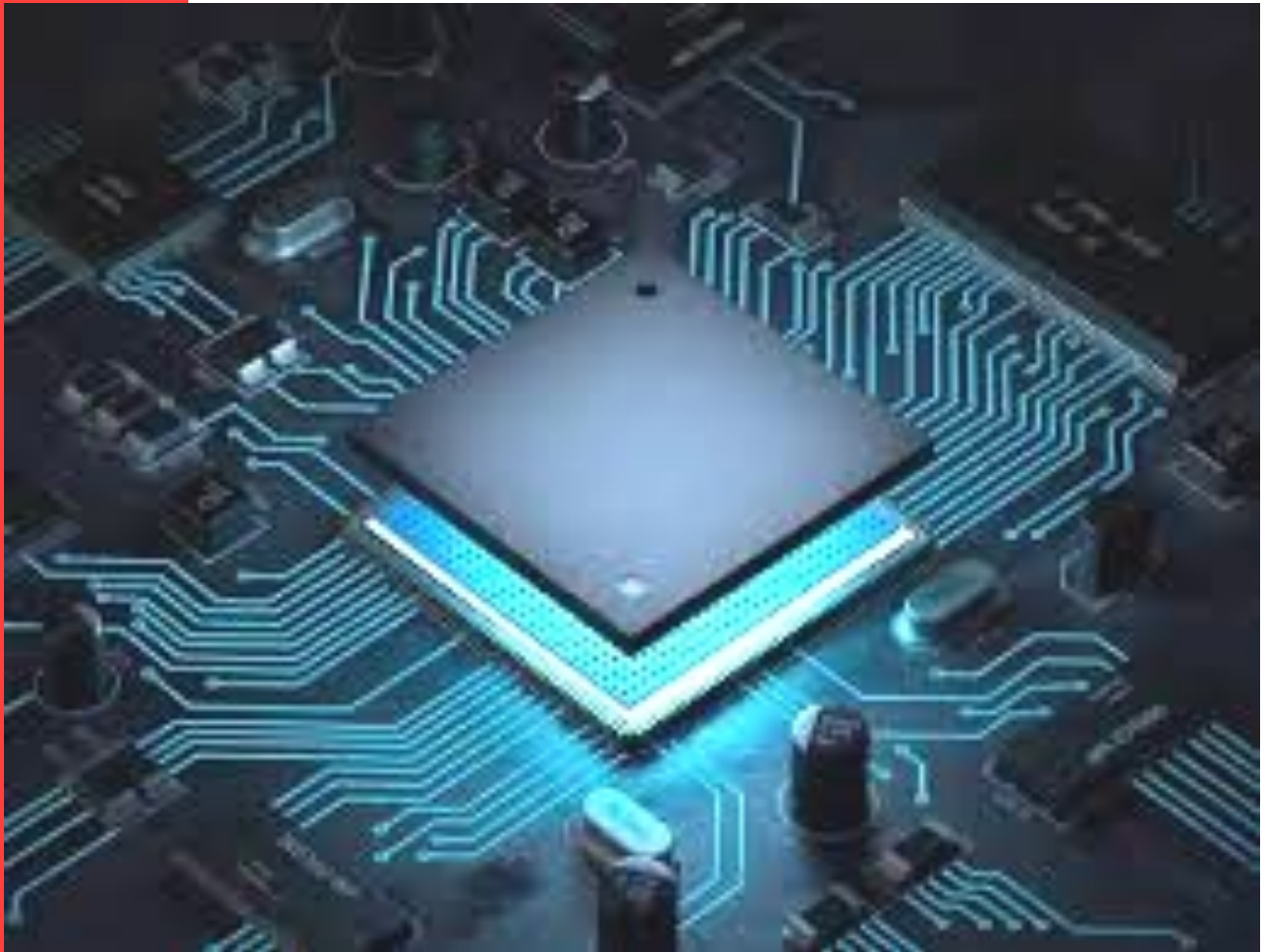




श्रद्धावान लभते ज्ञानम्
Good Education, Good Jobs

ECE-Inside

If you cannot do great things, do small things in a great way



Photonics Integrated Circuits

Quantum Computing

Artificial intelligence (AI)

Silicon Photonics

Internet of Things

UEMJ | ECE

Electronics & Communication Engineering

Volume No. 1 | October 2024

0

Table of Contents

0

Table of
Contents

01 -03

Letter from the patrons

04 -05

Team ECE

06

Upcoming Stories

07-17

Past stories

18 -21

Experts corner

22 -23

Optica

24 -26

Professors corner

27

Students corner

28 -29

Research/
Project/
Awards



LETTER FROM THE CHANCELLOR's OFFICE

Dear readers,

It is with utmost delight that I extend my warm welcome to each one of you - our distinguished faculty members, brilliant students, dedicated staff, and esteemed alumni. Your unyielding commitment to excellence continues to reinforce our Electronics and Communication Engineering (ECE) department as a powerhouse of innovation and learning. With each passing day, our department strides forward, reaffirming its position at the forefront of technological progress. The articles, research highlights, and personal narratives showcased in the magazine epitomize the remarkable accomplishments and unwavering dedication of our collective force.

As we embark on this journey towards the release of our magazine, let us recognize that our collective efforts are the bedrock of our department's success. Together, we inspire, innovate, and lead by example. I urge you all to actively engage, and remember, your invaluable feedback and insights are the bedrock upon which we refine our approach. In our unceasing pursuit of excellence, your input guides our path forward. The pages of this magazine are more than ink and text; they are a testament to our shared commitment to the field of ECE. May this edition reaffirm our passion, reignite our drive, and rejuvenate our sense of community.

Thank you for being the heart and soul of the ECE family.

Prof. Dr. Satyajit Chakrabarti

***Chancellor
University of Engineering and Management
(UEM), Jaipur***



Dear Readers,

We are excited to present the ECE Department magazine. It is with great enthusiasm that I welcome our esteemed faculty, dedicated students, diligent staff, and accomplished alumni. As we celebrate our successes, let us also embrace the challenges that propel us forward. Remember, adversity is not a roadblock but an opportunity for growth and learning. In the dynamic world of engineering and technology, interdisciplinary collaboration is vital. The integration of various engineering fields fosters innovation that transcends traditional boundaries.

I encourage you to seek out partnerships that offer fresh perspectives and drive meaningful breakthroughs. Our students are at the heart of our achievements. Your curiosity, passion, and determination shape the legacy of our university. Embrace every learning opportunity, as challenges are the stepping stones to success.

Prof. Dr. Biswajoy Chatterjee
Vice Chancellor
University of Engineering and Management
(UEM), Jaipur



Dear Readers,

As we unveil this latest edition of our magazine, I am filled with excitement and pride. This publication is more than just pages filled with words; it is a vibrant reflection of our community, our achievements, and our shared journey. In this issue, you will find stories that highlight the remarkable accomplishments of our students and faculty, explore innovative research, and celebrate the diverse voices that make our institution unique. Each article is a testament to the dedication and passion that thrive within our walls.

