

# MEENAKSHI SUNDARARAJAN ENGINEERING COLLEGE

(An Autonomous Institution)



# TECHSPECTRA



**FEB 2025**

@msec\_iotclub\_nodenova

# NOTE OF GRATITUDE



We express our heartfelt gratitude to our esteemed Secretary, Mr. N. Sreekanth, our respected Principal, Dr. S. V. Saravanan, and the visionary Head of the Electronics and Communication Engineering Department, Mrs. Siji Sivanandan, for their unwavering support and dedication to fostering innovation and excellence beyond academics at our college.

Their encouragement has empowered us to explore our potential, nurturing us into confident leaders, critical thinkers, and passionate innovators. Through their guidance, we have embraced new challenges, expanded our horizons, and gained invaluable experiences that inspire and shape our future.

We also thank all the faculty members of Electronics and Communication department. Their belief in our abilities continues to drive us forward, instilling confidence and ambition to make a meaningful impact.

**Thank you for being the pillars of our journey and for supporting us every step of the way!**







# CLUB ANNIVERSARY

It's been an incredible year since our club's inception, and we're thrilled to celebrate this milestone with all of you!

## Achievements and Highlights

**Successful Events:** We've organized numerous workshops, seminars, and hackathons, providing our members with hands-on experience in IoT technologies

**Project Showcase:** Our members have developed innovative IoT projects, demonstrating their creativity and technical expertise.

**Collaborations and Partnerships:** We've established connections with industry experts and organizations, opening doors for our members to explore new opportunities.



### First office bearers of the club

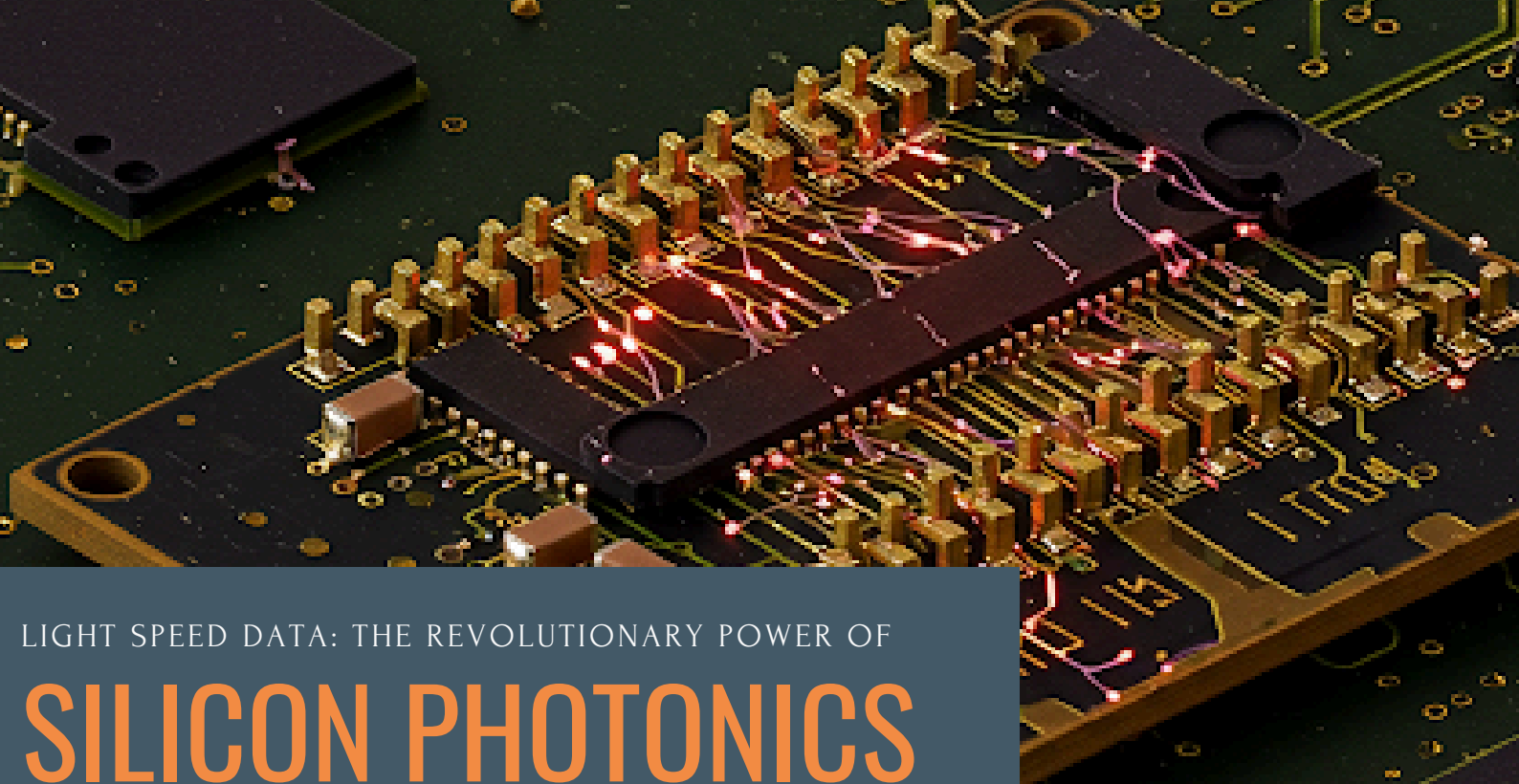
President: Rohan Steven B IV ECE B

Vice president: Harini S R IV ECE A

Secretary: Nivedha M.P IV ECE B

Treasurer: Hareesh Ram IV ECE A

Joint Secretary: Kavya Catherine J  
III ECE A



LIGHT SPEED DATA: THE REVOLUTIONARY POWER OF

# SILICON PHOTONICS

BY KAVYA CATHERINE. J ( 3 - A)

