BABU BANARASI DAS
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(FORMERLY KNOWN AS BABU BANARASI DAS NATIONAL INSTITUTE OF TECHNOLOGY AND MANAGEMENT)

BBDITM

Department of Electronics and Communication, BBDITM, Lucknow

ELECTRONICA MAGAZINE

Session 2024-25

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"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 Magazine possible. We on behalf of our team would also like to express our gratitude towards our readers.

THANK YOU

Our Inspiration

LATE BABU BANARASI DAS JI

(1912 – 1985)

Ex Chief Minister

Govt. of Uttar Pradesh

"*To provide an open opportunity to the young generation for evolving their core competencies and to build their career as world class professionals with broad based foundation, in-depth knowledge & versatile personality to meet the challenges of Global Economy…*" – Babuji's Vision.

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"*We not only make technocrats at BBD, we churn out citizens of the world, perfect in all respect in all respects, be it leadership, competence, confidence, communication, moral or knowledge…*" – **Akhilesh Das Gupta's Vision.**

MRS. ALKA DAS

CO-FOUNDER & CHAIRPERSON, BBD EDUCATIONAL GROUP
ADVOCATE AND SOCIALWORKER

"A lady with spirit, determination and zeal, Mrs. Alka Das has been the driving force behind her husband Dr. Akhilesh Das. She is the daughter of Late Justice D.P. Gupta, who held high positions in the State of Rajasthan, as its Governor and Chief Justice. She was brought up on Gandhian ideals and philanthropic traditions."

MR. VIRAJ SAGAR DAS

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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.

DIRECTOR'S MESSAGE-

I appreciate the efforts and hard work of the students, faculty and staff members of Electronics and Communication Engineering department for Magazine showcasing their overall academic achievements.

It is a matter of great pride that the ECE department has made outstanding progress in academic as well as extra-curricular activities.

Keep it up the good work and try to achieve the targets for upcoming academic session.

My best wishes to the team for achieving new heights.

Prof (Dr.) Shailendra Singh Chauhan
DIRECTOR
BBDITM

HOD'S MESSAGE-

The departmental newsletter once again highlights the efforts that the department is making for the overall expertise and value addition of its all stakeholders.

We are a NBA Accredited Department and to keep up the same momentum from all of us towards the outstanding work, looking forward to the upcoming semester with lots of expectations.

You all are doing a great job.....keep it up!

Prof (Dr.) Shailendra Tahilyani
HOD (EC)
BBDITM

EDITOR'S MESSAGE-

Dear Readers,

This Magazine (Volume 2024-25) of the Department of Electronics and Communication Engineering Department, BBDITM is a consolidated essence of all the departmental activities during session 2024-25.

We have tried our best to make sure that the newsletter represents all the departmental achievements/activities which happened to strengthen our departmental vision.

Thanks & Regards

Mr. Pankaj Verma
Assistant Professor
ECE, BBDITM

➢ EVENT ORGANIZED @ ECE DEPARTMENT

1. Circuit Hackathon

Objective of the event: -

1. The objective of organizing this event is to celebrate the Engineers Day and understand the role of significant contributions of engineers to the society.
2. To test out the skills of engineers to in circuits design.

Benefits in terms of Learning/ Skill/ Knowledge Obtained: -

The basic learning from the event was that students got to learn the working of various circuits on breadboard and to explore about the circuit designs.

Glimpses of Event:

2. Lecture on Strategies to Enhance the Project Quality

Event Summary:-

The Department of Electronics & Communication Engineering in collaboration with IIC and IETE has successfully organized an expert lecture on **"Strategies to enhance the Project Quality"** on 08/10/2024 for students of ECE and IT of BBDITM. This event was organized under the guidance of Director BBDITM **Prof. (Dr.) Shailendra Singh Chauhan** and Head of Department **Prof. (Dr.) Shailendra Tahilyani,** with a message of improving the quality of the project.

The important points regarding project quality enhancement were discussed by Director Sir. The discussed points in the session were on developing quality project requires navigating numerous challenges: assembling a competent team, defining clear goals, setting timelines, and, most importantly, ensuring effective project performance and taking the developed product for getting it patented and the try to move towards setting up startup and business. Session was concluded with glimpses of various innovators achievements.

Objective of the event: -

The objective of organizing this event was to engage the final year students towards their project quality enhancement.

Benefits in terms of Learning/ Skill/ Knowledge Obtained: -

The basic learning from the event was on the strategies defined towards the development of a quality project which intern is to be converted into a product.

Glimpses of Event:

Student Participants Lecture On Strategies To Enhance The Project Quality

3. Participation on National Space Day Celebration

Event Summary:-

Department of Electronics and Communication, BBDITM under the guidance of our respected Head of Department Prof. (Dr.) Shailendra Tahilyani **,** the students prepared and participated in **Quiz on Indian Space history** held on August 08, 2024.

In this Space Day celebration event, the models of Chandrayaan-3 Lander, Indian Deep Space Antenna, Crew Module, Resource Satellite, Crew Engine, Mars Orbiter Mission Scale, GSAT, Astrosat, GSLV, PSLV, Aryabhata satellite and other astronomical instruments were displayed.

The children were engaged in conversations with ISRO scientists about space and their missions, with many expressing a desire to become space scientists themselves. ISRO highlighted that India's successful landing on the moon is celebrated nationwide as 'Space Day'. ISRO praised the achievement for demonstrating India's space capabilities to the world and about the perseverance following the partial failure of Chandrayaan-2. Despite its 99% success, the soft landing wasn't achieved, but continuous efforts led to the successful landing of Chandrayaan-3. ISRO encouraged the students to learn from failures, emphasizing that perseverance and addressing shortcomings lead to success.