I encourage you to engage with the content, reflect on the narratives presented, and consider how you, too, can contribute to our ongoing dialogue. Together, we are shaping a future filled with promise and possibility.

Thank you for being an integral part of our community. Enjoy the read!

Prof. Dr. Satyajit Chakrabarti
Pro-Vice Chancellor
University of Engineering and Management
(UEM), Jaipur



Prof. Dr. Pradeep Kumar Sharma
Registrar

*University of Engineering and Management
(UEM), Jaipur*

I hope this message finds you well. On behalf of the Office of the Registrar at UEM Jaipur, I am excited to introduce the ECE magazine. Our ECE department has long been a cornerstone of academic and professional excellence, nurturing future leaders and innovators in the field. With the support of our dedicated faculty, our students have achieved impressive milestones and gained recognition across various platforms.

Our engineering students consistently excel in national and international competitions, showcasing their technical skills and innovative thinking. Faculty members have published impactful research in reputable journals, significantly advancing engineering practices and theories. Additionally, the department has forged strong partnerships with industry leaders, providing internships, guest lectures, and hands-on projects that enrich our students' practical experience and deepen their understanding of the engineering landscape.

We invite all students and faculty to share their stories and insights for the next editions of the magazine, highlighting our collective achievements and the vibrant spirit of the department.

Happy reading! .

I am glad to introduce the release of this latest magazine edition! This edition represents more than a collection of articles—it stands as a celebration of the dynamic and thriving community we have built together. Within these pages, you will discover captivating stories that highlight the core of our institution. From groundbreaking research to the remarkable achievements of our students and faculty, each feature showcases the diverse talents, innovation, and creativity that define our community. Every article reflects the unique perspectives that make our institution a hub of excellence and progress. As you explore the content, I encourage you to think about how each story connects with the broader narrative of our institution. It is your contributions—whether through research, mentorship, creativity, or engagement—that keep this community vibrant and evolving. I am deeply grateful for your continued support and involvement. It is this collective spirit that makes our institution not only succeed but flourish. I hope you find inspiration and pride in this edition, just as we did in putting it together.

Enjoy reading!



Prof. Dr. Mukesh Yadav
*Asso. Dean Academics & foreign affairs
University of Engineering and Management
(UEM), Jaipur*

LETTER FROM THE HOD

04

Dear Readers,

I Welcome to the Department of Electronics & Communication Engineering. It is my privilege and pleasure to introduce the Department of Electronics & Communication Engineering (ECE). Over the past years, our department has evolved continuously to stay at the forefront of technological advancements, adapting to the dynamic needs of the industry. The ECE department is a vibrant blend of experienced and young faculty members committed to providing an education based on Outcome-Based Learning. We offer students a well-rounded experience that includes a solid foundation in theoretical knowledge, hands-on practice, and exposure to emerging technologies.

I warmly invite you to join us on this exciting journey in the field of Electronics and Communication Engineering as we work together to create a better future.



Dr. Prashant Ranjan

PhD , NIT Allahabad
RF& Microwave

(HOD ECE)

Team ECE



Dr. Angshuman Khan
Associate Professor
(Ph.D NIT Patna)

VLSI Design.



Dr. Vishal Kumar Pandey
Associate Professor
(Ph.D NSUT Delhi)

Image Processing



Dr. Chandra Prakash
Associate Professor
(Ph.D IIT Dhanbad)

Photonic Integrated Circuits
(PiCs), Silicon Photonics
(SiPh), Photonics Sensors,
Antennas.

Dr. Anjali Yadav
Associate Professor
(Ph.D IIT KGP)

Nano Photonics,
Nano Materials.



Dr. Sikta Mandal
Assistant Professor
(Ph.D KIET)
Solid State Physics



Prof. Uttam Narendra Thakur
Assistant Professor
(Ph.D BITs Pilani Persu.)
Nano Materials sensors.



Prof. Surajit Sur
Assistant Professor
(Ph.D NIT Patna Persu.)
RF & Microwave



Prof. Kanhaiya Lal Bunker
Assistant Professor
Wireless Communication



Mr. Ladu Ram
Lab Instructor

12th International Conference on Internet of Everything, Microwave, Embedded, Communication & Networks

Upcoming Stories...

06



24-26, Oct-2024

The 12th International Conference on the Internet of Everything, Microwave, Embedded, Communication, and Networks (IEMECON 2024) is an illustrious event organized by the University of Engineering and Management, Jaipur. As technology continues its rapid evolution, these interconnected realms of Internet of Everything (IoE), Microwave Engineering, Embedded Systems, Communication, and Networks play a pivotal role in shaping our future. The conference serves as a beacon for researchers, scholars, engineers, and industry professionals, providing a platform to delve into the latest advancements and explore potential innovations in these transformative fields. It stands as a testament to the University's dedication to fostering knowledge dissemination, collaboration, and interdisciplinary learning.



Past events...

Welcome: New Students

07



PRADYOG Club and IEEE MTT-S Student Branch Chapter hosted an induction program to welcome the new first-year students. They have shared the story behind the club's name, as well as the vision and mission of both PRADYOG and the IEEE MTT-S Chapter.

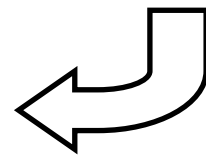


The session continued with an introduction to the Internet of Things (IoT), exploring the fascinating world of interconnected devices powered by sensors, software, and cutting-edge technologies. They showcased several projects and organized a quiz competition where participants had the chance to win exciting prizes. It was an engaging and enjoyable experience for both the first-year students and the team PRADYOG.

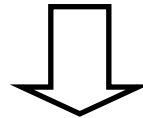




Mr. Deepak Sharma,
Chief Technical Officer,
Rams Creative Technolo-
gies Pvt Ltd,



Dr. Amit Mahesh Joshi,
Associate Professor,
MNIT Jaipur





Department of Electronics and Communication Engineering has successfully completed the BoS meeting, UEM Jaipur Campus. Two external expert members, Dr. Amit Mahesh Joshi, Associate Professor, MNIT Jaipur, and Mr. Deepak Sharma, Chief Technical Officer, Rams Creative Technologies Pvt Ltd, were present and contributed valuable insights. The BoS members have suggested a few points to add to our curriculum, which we will incorporate soon. Prof. (Dr.) Pradeep Sharma, Registrar, UEM Jaipur, and Dr. Prashant Ranjan, HoD ECED, felicitated the external expert members.

10 Past events...

College to Corporate Program for All Final Year Students

we were privileged to host Mr. Rajeev Agarwala, a renowned motivational speaker and mentor. Mr. Agarwala engaged with all the final-year students, who participated enthusiastically throughout the session. The session focused on key topics such as personality development and the importance of self-empowerment, encapsulated in the theme "Own the World, Own Yourself." The interactive session resonated deeply with the students, encouraging them to take proactive steps towards their personal and professional growth.

