide programmable brain stimulation for Parkinson's disease, showing how electronics can interface with the nervous system.

Real-World Applications in Diagnosis and Therapy

At the core are **CMOS** sensors, **MEMS** *accelerometers*, *low-noise amplifiers*, **ADCs**, and wireless modules that enable miniaturization and connectivity. Future devices may adopt graphene transistors for ultrafast bio signal processing, flexible substrates for biocompatibility, and energy-harvesting circuits to eliminate bulky batteries.

India's Breakthroughs in Affordable Healthcare Technologies

India has made remarkable strides in biomedical electronics, emphasizing *low-cost, high-impact innovations*. Devices like ***Cardio Track*** (portable ECG systems), ***3nethra*** (ophthalmic screening tool), and ***SwasthVayu***(non-invasive ventilator) demonstrate the fusion of embedded systems, sensors, and imaging electronics for accessible healthcare. With initiatives like *"Make in India"* and the National Digital Health Mission, India is advancing towards *AI-integrated biosensors*, *IoT-enabled wearables*, and *telemedicine platforms*, positioning itself as a global hub for affordable biomedical technologies.

Future Horizons: AI, IoT, and Personalized Medicine

The future of biomedical electronics lies in the integration of *AI*, *IoT*, and *personalized medicine*, enabling smarter diagnostics, remote monitoring, and patient-specific treatments. Emerging fields like *wearable biosensors* and *neuro-electronics* promise revolutionary healthcare delivery. In conclusion, biomedical electronics continues to bridge technology and medicine, with nations like India driving affordable, scalable innovations that position the field as a cornerstone of global healthcare advancement.

Sayyed Sania
2200540310040
EC3

CONGARULATIONS

Congratulations to following students for their exceptional performance in end semester exam ***Dr. APJ Abdul Kalam Technical University*** *Examination,* ***Even Semester 2023-24***

YEAR	UNIVERSITY ROLL NO.	STUDENT NAME	III SEM SGPA
EC 2nd Year	2200540310012	APARNA TIWARI	8.52
	2200540310040	SAYYED SANIA	8.52
	2200540310026	NIHARIKA ANAND	8.52
	2200540310047	TARUN TIWARI	8.22
	2200540310010	ANSHIKA MISHRA	8.22

YEAR	UNIVERSITY ROLL NO.	STUDENT NAME	III SEM SGPA
EC 3rd Year	2100540310017	MOHD ZAID	7.76
	2100540310009	AYUSH	7.62
	2100540310016	MD TAHIR	7.38
	2100540310010	AYUSH SRIVASTAVA	7.05
	2100540310013	GARIMA YADAV	7.05

YEAR	UNIVERSITY ROLL NO.	STUDENT NAME	III SEM SGPA
EC 4th Year	2000540310013	DIPIKA SRIVASTAVA	8.93
	2000540310019	JANHAVI SRIVASTAVA	8.64
	2000540310003	AGHA HAYAAT FATMA	8.33
	2000540310026	NISHI PANDEY	8.27
	2000540310004	AMIT DIXIT	8.12