Objective of the event: -

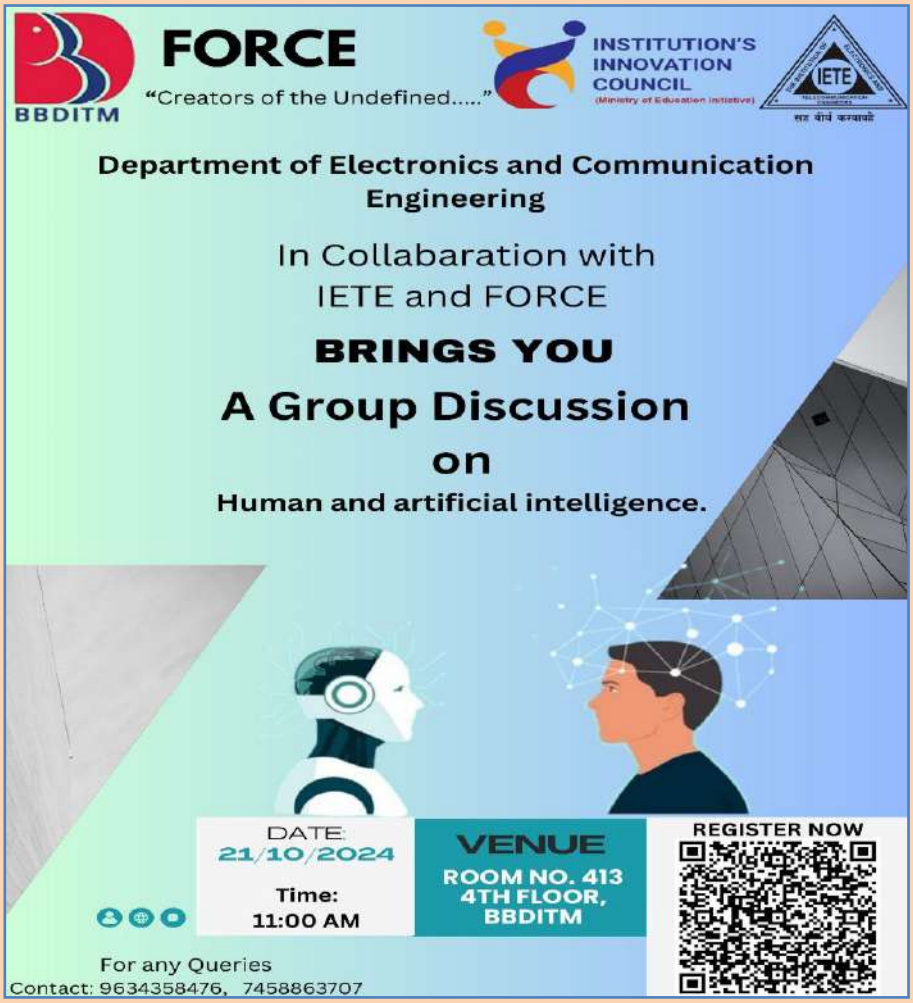
The objective of organizing this event was to engage and inspire the youth towards space technology and its applications.

Benefits in terms of Learning/ Skill/ Knowledge Obtained: -

The basic learning from the event was to recognize the significant achievements in space exploration and highlights advancements in space technology. The day is dedicated to inspiring future generations by generating interest in space science and technology among students and providing them with role models.

Glimpses of Event:

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



Overall Event Summary:-

The Department of Electronics & Communication Engineering in collaboration with **IIC, IETE** and **FORCE (Departmental Club)** has successfully organized a group discussion on **"Human and Artificial Intelligence"** on 21/10/2024 for students of ECE under the guidance of Head of Department Prof. (Dr.) Shailendra Tahilyani, with a message to have technical knowledge of the topic which is in high demand in current scenario. Students had participated in the event and discussed the pros and cons of Human Vs Artificial Intelligence. AI can be seen everywhere from robotic manufacturing lines churning out perfect products with maximum efficiency to trading algorithms transforming markets overnight and its use is very much prevalent in technological world. Artificial intelligence is evolving with every passing day. New innovations by using AI are making our lives simpler but it is also a reason for human degradation.

Objective of the event: -

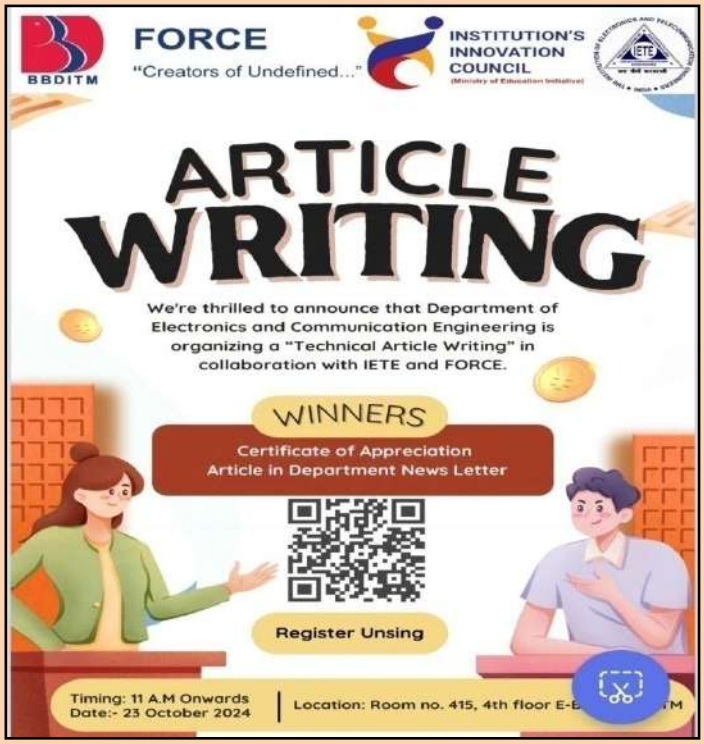
The objective of organizing this event was to honor the birth anniversary of former President of India, Missile Man of India, Dr. APJ Abdul Kalam and to engage the students in critical thinking, decision-making, and enhanced productivity by innovative ideas.

Benefits in terms of Learning/ Skill/ Knowledge Obtained: -

The basic learning from the event was that students remained updated with topics which are currently in demand and learned the utility of various aspects of Artificial Intelligence in Innovations. It helps them prepare themselves for their future career. The take away from the event was that the students were aware of the pros and cons of artificial intelligence. Ethical use of AI for various applications should have various check points at different stages.

Glimpses of Event:

5. Technical Article writing competition :



Event Summary:-

The Department of Electronics & Communication Engineering in collaboration with **IIC, IETE** and **FORCE (Departmental Club)** has successfully organized **"Technical Article Writing"** competition on 23/10/2024 for students of ECE under the guidance of Head of Department Prof. (Dr.) Shailendra Tahilyani, with a message to convey complex information in a simple manner. The purpose of technical documentation is to improve the skills of students for their future endeavors.

Total 20 students have participated in the events on various technical topics.