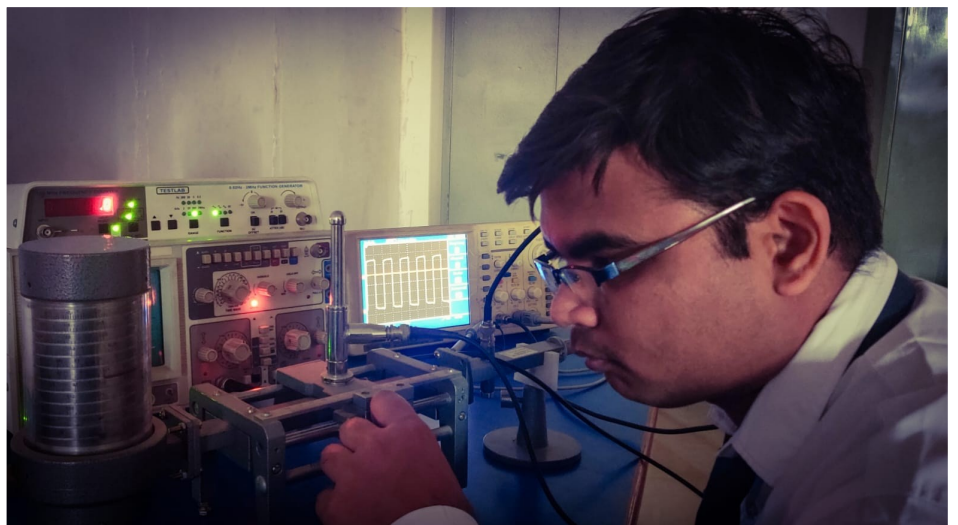




12 Past events...

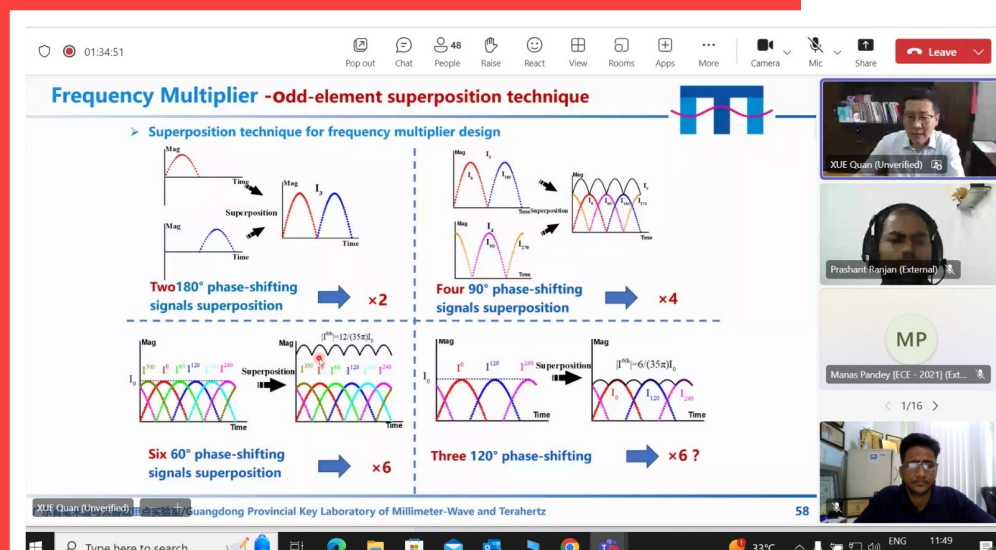
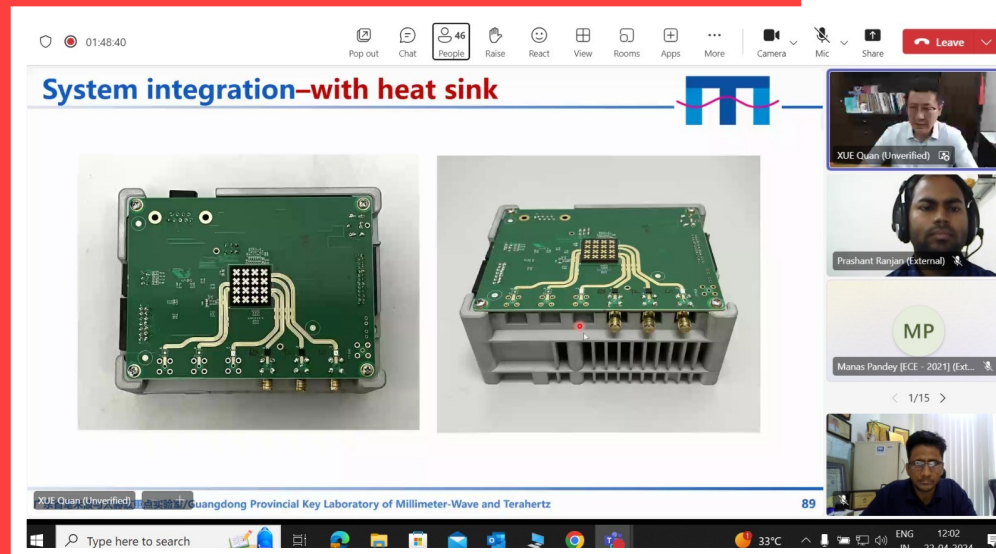
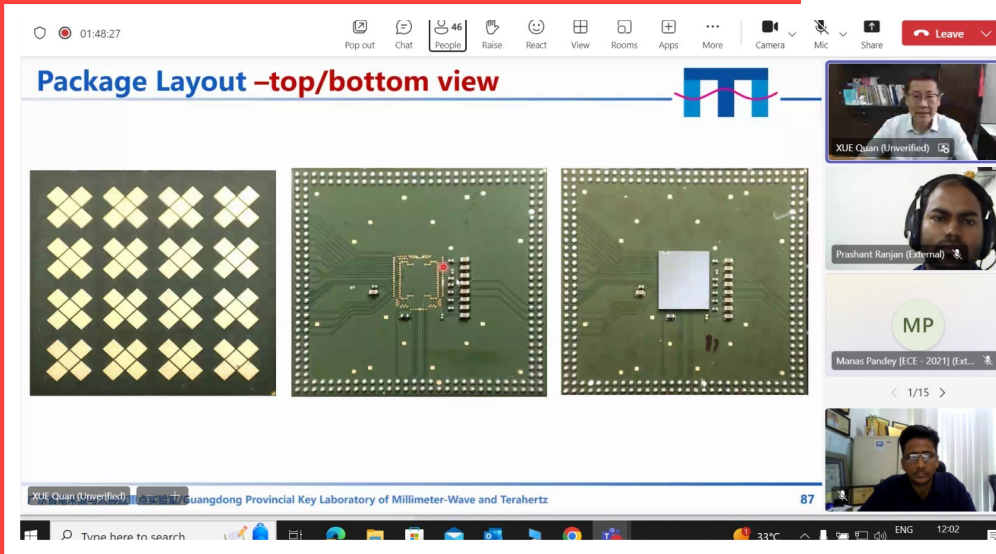
Lab Introduction session for the new students...