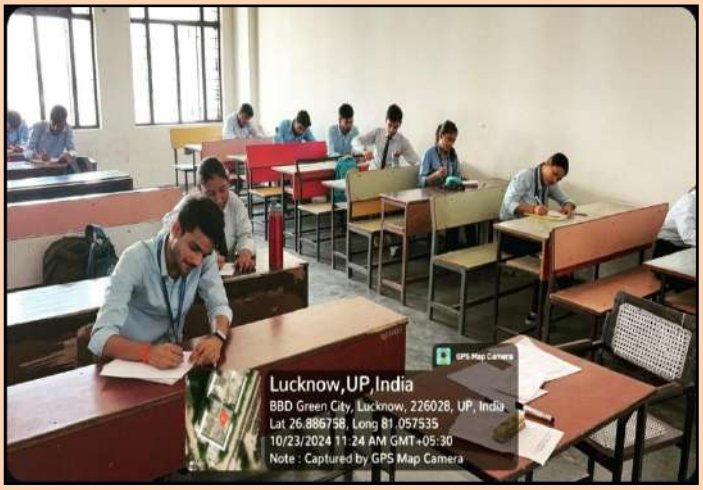
Objective of the event: -

The objective of organizing this event is to enhance the student's ability to think and organize the content in an articulated manner and to convey any thoughts to the people in simple form.

Benefits in terms of Learning/ Skill/ Knowledge Obtained: -

The basic learning from the event was that students remain updated with topics which are currently in demand from their career perspectives.

Glimpses of Event :



Result: - Total 20 students participated in the event. It helps the student to improve their creative thinking and technical writing skills.

S. No.	Name of Student	University Roll No	YEAR	POSITION
1.	Anshika Mishra	2200540310010	3rd Year / 5th Sem	FIRST
2.	Sambhavi Singh	2300540310043	2nd Year / 3rd Sem	SECOND
3.	Saumya Maurya	2300540310040	2nd Year / 3rd Sem	THIRD

6. Project Competition:

Event's Brief:

The Department of Electronics & Communication Engineering in collaboration with **IETE and FORCE** (Departmental Club) has successfully organized **Project Competition** on Feb 11, 2025 in the Department of ECE, BBDITM.

This event was organized under the guidance of respected Head of Department Prof. (Dr.) Shailendra Tahilyani with a message to use the technology to achieve a specific goal, whether it's software development, hardware installation, system integration or network design. The students showcased different projects regarding robotics, line follower, light follower, blind stick etc.

Glimpses of Event:

Student Participants in Project Competition

7. Industrial Visit at 'Balram Bottlers, Lucknow'

Event's Brief:

The Department of Electronics & Communication Engineering in collaboration with ***Bureau of Indian Standards (BIS)*, Government of India** has successfully organized an industrial visit for ECE 3rd year students at **Balram Bottlers,** Industrial Area Sarojini Nagar, Lucknow on **March 19, 2025**.

Objective of the event: -

The objective of industrial visit to a water supply company is to offer students a chance to learn how science and technology are applied in the real world to solve essential societal problems like access to clean drinking water. It enhances their understanding of industrial operations, the environment, and offers a practical perspective on their studies.

Outcome of the event: -

The outcome of this industrial visit is that our students learned about the processes used to purify raw water to make it safe for drinking. This includes physical, chemical, and biological methods used to remove contaminants. They were introduced to the various stages of water treatment, such as coagulation, sedimentation, filtration, disinfection, and distribution. In addition, our students were also got an overview of the advanced technologies used in water purification, such as reverse osmosis, ultraviolet (UV) treatment, and advanced filtration techniques.

Events Photographs:

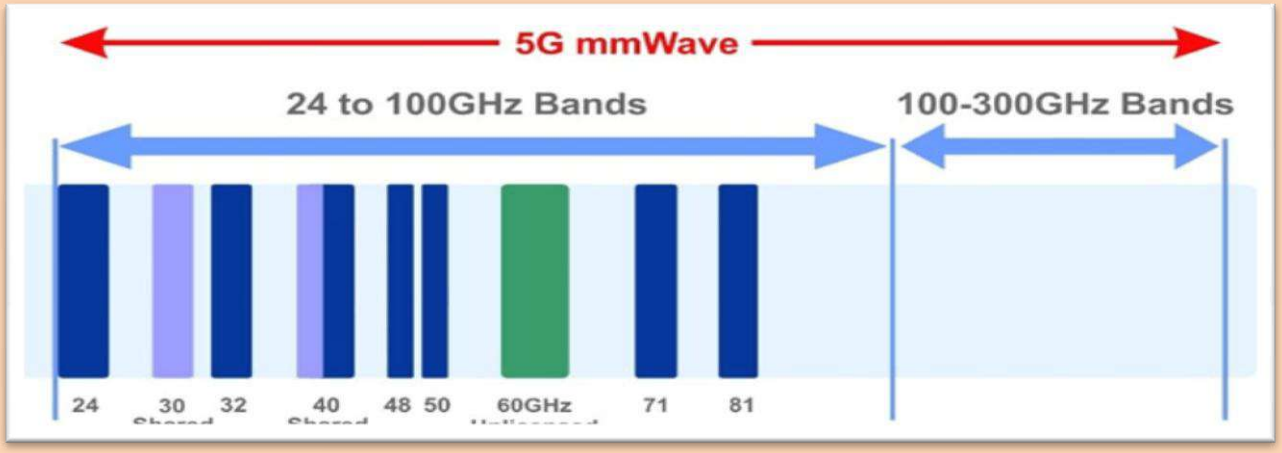
Industrial Visit at Balram Bottlers, Lucknow

➢ FACULTY CORNER :

❖ 5G mmWave Technolog:

What is 5G mmWave Technology?

5G mmWave technology utilizes high-frequency millimeter waves (24-100 GHz) to deliver ultra-fast data speeds and low latency. It supports high-capacity networks ideal for dense urban areas but has a limited range and weaker penetration through obstacles. It's pivotal for advanced applications like virtual reality and high-definition streaming.



How mmWave differs from Sub-6 Ghz frequencies?

5G mmWave technology operates at high frequencies (24-100 GHz), delivering extremely fast data speeds and low latency compared to other 5G frequency bands. It excels in providing high-capacity networks suitable for dense urban areas but has a shorter range and less effective penetration through obstacles like buildings. In contrast, sub-6 GHz frequencies, which are lower than 6 GHz, offer broader coverage and better penetration but deliver lower data speeds and higher latency. While mmWave supports high-speed applications such as virtual reality and 4K streaming, sub-6 GHz frequencies are more suitable for wider area coverage and consistent connectivity in less dense environments.