The lab demonstration was an engaging and informative session designed to showcase key concepts and techniques in electronics. Participants had the opportunity to observe practical applications of theoretical knowledge through hands-on. Throughout the session, emphasis was placed on safety protocols and best practices, ensuring that everyone was aware of the necessary precautions.



Millimeter-wave Transceiver Chips with Antenna in Package

13



IEEE Microwave Theory and Technology (MTT-S) Student Branch, University of Engineering & Management Jaipur (UEM) . Organized a talk on **“Millimeter-wave Transceiver Chips with Antenna in Package”**

Name of Speaker
Prof. Quan Xue
South China University of Technology
Guangzhou, Guangdong
China

Date: 22nd April, 2024
(Monday)

Farewell 2020-2024...

The farewell function was a memorable and heartfelt event marking the conclusion of time together of our 2024 batch. The evening brought together students, teachers, and staff to celebrate shared experiences and bid farewell to those moving on to new adventures.

The event began with an opening address from HOD ECE, who set a warm and nostalgic tone, inviting everyone to reflect on the journey we've shared. Following this, several students shared their thoughts and fond memories, highlighting the impact of our time together and expressing gratitude for the support and friendships formed along the way.

One of the highlights of the evening was a video montage that showcased unforgettable moments—photos from events, achievements, and candid moments that made our time together special. This visual journey elicited laughter and a few tears, reminding us all of the bonds we've created.

In addition to speeches and videos, students organized fun activities, which added an element of joy and engagement to the evening. The atmosphere was filled with laughter and camaraderie, fostering connections among everyone present.



Remains Forever...

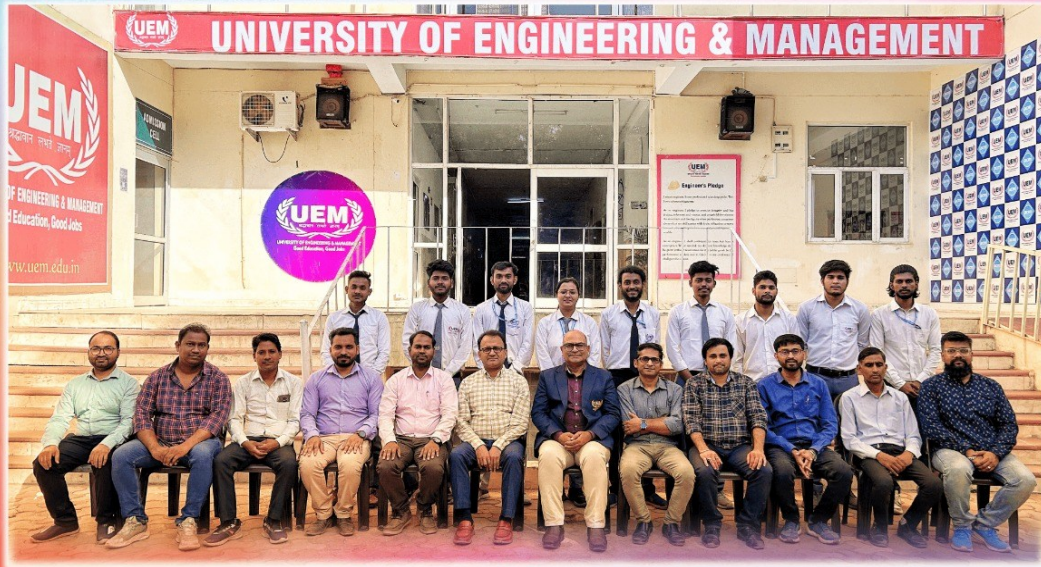
15



UNIVERSITY OF ENGINEERING & MANAGEMENT

Campus: 'Gurukul', Udaipuria Mod, 6 Kms from Chomu on Sikar Road, Jaipur-303807 (Rajasthan) | www.uem.edu.in

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING BATCH 2020-24 (B.TECH)



Time passes, but memories remain...

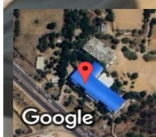
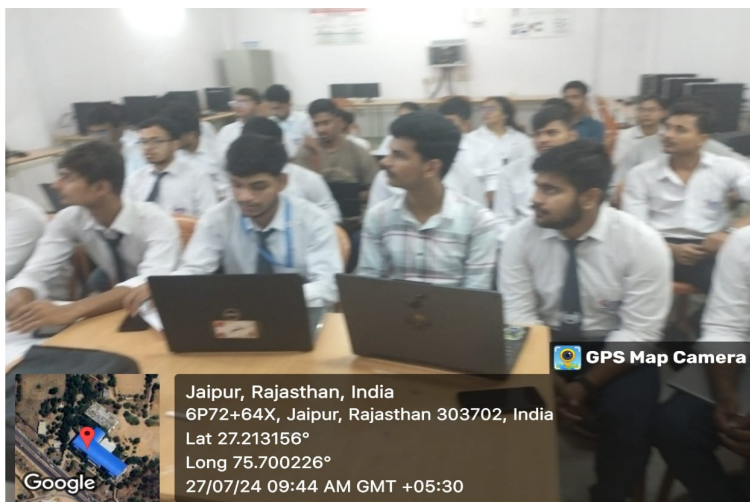
16 Past events...

Hands-On Workshop on 3D- Printing Technology

27th July 2024

IEEE Microwave Theory and Techniques Society (MTT-S) Student Branch Chapter, organized on 27th July 2024, a hands-on workshop for second-year students. The focus of the workshop was on 3D printing technology, aimed at providing students with practical experience and knowledge in this cutting-edge field.

It included Introduction to 3D Printing, Designing for 3D Printing, Implementation of 3D Printing, and Hands-On Session . The participants gained a deeper understanding of 3D printing technology, from design to implementation.



Jaipur, Rajasthan, India
6P72+64X, Jaipur, Rajasthan 303702, India
Lat 27.213156°
Long 75.700226°
27/07/24 09:44 AM GMT +05:30



The hands-on workshop was conducted by Prof. Sougata Banerjee, an expert in the field of 3D printing. Prof. Banerjee provided a comprehensive overview of 3D printing technology, covering both theoretical and practical aspects. It includes Introduction to 3D Printing, Designing for 3D Printing, Implementation of 3D Printing, and Hands-On Session.

Semiconductor Era of India:

India is at a pivotal moment as multinational companies seek to diversify their supply chains and strengthen production resilience. The country presents a compelling case as an investment destination for high-tech industries, especially in semiconductors. Already a key player in global semiconductor value chains, India has made significant strides in research, development, and design. To capitalize on this opportunity, India must further develop its semiconductor engineering workforce and create a supportive policy and regulatory framework. Consistent and reliable policies are essential for attracting and retaining investments in this sector.

Collaboration between India and the United States is crucial for achieving these goals. The U.S.-India Semiconductor Supply Chain and Innovation Partnership aims to enhance cooperation in areas such as developing microelectronics curricula, facilitating student exchanges, and advancing joint R&D initiatives. This partnership also focuses on improving business conditions and investment flows, with strong industry involvement being vital for its success.

The Indian government has approved the Semicon India program, which aims to enhance the country's semiconductor design and manufacturing capabilities, fostering innovation, job creation, and economic growth.

India has a unique opportunity to strengthen its position in the global semiconductor supply chain and improve overall supply chain resilience. Through strategic collaboration, both India and the U.S. can achieve significant benefits and advance their mutual interests in the semiconductor industry.

Er. Swati
DFT Engineer
Synapse Design

India's Semiconductor Mission

India Semiconductor Mission (ISM) is a specialized and independent Business Division within the Digital India Corporation that aims to build a vibrant semiconductor and display ecosystem to enable India's emergence as a global hub for electronics manufacturing and design.

India, acknowledging the strategic significance of semiconductors, is making concerted efforts to establish itself as a prominent player in the global market. Programs like the US\$10 billion India Semiconductor Mission, along with Digital India and Make in India, are designed to decrease reliance on imports by promoting local manufacturing and innovation.

Developments:-

Tata Electronics partners with Taiwan's PSMC to launch India's first AI-enabled semiconductor Fab in Gujarat

Tata Electronics has finalised an agreement with Taiwan's Powerchip Semiconductor Manufacturing Co. Ltd. (PSMC) to set up a state-of-the-art AI-enabled semiconductor fabrication plant in Gujarat.

India's semiconductor future: Choosing the right development model for the industry is essential

The semiconductor ecosystem is built on a vertically integrated foundation laid by a few large players, which has led to the dominance of a few companies that control hundreds of autonomous companies that...

India to get first national security semiconductor fabrication plant

India and the US have agreed to set up a joint semiconductor fabrication plant in India, which will produce chips for military hardware. The plant is expected to be operational by 2025.

22 Sep, 2024, 11:40 PM

L&T Semicon expects its chip production to start in 2 yrs; to set up unit later

L&T Semicon

products w

before sett

29 Sep, 2024

SEMI, IESA join hands to boost semiconductor ecosystem in India

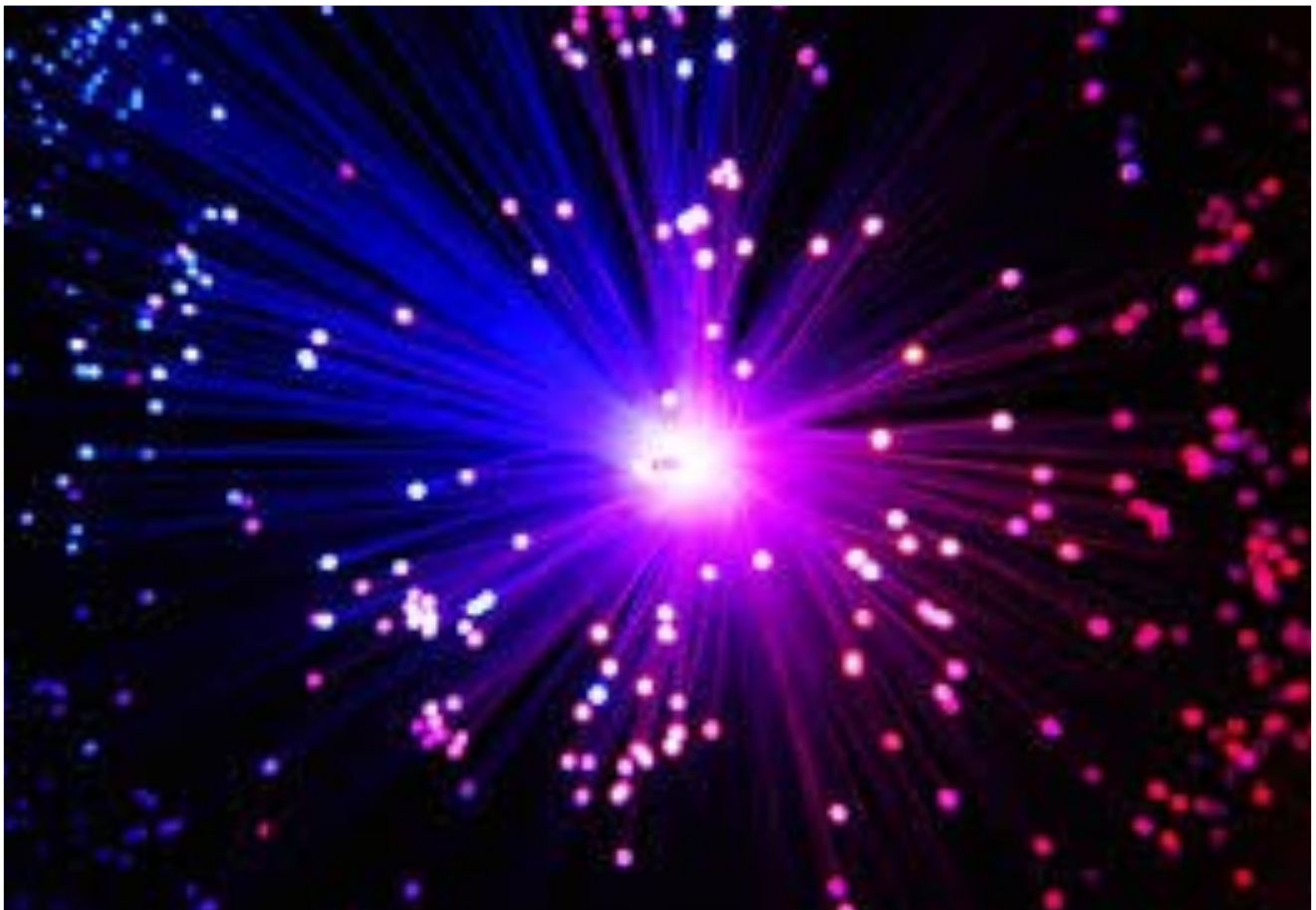
SEMI and IESA have formed a strategic partnership to enhance the semiconductor industry ecosystem in India. This collaboration aims to...

The Dawn of Photonics:

A New Era in Technology

The dawn of photonics marks a transformative phase in the realm of technology, where light becomes a central player in communication, information processing, and sensing. This emerging field is rooted in the fundamental understanding of how light behaves and interacts with matter, and its evolution has profound implications across various industries.

Photonics, at its core, involves the generation, manipulation, and detection of photons, the basic unit of light.





Dr. Rituraj Singh
Optica Ambassador
NSUT Delhi

The Future of Photonics: Innovations and Applications

The future of photonics is promising, marked by significant advancements that are set to impact various sectors, from telecommunications to healthcare. As we stand on the brink of a photonic revolution, several key trends and innovations are shaping this dynamic field. One major trend is the integration of photonics with emerging technologies. The intersection of photonics and artificial intelligence (AI) is particularly noteworthy. By leveraging the speed of light for data processing, photonic chips can enhance machine learning capabilities and handle data-intensive tasks more efficiently than traditional electronic circuits. Similarly, photonics plays a crucial role in quantum computing, where light is used to represent and process quantum information. This integration could unlock unprecedented computational power, driving innovation across numerous applications.