Applications of 5G mm wave technology

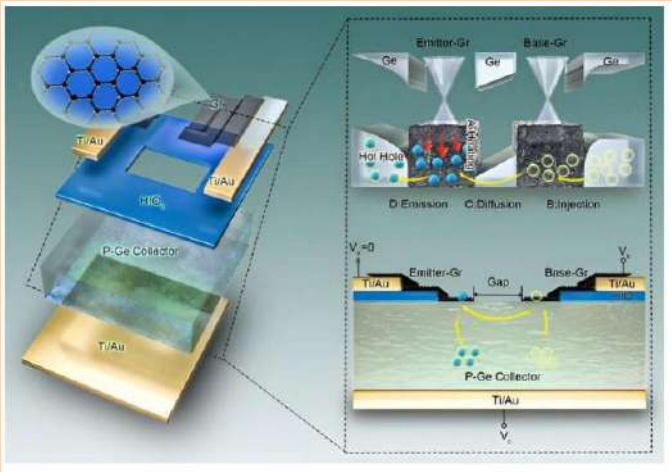
5G mm Wave technology delivers ultra-fast data speeds and low latency, enabling applications like high-definition video streaming, augmented and virtual reality, smart city infrastructure, industrial automation, remote healthcare, and advanced public safety systems. Its high capacity supports dense IoT networks and high-speed internet in crowded urban areas.

Ms. Keerti Mishra
Assistant Professor
Electronics & Communication Engineering

❖ A Review on Transistor Technology With Hot Carrier Generation Mechanism :

Utilizing low-dimensional materials like graphene, the team developed a hot-emitter transistor with good performance metrics, offering multiple applications for future high-performance, low-power devices in the post-Moore era.

A research team from the Institute of Metal Research (IMR) at the Chinese Academy of Sciences has introduced a new mechanism for generating hot carriers, termed stimulated emission of heated carriers (SEHC). The team also developed a hot-emitter transistor (HOET) that achieves an ultralow sub-threshold swing of less than 1 mV/dec and a peak-to-valley current ratio exceeding 100. This research provides a prototype for a low-power, multifunctional device suitable for the post-Moore era.



Low-dimensional materials, such as graphene, present opportunities for developing new hot carrier transistors due to their atomic thickness, electrical and optical properties, and defect-free surfaces. These materials can easily form hetero-structures with other substances, offering diverse energy band combinations. The researchers created a hot-emitter transistor by combining graphene with germanium, leading to a novel mechanism for hot carrier generation. The transistor features two coupled graphene/germanium Schottky junctions. During operation, germanium injects high-energy carriers into the graphene base, which then diffuse to the emitter, causing a significant current increase due to the preheated carriers. The sub-threshold swing of less than 1 mV/dec surpasses the conventional Boltzmann limit of 60 mV/dec.

The transistor demonstrates a peak-to-valley current ratio exceeding 100 at room temperature. These characteristics indicate potential for multi-valued logic computing, showcasing broad prospects for future high-performance, low-power, multifunctional devices. The team claimed this research adds a valuable component to the family of hot carrier transistors, indicating promising applications in future devices.

Mr. Ravi Shankar
Assistant Professor
Electronics & Communication Engineering

❖ ELECTRIC VEHICLE CHARGING STATION:

An electric vehicle, also called an EV, uses one or more electric motors or traction motors for propulsion. An electric vehicle may be powered through a collector system by electricity from off-vehicle sources, or may be self-contained with a battery, solar panels or an electric generator to convert fuel to electricity.

An electric vehicle charging station, also called EV charging station, electric recharging point, charging point, charge point and electronic charging station (ECS) is an element in an infrastructure that supplies electric energy for the recharging of plug-in electric vehicles-including electric cars, neighborhoods electric Vehicles and plug-in hybrids.

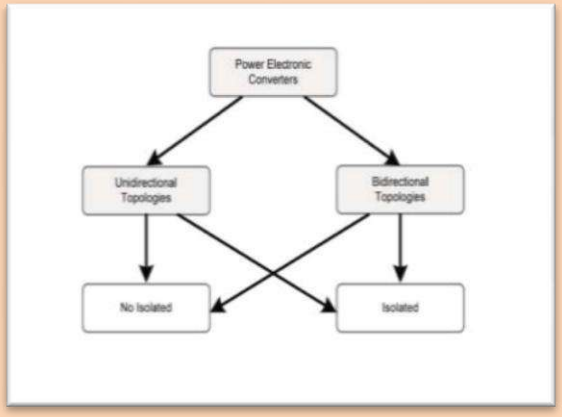
Nowadays, energy efficiency is a top priority, boosted by a major concern with climatic changes and by the soaring oil prices in countries that have a large dependency on imported fossil fuels, which leads to the demand of EV charging station in the country.

Benefits of E-vehicle Charging Station:

- Increase in number of charging stations will boost the selling of EV's as their will be reduced range anxiety.
- It is always great for environment.
- It will boost direct and indirect employment in country.
- Good Opportunity for young entrepreneur to install charging station in their locality.

EV batteries charging system:

This charging system is an AC-DC power circuit that must be controlled in order to respect the vehicles' batteries nominal characteristics to preserve their lifespan. Additionally, it should monitor the batteries during their operation to prevent damages during the charging or discharging processes. The ACDC power circuit can be implemented with different topologies according to the characteristics desired for the system.



Mr. Kishan Kumar
Assistant Professor
Electronics & Communication Engineering

❖ Energy-Efficient Wireless Chip:

The chip could improve current electronics and meet the efficiency needs of future 6G technologies.

A new transmitter chip designed by researchers at MIT significantly boosts the energy efficiency of wireless communications, achieving much lower error rates than both traditional and optimal modulation-based systems. The chip could extend battery life and signal range for connected devices, from industrial sensors to smart home appliances.

At the core of the design is a novel modulation scheme that combines adaptive, non-uniform modulation with a clever padding technique. This approach reduces transmission errors while still conserving energy—something conventional systems struggle to balance. Even in noisy environments, the chip maintains consistent message lengths by adding extra bits between data symbols, helping the receiver recognize signal boundaries with clarity.

- The chip's reliability stems from a decoding strategy based on GRAND (Guessing Random Additive Noise Decoding), an MIT-developed algorithm. GRAND allows the receiver to identify and remove the added padding, successfully recovering the original message despite varying signal patterns.
- Thanks to its compact architecture, the chip leaves room for even more energy-saving enhancements. It has already shown a fourfold reduction in signal error compared to systems using optimal modulation—an unexpected gain for such low-power transmission.
- This technology fits neatly into existing IoT devices and can help meet the strict energy demands of future 6G networks. Its flexibility makes it well-suited for applications where energy efficiency and reliability are critical, such as real-time monitoring in factories or continuous updates from smart appliances.

In typical wireless systems, transmitters convert digital bits into radio signals using modulation—often a fixed, evenly spaced symbol pattern. While stable, this traditional method doesn't adapt well to rapidly changing wireless conditions. Adaptive modulation improves efficiency by tailoring symbol patterns to the environment but introduces challenges like increased error rates due to irregular signal lengths.

By addressing this issue through equal-length transmissions and robust decoding, MIT's design merges the best of both worlds—adaptive performance with reliable delivery.

Mr. Navneet Kumar Pandey
Assistant Professor
Electronics & Communication Engineering

➢ 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.