Advancements in materials are also pivotal to the future of photonics. Researchers are exploring new materials, such as two-dimensional substances like graphene and transition metal dichalcogenides, which can enhance the performance of photonic devices. Metamaterials, engineered to manipulate electromagnetic waves in novel ways, are leading to applications in superlenses, cloaking devices, and enhanced sensor technologies.

The trend towards miniaturization and integration of photonic components is transforming device design. Ongoing efforts to make photonic elements smaller and more efficient are crucial for applications in consumer electronics, telecommunications, and data centers. This miniaturization allows for the creation of more compact devices that can deliver high performance without significant increases in size or cost.

What is Optics?

The science of light. The study of the eye and vision. Lasers. Telescopes. Microscopes. What makes the sky blue, how rainbows form, and why stars twinkle. Manufacturing computer chips. Environmental monitoring and more every day.

OPTICA

Formerly OSA

22

Optica (formerly known as OSA), dedicated to advancing optics and photonics globally, is a society committed to promoting the generation, application, archiving, and dissemination of knowledge in this field. Established in 1916, it serves as the leading organization for scientists, engineers, business professionals, students, and anyone interested in the science of light. Through its esteemed publications, conferences, online resources, and in-person events, Optica drives discoveries, influences practical applications, and accelerates progress in scientific, technical, and educational endeavors.

Principles guide Optica:-

- Unsurpassed quality
- Forefront of Technological Change
- Inclusively Worldwide
- Champion of our Field

Optica Topical Meet – 2024 23



21 - 25 January, 2024 Estes Park, Colorado, USA

Dr. Chandra Prakash from the ECE department participated in the Optica Annual Topical Meeting held in Denver, Colorado. The meeting focused on the theme "What They Don't Teach in Your Lab."

The meeting featured a diverse group of around 70 participants from 20 different countries.



Victor Ochoa-Gutierrez
University of Glasgow, UNITED KINGDOM



Matias Paatelainen
Tampereen Yliopisto, FINLAND



Ignacio Papuccio
Instituto Balseiro, ARGENTINA



Jani Patrakka
Tampere University, FINLAND

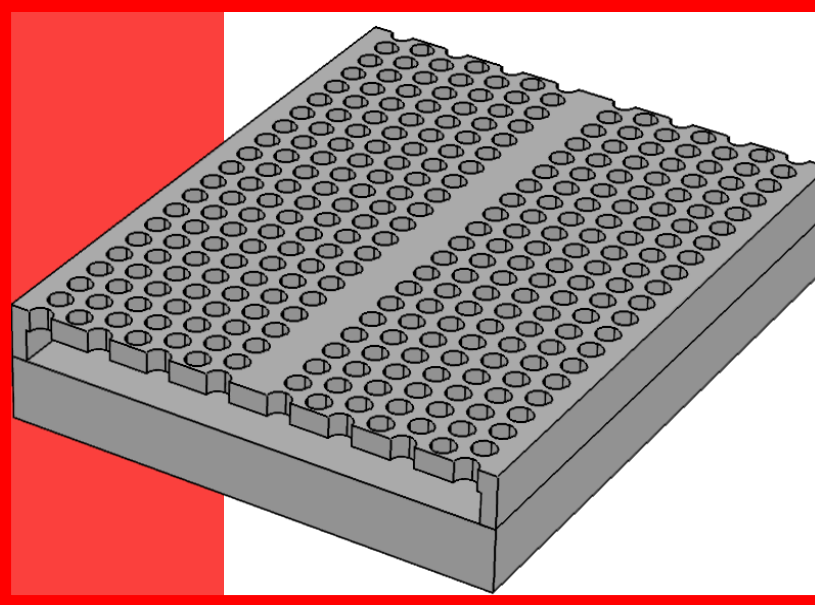


Shih Peng
National Taiwan University of Science and Technology, TAIWAN



Chandra Prakash
University of Engineering and Management Jaipur, Rajasthan, INDIA





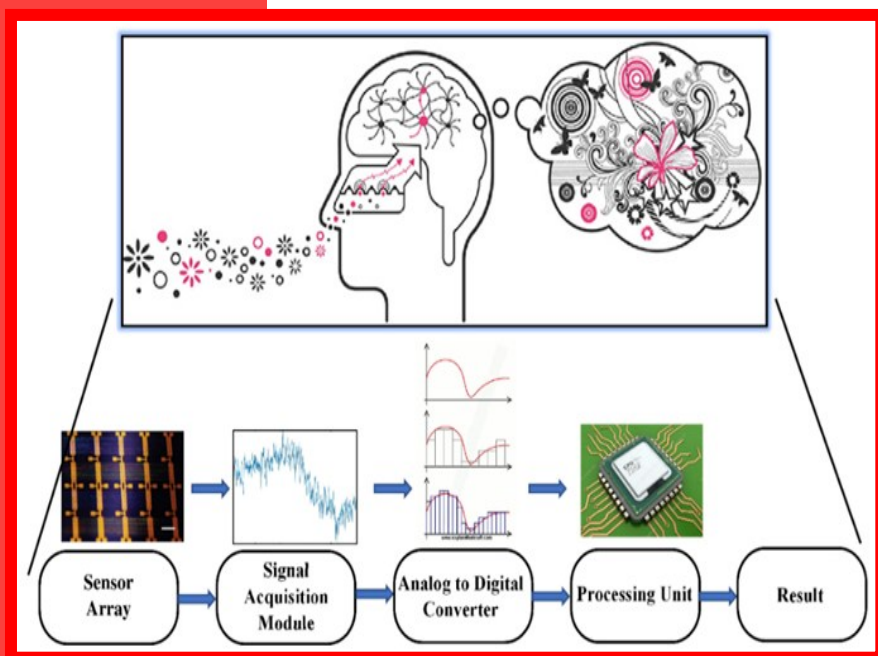
Silicon Integrated Photonics...

Dr. Chandra Prakash
Associate Professor
Dept. of ECE

Silicon photonics has consumed a significant portion of the spotlight in integrated photonics research due to its several potential in addition to the established foundry of silicon-based devices. Silicon-based devices require a very small cross-section area of the waveguide to confine the light. Thereby, silicon photonics is able to deliver small footprint devices that are highly suitable for integrated photonics. In this context photonic crystal is a new platform which enriches the silicon photonics with its versatility in designing photonic devices.

Photonic crystals (PhCs) are not natural materials but engineered by making periodic arrangements of two or more materials of different refractive indices on the wavelength scale. PhCs exhibit several unique properties like - photonic bandgap (PBG) (also termed as forbidden band in the optical transmission window), slow-light phenomenon, self-collimation of light, negative refraction, and super-prism effect, which make it a compelling platform for integrated photonics. Broadly, it can be said that Photonic crystal (PhC) materials are indeed attractive due to the existence of forbidden band(s) in their dispersion ($w-k$) diagram.

Photonic crystal (PhC) provides a higher degree of freedom than the conventional strip waveguides to manipulate the light propagation on a micro-scale dimension. The introduction of a defect in PhCs can result in a propagation band in the bandgap, and the light is allowed to propagate in the waveguide by the photonic bandgap guidance. Generally, two types of PhC designs are used in practice; one is hole type (holes of low refractive index material in a high refractive index material) and the other one is rods-type (high refractive index dielectric rod in low refractive index material) PhC. Both the designs are sensitive to the polarizations of light. The hole-type structures show bandgaps for the TE polarized lights, whereas the rod-type structures show bandgap for TM polarized light.

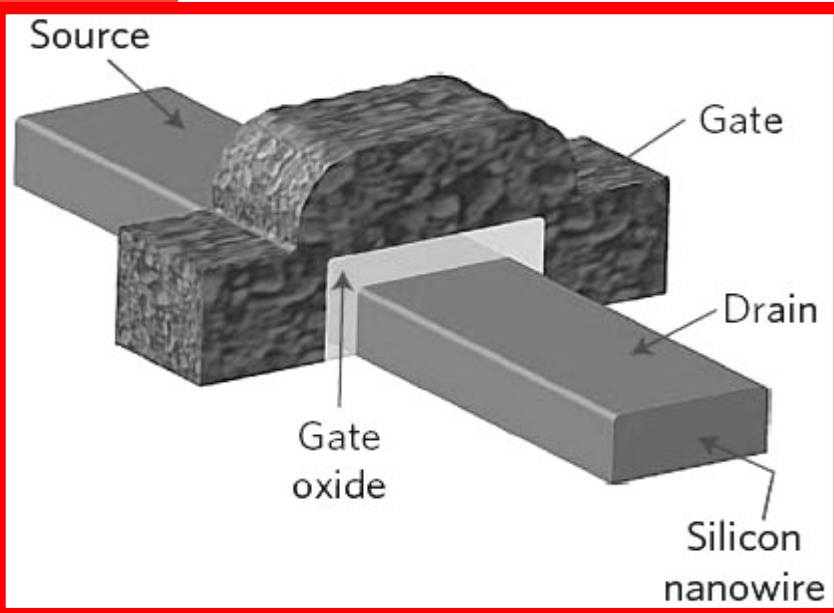


The Electronic Nose: A Modern Marvel in VOC Detection

Prof. Uttam Narendra Thakur
Assistant Professor
Dept. of ECE

An electronic nose, often referred to as an e-nose, is a sophisticated device designed to detect and identify odours and flavours. This innovative technology emulates the human olfactory system, enabling it to "smell" by detecting specific chemical compounds in the air. Over the past few decades, the development of electronic noses has gained significant momentum due to their wide range of applications in various industries, including food and beverage, healthcare, environmental monitoring, and even security. The fundamental principle behind an electronic nose is the detection and analysis of volatile organic compounds (VOCs). These are the chemical molecules responsible for the odours we perceive. The e-nose typically consists of an array of sensors that respond to different types of VOCs. When exposed to a particular scent, each sensor in the array produces a unique signal pattern based on the chemical composition of the odour. This pattern is then processed and compared to a database of known odours using advanced algorithms, allowing the device to identify or classify the scent.

In healthcare, electronic noses are being explored as non-invasive diagnostic tools. Certain diseases and medical conditions produce distinctive odors due to the presence of specific VOCs in a patient's breath, sweat, or urine. E-noses have shown potential in detecting conditions such as diabetes, lung cancer, and infections by analysing these odours. This could revolutionize the way diseases are diagnosed, offering a quicker, less invasive alternative to traditional methods.

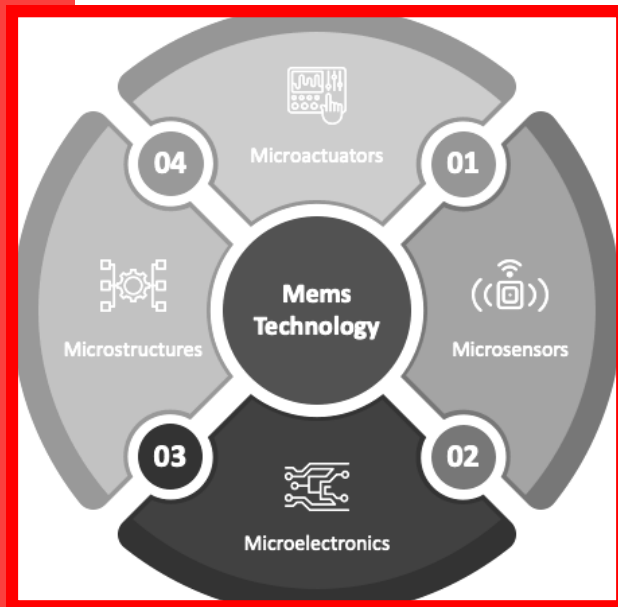


The Junctionless Transistor (JLT): A Paradigm in VLSI

Dr. Angshuman Khan
Associate Professor
Dept. of ECE

The junctionless transistor (JLT) technology is a big step forward for VLSI (Very Large-Scale Integration). They facilitate the construction and size scaling of chips and can improve performance. Most transistors use junctions made by adding different kinds of atoms to silicon. The junctions get very close when we make these transistors smaller, which is hard to do because we must be very exact with the doping. Junctionless transistors, which don't need these junctions, are an excellent way to solve this problem. The concept of JLT was first proposed by J. E. Lilienfeld in the 1920s [1]. Because these transistors don't have PN junctions, they don't need complicated fabrication steps. In order to make JLTs, the channel needs to be very thin (nanometer-scale) and highly doped. Due to technological limitations, the first JLT took more than 80 years to fabricate. JLTs are available in two basic variants: depletion-based and tunnel-based. Depletion-based transistors exhibit a change in the size of an internal region in response to the gate voltage, influencing the current flow. Tunnel-based transistors regulate the current flow by the process of band-to-band tunneling. The number of gates also determines the type of JLT. There is only one gate at the top of a single-gate JLT to control the current. A double-gate JLT has the top gate and a second gate (total of two) below the channel.

JLTs face challenges. Making sure the doping is even throughout the channel is crucial but tricky, affecting how well the device works. It's also essential to control the threshold voltage precisely for it to work reliably. Even with these issues, JLTs hold much promise for VLSI technology. They could bring benefits like being more accessible to fabrication, scaling well, and performing better. As technology gets better and chips get smaller, junctionless designs might play a significant role in how semiconductors are made in the future.