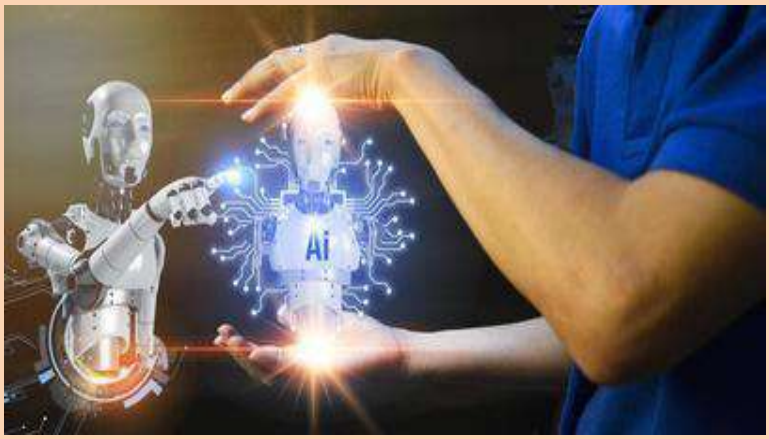
Future Horizons: AI, IoT, and Personalized Medicine

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

❖ AI: A Powerful Assistant, Not the Master

"AI may be powerful, but imagination, responsibility, and courage belong only to us."



Artificial Intelligence has quietly woven itself into the fabric of our lives. From classrooms and offices to creative studios, it has become more than just a futuristic concept—it's now an everyday reality. Yet amid all the fascination and fear surrounding it, one truth stands firm: AI is a helper, not an owner.

Think back to when calculators were first introduced. Many worried they would ruin mathematics, stripping away the need to think. Instead, calculators freed us from mechanical repetition and opened the door to higher problem-solving. AI is today's equivalent—far more advanced, yes—but at its core, still a tool.

The difference, however, is that AI has crept into areas once thought exclusively human. It filters job applications before managers see them, drafts legal notes within minutes, and even imitates art and music. This raises a pressing question: where do humans still hold an unshakable advantage?

• Where Humans Outperform Machines

- **Judgment and Context** : AI can spot patterns, but it doesn't understand context. A single word in a contract, or a subtle tone in conversation, might completely change meaning. Humans can weigh culture, ethics, and intent—dimensions machines still can't process.
- **Common Sense**: Children instinctively avoid touching fire. AI, however, needs endless data to "learn" that. It thrives on repetition but falters when life throws unpredictable, messy situations.
- **True Creativity** : AI generates from what already exists. Humans imagine what has never been. From Leonardo da Vinci's flying machines to the first moon landing, history is proof that innovation often begins with a spark no dataset could predict.
- **Ethics and Accountability** : AI can recommend a business move, but only humans can answer whether it should be done. Responsibility, morality, and foresight remain uniquely human burdens.

Adapting Wisely

To thrive in this new age, the key is adaptation. That means building AI literacy—understanding its scope without surrendering control. The strongest results come when human qualities like empathy, imagination, and vision work alongside AI's unmatched speed and efficiency.

The future isn't humans versus AI. It's humans with AI. Just as calculators strengthened mathematics, AI can strengthen society—if we keep it in its place.

The Bottom Line

AI is extraordinary. But it is not the thinker, the dreamer, or the decision-maker. It remains what it was designed to be: a tool. The spark of imagination, the weight of responsibility, and the courage to act those belong only to us.

Niharika Anand
2200540310026
EC3

❖ Electric Vehicles: Driving Towards a Greener Future

As the world grapples with the pressing challenges of climate change and environmental degradation, electric vehicles (EVs) have emerged as a promising solution for reducing our carbon footprint. With rising awareness, advancing technology, and supportive government policies, the scope of EVs is expanding rapidly — not just as a mode of transport but as a powerful tool in the fight against global warming.

The Environmental Cost of Traditional Vehicles

For decades, internal combustion engine (ICE) vehicles have dominated the roads, running primarily on petrol and diesel. While they offer convenience and speed, they are also major contributors to air pollution and greenhouse gas (GHG) emissions. Transport alone accounts for nearly 24% of global CO_2 emissions, with the majority coming from cars, trucks, and buses. These emissions trap heat in the Earth's atmosphere, accelerating global warming and leading to severe consequences like rising sea levels, unpredictable weather patterns, and loss of biodiversity.

EVs: A Cleaner Alternative

Electric vehicles offer a cleaner, more sustainable alternative. Unlike ICE vehicles, EVs do not emit tailpipe pollutants such as carbon dioxide, nitrogen oxides, or particulate matter. This makes them especially valuable in reducing urban air pollution, which is linked to respiratory diseases, heart conditions, and premature deaths.

Even when powered by electricity from non-

renewable sources, EVs are generally more efficient and emit fewer overall greenhouse gases compared to traditional vehicles. As electricity grids transition to greener sources like solar, wind, and hydro, the environmental benefits of EVs will only grow stronger.

Reducing Global Warming

One of the most compelling arguments for electric vehicles is their potential to slow down global warming. If adopted on a large scale and powered by renewable energy, EVs can significantly reduce global CO_2 emissions.

According to the International Energy Agency (IEA), switching to electric cars could cut carbon emissions from transport by over 50% by 2050. This would play a crucial role in meeting global climate targets, including the goals set in the Paris Agreement.

Battery Recycling and Sustainable Manufacturing

Critics often point to the environmental cost of battery production in EVs. However, this is being addressed through innovations in battery recycling, second-life applications, and the development of greener materials. Companies are now investing in closed-loop battery systems that minimize waste and environmental damage.

Moreover, EV manufacturers are increasingly adopting sustainable practices, such as using recycled materials in car interiors, eco-friendly paint, and energy-efficient factories powered by renewable sources.

The Broader Impact: More than Just Cars

The electric mobility revolution isn't limited to passenger cars. Electric buses, trucks, two-wheelers, and even ships are hitting the roads and waters, making transport cleaner across multiple sectors. Governments around the world are investing in EV infrastructure, including charging stations, battery swapping stations, and incentives to make EVs more accessible.

Conclusion

Electric vehicles represent more than just a trend — they are a necessary evolution in our quest for a sustainable future. With their ability to reduce pollution, cut carbon emissions, and promote renewable energy, EVs are paving the way toward a cleaner, greener planet.

As technology advances and awareness grows, the scope of electric vehicles will only expand, driving us closer to a world where progress and environmental responsibility go hand in hand.