MEMS: Micro Electromechanical Systems

Rohit Kumar Shaw

(Student)

M. Tech (Microelectronics & VLSI)

Dept. of ECE, UEMJ

Micro Electromechanical Systems (MEMS) represent a revolutionary convergence of mechanical and electrical engineering, offering unparalleled opportunities in miniaturization and integration. It integrates mechanical elements, sensors, actuators, and electronics on a common silicon substrate through micro fabrication technology. The ability to merge these diverse components into a single chip has paved the way for groundbreaking applications in various fields, including medical devices, automotive systems, telecommunications, and consumer electronics.

The production of MEMS devices involves sophisticated micro fabrication processes similar to those used in the semiconductor industries. Techniques such as bulk micromachining involve etching silicon wafers to create microstructures, while surface micromachining builds layers of material to form intricate patterns on the substrate. Lithography is used to define fine patterns, and deposition and etching processes further refine the structures. These methods collectively enable the creation of highly functional and compact MEMS devices.

The foundational aspects of MEMS lie in the intricate design and function of microelectronics, micro sensors, micro-actuators, and microstructures. Micro sensors detect environmental changes and convert them into electrical signals, while micro-actuators use these signals to produce mechanical motion.

Microstructures, comprising miniature mechanical elements such as beams and gears, provide the physical basis for these functions.

MEMS-based sensors and actuators are crucial in the development of implantable medical devices. For example, MEMS pressure sensors are used in cardiac monitors to measure blood pressure and flow. MEMS sensors can monitor various physiological parameters, such as glucose levels, body temperature, and respiratory rate.

Research Activities:

28

Publications :-				
2024				
SCI/SCIE	SCOPUS	Conference	Patents	Total
5	3	0	0	8
2023				
SCI/SCIE	SCOPUS	Conference	Patents	Total
8	2	10	17	37

Projects:

Project name	PI	Co-PI	Grant
Artistry Meets Engineering: Precision Hand-writing Replication Using AI Integrated Computer Numerical Control (CNC) Technology	Prof Sayak Pramanik	Prof Vishal Kumar Pandey	136000/-
Design of compact reconfigurable antenna using quantum genetic algorithm for the IOT devices	Dr. Prashant Ranjan	Prof Surajit Sur, Dr. Chandra Prakash	30000/-
Passive Metamaterial based Rectennas for Wi-Fi band energy harvesting using machine learning in wireless Ad-hoc sensor networks	Prof Surajit Sur	Dr. Prashant Ranjan	100000/-
Design and development of an AI based face detection system for attendance showing real time data monitoring and dashboard (AI-Based attendance system)	Dr. Prashant Ranjan	Mr. Subhranil Baul, Mr. Shashank Rai, Mr. Suman Maity	50000/-

Awards and Achievements:-

29

Dr. Vishal Kumar Pandey has invited as session chair at the national conference NMIC-2024, organized by ISVE, Ranchi.

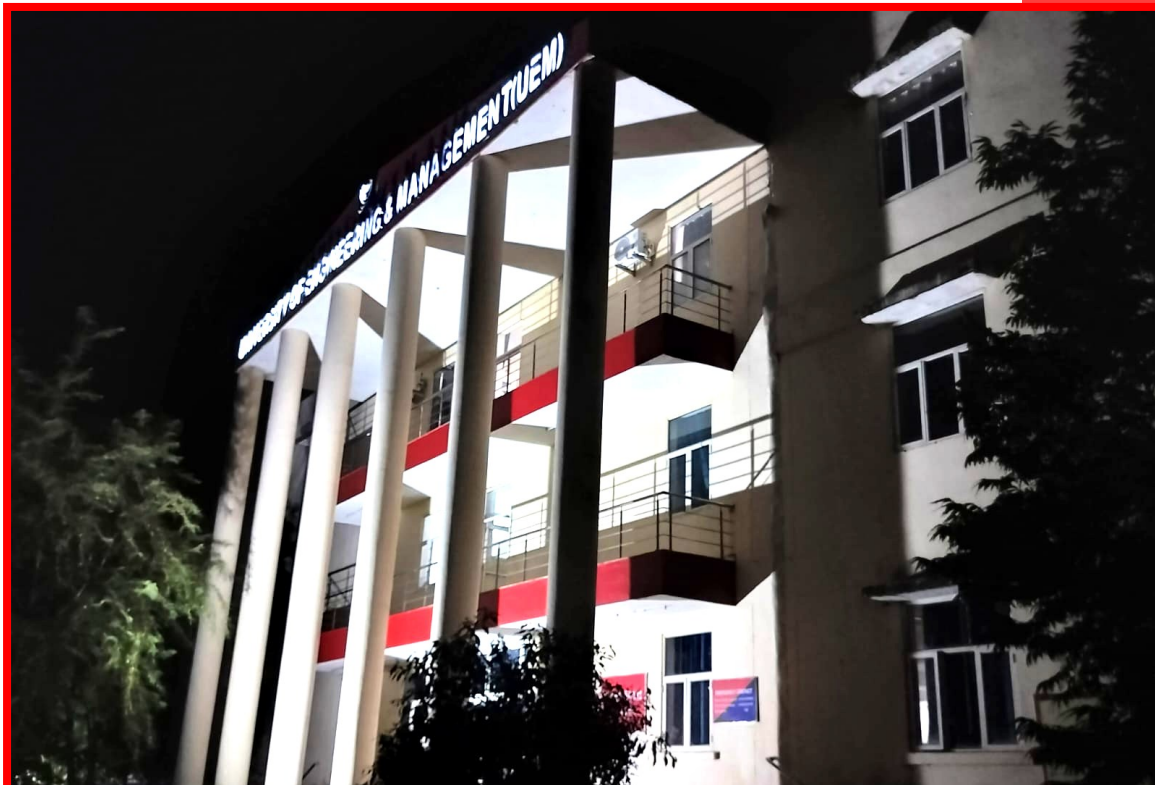


Student's Achievements:-



- Our Student Rohit Kumar Shaw has achieved 2nd position in ICAhte-2024 Conference.
- Our student Rahul Solanki has cleared Gate 2024 in his very first attempt.





On behalf of the Editorial Board, I feel both proud and honored to introduce magazine of ECE department . Launching this new magazine would not have been possible without the great and much appreciated contributions from the editorial and technical team. The robust intellectual support and well-timed contribution of content writers deserve special appreciatory applause. Our team expects similar sort of sincere dedication from the writers in near future. The magazine wishes to serve as a forum for showcasing and acknowledging the achievements of department. The emergence of a new magazine comes from a long process, hence, all essential steps to make it a high caliber scientific publication were taken. We are relying on the alliance of all our writers, editors, and contributors to make it up to date, vibrant and relevant publication. We hope you will enjoy reading our first issue. We invite you to submit your best articles for publication. We would like to extend our heartfelt gratitude to the department, UEM family, professors, and students for this support. Our team looks forward to continued dedication from our writers in the future.



Dr. Chandra Prakash
(Editor)

Contact Us

Department of ECE

University of Engineering and Management (UEM), Jaipur,
Rajasthan.

<https://uemjece.wixsite.com/dept>