Shreya Dwivedi
2100540310028
EC4

CONGARULATIONS

Congratulations to following students for their exceptional performance in end semester exam ***Dr. APJ Abdul Kalam Technical University*** *Examination,* ***Odd Semester 2024-25***

YEAR	UNIVERSITY ROLL NO.	STUDENT NAME	III SEM SGPA
EC 2nd Year	2300540310036	SANJAY GUPTA	8.12
	2300540310040	SAUMYA MAURYA	7.84
	2300540310056	VARTIKA SINGH	7.72
	2300540310034	SADHANA SAHANI	7.52
	2300540310039	SATYAM TIWARI	7.44

YEAR	UNIVERSITY ROLL NO.	STUDENT NAME	III SEM SGPA
EC 3rd Year	2200540310040	SAYYED SANIA	9.26
	2200540310026	NIHARIKA ANAND	8.87
	2300540319001	ADARSH SINGH	8.87
	2300540319002	NIDHI AGRAHARI	8.61
	2200540310012	APARNA TIWARI	8.48

YEAR	UNIVERSITY ROLL NO.	STUDENT NAME	III SEM SGPA
EC 4th Year	2100540310027	SHIWANGI YADAV	8.67
	2100540310028	SHREYA DWIVEDI	8.67
	2100540310017	MOHD ZAID	8.5
	2100540310003	ADITYA SINGH	8.5
	2100540310016	MD TAHIR	8.5

➢ FDP attended / Patent / Research Paper published by faculty members-

Prof. (Dr.) Shailendra Tahilyani
Professor & HOD
Electronics & Communication Engineering

Events Attended:

[1] Participated in one week **FDP** on topic "Generative AI" organized by Department of Electronics and Communication Engineering and Electrical Engineering, BBDNIIT, Lucknow during 29 Apr - 03 May 2024.
[2] Participated in one week **FDP** on topic "Future Trends and Design Challenges in 5G/6G Wireless technologies" organized by Department of ECE, Vel Tech Multi Tech Dr. Rangarajan Dr.Sakunthala Engineering College, Avadi, Chennai during 18-23 Nov 2024.

Dr. Rupali Agarwal
Associate Professor
Electronics & Communication Engineering

Events Attended / Publication

[1] Participated in one week **FDP** on topic "Design and Development of Biomedical Antennas" organized by Department of ECE, KIET Group of Institutions, Delhi-NCR, Ghaziabad during 22-28 July 2024.
[2] Participated in one week **FDP** on topic "Communication, Signal Processing and Recent Technologies for Different Applications" organized by Department of ECE, BBIT Kolkata during 22-28 Oct 2024.
[3] Participated in one week **FDP** on topic "Future Trends and Design Challenges in 5G/6G Wireless technologies" organized by Department of ECE, Vel Tech Multi Tech Dr. Rangarajan Dr.Sakunthala Engineering College, Avadi, Chennai during 18-23 Nov 2024.
[4] Participated in one week **FDP** on topic "Data Visualization with Power BI" organized by Department of Electronics & Communication Engineering and Electrical Engineering, BBDNIIT Lucknow during 07-11 Jan 2025.

[5] Participated in one week **FDP** on topic "Next Generation Technologies in Electronics and Computer Science: Trends and Teaching Approaches" organized by Greater Kolkata College of Engineering and Management, Kolkata during 16-20 June 2025.

[6] Participated in one week **FDP** on topic "Agentic AI and PEGA: Practical Foundations" organized by BBDU, Lucknow during 16-20 June 2025.

[7] Published Book Chapter **"Smart Weeding Systems: Advancements and Challenges"** in Book "Artificial Intelligence and Internet of Things for Smart Agriculture" **CRC Press, Taylor & Francis, ISBN 978103256873 Aug 2025.**

Achievements

[1] Received **Appreciation Later** from Director, BBDITM for excellent performance and innovative teaching style in academics for Even Semester session 2023-24

[2] Session Chair in IEEE International conference (CCTES-24) held at integral University, Lucknow on 15-16 November 2024.

Mr. Pankaj Verma
Assistant Professor
Electronics & Communication Engineering

Events Attended

[1] Participated in one week **FDP** on topic "Design and Development of Biomedical Antennas" organized by Department of ECE, KIET Group of Institutions, Delhi-NCR, Ghaziabad during 22-28 July 2024.

[2] Participated in one week **FDP** on topic "Communication, Signal Processing and Recent Technologies for Different Applications" organized by Department of ECE, BBIT Kolkata during 22-28 Oct 2024.

[3] Participated in one week **FDP** on topic "Future Trends and Design Challenges in 5G/6G Wireless technologies" organized by Department of ECE, Vel Tech Multi Tech Dr. Rangarajan Dr.Sakunthala Engineering College, Avadi, Chennai during 18-23 Nov 2024.

[4] Participated in one week **FDP** on topic "Data Visualization with Power BI" organized by Department of Electronics & Communication Engineering and Electrical Engineering, BBDNIIT Lucknow during 07-11 Jan 2025.

[5] Participated in one week **FDP** on topic "Next Generation Technologies in Electronics and Computer Science: Trends and Teaching Approaches" organized by Greater Kolkata College of Engineering and Management, Kolkata during 16-20 Jun 2025.

Mr. Amit Kumar Singh

Assistant Professor

Electronics & Communication Engineering

Events Attended

[1] Participated in one week **FDP** on topic "Design and Development of Biomedical Antennas" organized by Department of ECE, KIET Group of Institutions, Delhi-NCR, Ghaziabad during 22-28 July 2024.

[2] Participated in one week **FDP** on topic "Communication, Signal Processing and Recent Technologies for Different Applications" organized by Department of ECE, BBIT Kolkata during 22-28 Oct 2024.

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[4] Participated in one week **FDP** on topic "Data Visualization with Power BI" organized by Department of Electronics & Communication Engineering and Electrical Engineering, BBDNIIT Lucknow during 07-11 Jan 2025.

[5] Participated in one week **FDP** on topic "Next Generation Technologies in Electronics and Computer Science: Trends and Teaching Approaches" organized by Greater Kolkata College of Engineering and Management, Kolkata during 16-20 Jun 2025.

Dr. Abhimanyu Kumar Yadav

Associate Professor & DI

Electronics & Communication Engineering

Events Attended

[1] Participated in one week **FDP** on topic "Design and Development of Biomedical Antennas" organized by Department of ECE, KIET Group of Institutions, Delhi-NCR, Ghaziabad during 22-28 July 2024.

[2] Participated in one week **FDP** on topic "Communication, Signal Processing and Recent Technologies for Different Applications" organized by Department of ECE, BBIT Kolkata during 22-28 Oct 2024.

[3] Participated in one week **FDP** on topic "Future Trends and Design Challenges in 5G/6G Wireless technologies" organized by Department of ECE, Vel Tech Multi Tech Dr. Rangarajan Dr.Sakunthala Engineering College, Avadi, Chennai during 18-23 Nov 2024.

[4] Participated in one week **FDP** on topic "Data Visualization with Power BI" organized by Department of Electronics & Communication Engineering and Electrical Engineering, BBDNIIT Lucknow during 07-11 Jan 2025.

[5] Participated in one week **FDP** on topic "Next Generation Technologies in Electronics and Computer Science: Trends and Teaching Approaches" organized by Greater Kolkata College of Engineering and Management, Kolkata during 16-20 Jun 2025.

Mr .Navneet Kumar Pandey
Assistant Professor
Electronics & Communication Engineering

Events Attended

[1] Participated in one week **FDP** on topic "Design and Development of Biomedical Antennas" organized by Department of ECE, KIET Group of Institutions, Delhi-NCR, Ghaziabad during 22-28 July 2024.

[2] Participated in one week **FDP** on topic "Communication, Signal Processing and Recent Technologies for Different Applications" organized by Department of ECE, BBIT Kolkata during 22-28 Oct 2024.

[3] Participated in one week **FDP** on topic "Future Trends and Design Challenges in 5G/6G Wireless technologies" organized by Department of ECE, Vel Tech Multi Tech Dr. Rangarajan Dr.Sakunthala Engineering College, Avadi, Chennai during 18-23 Nov 2024.

[4] Participated in one week **FDP** on topic "Data Visualization with Power BI" organized by Department of Electronics & Communication Engineering and Electrical Engineering, BBDNIIT Lucknow during 07-11 Jan 2025.

[5] Participated in one week **FDP** on topic "Next Generation Technologies in Electronics and Computer Science: Trends and Teaching Approaches" organized by Greater Kolkata College of Engineering and Management, Kolkata during 16-20 Jun 2025.

Mr. Diwakar Singh
Assistant Professor
Electronics & Communication Engineering

Events Attended

[1] Participated in one week **FDP** on topic "Design and Development of Biomedical Antennas" organized by Department of ECE, KIET Group of Institutions, Delhi-NCR, Ghaziabad during 22-28 July 2024.

[2] Participated in one week **FDP** on topic "Communication, Signal Processing and Recent Technologies for Different Applications" organized by Department of ECE, BBIT Kolkata during 22-28 Oct 2024.

[3] Participated in one week **FDP** on topic "Future Trends and Design Challenges in 5G/6G Wireless technologies" organized by Department of ECE, Vel Tech Multi Tech Dr. Rangarajan Dr.Sakunthala Engineering College, Avadi, Chennai during 18-23 Nov 2024.

[4] Participated in one week **FDP** on topic "Data Visualization with Power BI" organized by Department of Electronics & Communication Engineering and Electrical Engineering, BBDNIIT Lucknow during 07-11 Jan 2025.

[5] Participated in one week **FDP** on topic "Next Generation Technologies in Electronics and Computer Science: Trends and Teaching Approaches" organized by Greater Kolkata College of Engineering and Management, Kolkata during 16-20 Jun 2025.

Mr. Ravi Shankar
Assistant Professor
Electronics & Communication Engineering

Events Attended

[1] Participated in one week **FDP** on topic "Design and Development of Biomedical Antennas" organized by Department of ECE, KIET Group of Institutions, Delhi-NCR, Ghaziabad during 22-28 July 2024.

[2] Participated in one week **FDP** on topic "Communication, Signal Processing and Recent Technologies for Different Applications" organized by Department of ECE, BBIT Kolkata during 22-28 Oct 2024.

[3] Participated in one week **FDP** on topic "Future Trends and Design Challenges in 5G/6G Wireless technologies" organized by Department of ECE, Vel Tech Multi Tech Dr. Rangarajan Dr.Sakunthala Engineering College, Avadi, Chennai during 18-23 Nov 2024.

[4] Participated in one week **FDP** on topic "Data Visualization with Power BI" organized by Department of Electronics & Communication Engineering and Electrical Engineering, BBDNIIT Lucknow during 07-11 Jan 2025.

[5] Participated in one week **FDP** on topic "Next Generation Technologies in Electronics and Computer Science: Trends and Teaching Approaches" organized by Greater Kolkata College of Engineering and Management, Kolkata during 16-20 Jun 2025.

Mr. Kishan Kumar
Assistant Professor
Electronics & Communication Engineering

Events Attended / Publication

[1] Participated in one week **FDP** on topic "Design and Development of Biomedical Antennas" organized by Department of ECE, KIET Group of Institutions, Delhi-NCR, Ghaziabad during 22-28 July 2024.

[2] Participated in one week **FDP** on topic "Communication, Signal Processing and Recent Technologies for Different Applications" organized by Department of ECE, BBIT Kolkata during 22-28 Oct 2024.

[3] Participated in one week **FDP** on topic "Future Trends and Design Challenges in 5G/6G Wireless technologies" organized by Department of ECE, Vel Tech Multi Tech Dr. Rangarajan Dr.Sakunthala Engineering College, Avadi, Chennai during 18-23 Nov 2024.

[4] General Scopes paper title "Artificial Intelligence Based Fast DC Charging Control of Electric Vehicles in Standalone Mode Involving Multiple Renewable Energy Resources" International Journal on Energy Conversion (I.R.E.CON.), Vol. 12, N. 4 July 2024, ISSN 2281-5295

[5] Participated in one week **FDP** on topic "Data Visualization with Power BI" organized by Department of Electronics & Communication Engineering and Electrical Engineering, BBDNIIT Lucknow during 07-11 Jan 2025.

[6] Participated in one week **FDP** on topic "Next Generation Technologies in Electronics and Computer Science: Trends and Teaching Approaches" organized by Greater Kolkata College of Engineering and Management, Kolkata during 16-20 Jun 2025.

[7] Published paper **"Marine Current Energy Coupled with a VSC-HVDC link integrated with the grid",** 2025 International Conference on Cognitive Computing in Engineering, Communications, Sciences and Biomedical Health Informatics (IC3ECSBHI), May 2025, pp: 933-938.

Ms. Keerti Mishra
Assistant Professor
Electronics & Communication Engineering

Events Attended

[1] Participated in one week **FDP** on topic "Data Visualization with Power BI" organized by Department of Electronics & Communication Engineering and Electrical Engineering, BBDNIIT Lucknow during 07-11 Jan 2025.

[2] Participated in one week **FDP** on topic "Next Generation Technologies in Electronics and Computer Science: Trends and Teaching Approaches" organized by Greater Kolkata College of Engineering and Management, Kolkata during 16-20 Jun 2025.

Mr. Rajeev Singh
Assistant Professor & DI
Electronics & Communication Engineering

Events Attended

[1] Participated in one week **FDP** on topic "Design and Development of Biomedical Antennas" organized by Department of ECE, KIET Group of Institutions, Delhi-NCR, Ghaziabad during 22-28 July 2024.

[2] Participated in one week **FDP** on topic "Communication, Signal Processing and Recent Technologies for Different Applications" organized by Department of ECE, BBIT Kolkata during 22-28 Oct 2024.

[3] Participated in one week **FDP** on topic "Future Trends and Design Challenges in 5G/6G Wireless technologies" organized by Department of ECE, Vel Tech Multi Tech Dr. Rangarajan Dr.Sakunthala Engineering College, Avadi, Chennai during 18-23 Nov 2024.

[4] Participated in one week **FDP** on topic "Data Visualization with Power BI" organized by Department of Electronics & Communication Engineering and Electrical Engineering, BBDNIIT Lucknow during 07-11 Jan 2025.

[5] Participated in one week **FDP** on topic "Next Generation Technologies in Electronics and Computer Science: Trends and Teaching Approaches" organized by Greater Kolkata College of Engineering and Management, Kolkata during 16-20 Jun 2025.

➢ RESEARCH PAPER PUBLISHEH BY FINAL YEAR STUDENTS (SESSION 2024-25)

S. No.	University Roll No.	Name of Student	Project Guide	Title of Paper	Name of Journal
1.	2100540310032	Yugal Kumar singh	Dr. Rupali Agarwal	Hybrid Controlled Advanced Drone	International Journal of Research and Analytical Reviews (IJRAR)Volume 12, Issue 2, May 2025, pp: 946-948 (ISSN:2348-1269)
2.	2100540310025	Sawan Kumar Singh			
3.	2100540310012	Dipika Yadav			
4.	2100540310030	Twinkle Shukla			
5.	2100540310010	Ayush Srivastava	Mr. Ravi Shankar	Solar Based EV Charging Station with IOT Networking	International Research Journal of Modernization in Engineering Technology and Science (IRJMETS) Volume 7, Issue 4, April 2025, pp: 8103-8107 (e-ISSN: 2582-5208)
6.	2100540310005	Anuradha Yadav			
7.	2100540310028	Shreya Dwivedi			
8.	2000540310020	Jyotirmaya Samanta			
9.	2100540310009	Ayush			
10.	2100540310003	Aditya Singh	Mr. Pankaj Verma	SURVILLANCE DRONE USING ESP32	Journal of Emerging Technologies and Innovative Research(JETIR) Volume 12, Issue 4,April 2025, (ISSN: 2349-5162)
11.	2100540310008	Aviral Srivastava			
12.	2100540310013	Garima Yadav			
13.	2100540310031	Utsav Singh			
14.	2100540310001	Abhay Pratap Singh	Mr. Diwakar Singh	Robotics Arm for Industrial Applications	International Journal of Research Publication and Reviews (IJRPR) Volume 6, Issue 5, May 2025, pp: 5814-5816 (ISSN:2582-7421)
15.	2100540310018	Mukesh Sharma			
16.	2100540310019	Nikhil Kumar Yadav			
17.	2100540310027	Shiwangi Yadav			

S. No.	University Roll No.	Name of Student	Project Guide	Title of Paper	Name of Journal
18.	2100540310014	Kinshuk Makhija	Mr. Navneet Kumar Pandey	Smart Wearable for Mountaineers	International Journal of Research Publication and Reviews (IJRPR) Volume 6, Issue 5, May 2025, pp: 2944-2947 (ISSN:2582-7421)
19.	2100540310024	Ravi Prakash			
20.	2200540319004	Rishabh Pandey			
21.	2200540319006	Sushma Kumari			
22.	2100540310007	Arun Kumar Singh	Mr. Kishan Kumar	System to check the Healthiness of the Earthing system and Alert staff in case of Malfuncation	International Journal of scientific research & Engineering Trends, Volume 11, Issue 2,Mar-Apr-2025, pp: 1520-1523 ISSN(Onilne): 2395566X
23.	2100540310011	Deepak Pal			
24.	2100540310016	Md. Tahir			
25.	2100540310017	Mohd. Zaid			
26.	2100540310002	Aditya Mittal	Ms. Keerti Mishra	Smart stretcher for monitoring mobile patients	International Journal of Research Publication and Reviews (IJRPR) Volume 6, Issue 5, May 2025, pp: 17273-17276 (ISSN:2582-7421)
27.	2100540310020	Niraj Verma			
28.	2100540310026	Shivam Singh			
29.	2200540319001	Anushka Chaudhary	Mr. Amit Kumar Singh	Road Surface Analyser for Safety and Smoothness of Road	International Journal of Research Publication and Reviews (IJRPR) Volume 6, Issue 5, May 2025, pp: 5217-5223 (ISSN:2582-7421)
30.	2200540319002	Rajat Rastogi			
31.	2200540319003	Rajat Srivastava			
32.	2200540319005	Shailly Soni			

➢ PLACEMENTS @ECE (2024-25) - BBDITM:-

S. No.	Student Name	Univ. Roll No.	Company Name
1.	Ayush Srivastava	2100540310010	Vivo Mobiles Pvt. Ltd. Windcare India Private Limited Edu-Versity KTPL Technologies
2.	Mukesh Sharma	2100540310018	Polycab India Pvt. Ltd ADJ Engineering Pvt. Ltd
	Shreya Dwivedi	2100540310028	Indus Tower Edu-Versity
3.	Aditya Singh	2100540310003	Vivo Mobiles Pvt. Ltd.
4.	Utsav Singh	2100540310031	Vivo Mobiles Pvt. Ltd.
5.	Yugal Kumar Singh	2100540310032	Design2 Occupancy
6.	Dipika Yadav	2100540310012	RJ Solar
7.	Garima Yadav	2100540310013	RJ Solar
8.	Sushma Kumari	2200540319006	RJ Solar
9.	Twinkle Shukla	2100540310030	Indus Tower
10.	Shailly Soni	2200540319005	Statix Electric
11.	Anuradha Yadav	2100540310005	Indus Tower
12.	Rajat Rastogi	2200540319002	Panasonic Electric Works India Pvt. Ltd. ADJ Engineering Pvt. Ltd
13.	Md Tahir	2100540310016	EVTL Pvt. Ltd.

REACH US

Department of Electronics & Communication Engineering
Babu Banarasi Das Institute of Technology & Management
Sector I, Dr. Akhilesh Das Nagar, Ayodhya Road, Lucknow (UP)-226028, Uttar Pradesh, India
0-(522)-3911280
hodec@bbdnitm.ac.in
www.bbditm.ac.in