"Imagine data traveling at the speed of light, not just across continents, but within your devices. That's the promise of silicon photonics, a groundbreaking technology that's transforming how we process and transmit information. Instead of traditional electrical signals, silicon photonics uses light to carry data through tiny optical circuits etched onto silicon chips. This offers several incredible advantages:

**Blazing Fast Speeds:** Light travels much faster than electricity, leading to significantly increased data transfer rates.

**Reduced Power Consumption:** Optical signals require less energy, making devices more efficient.

**Smaller and More Integrated Devices:** Silicon photonics allows for compact and highly integrated optical components.

## Where will we see this technology?

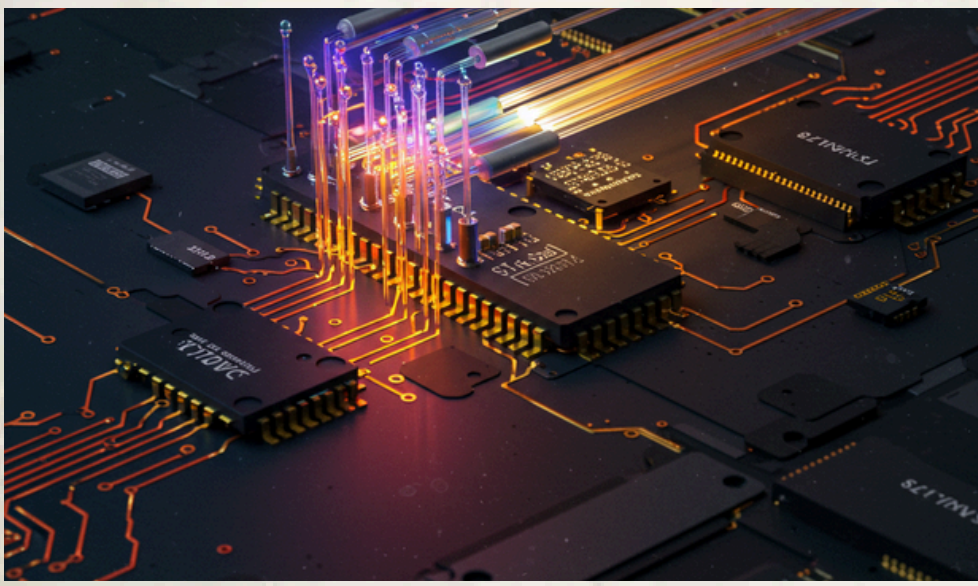
**Data Centers:** Supercharging data transfer for cloud computing and AI.

**Telecommunications:** Enabling faster and more reliable internet connections.

**Medical Devices:** Creating advanced sensors for diagnostics and treatments.

**Autonomous Vehicles:** Enhancing sensor capabilities for safer navigation

Silicon photonics is poised to revolutionize industries, bringing us closer to a future of seamless and lightning-fast communication



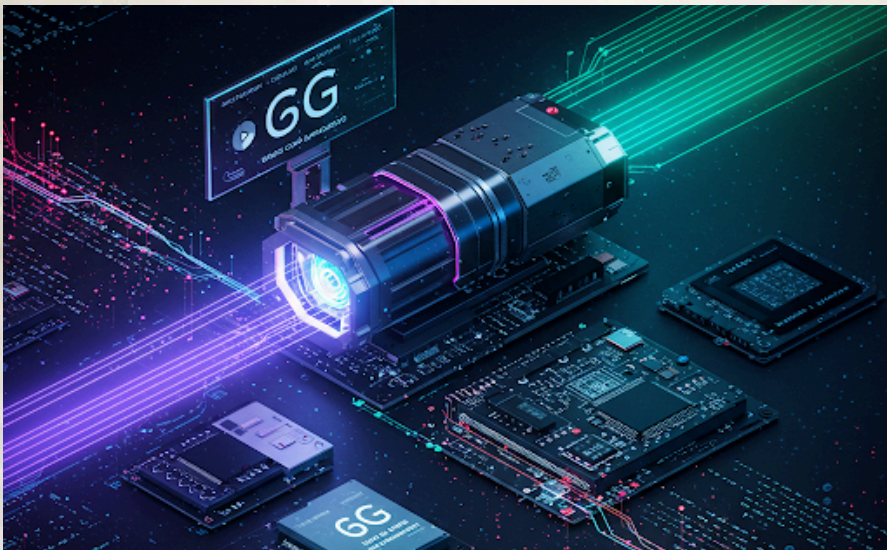




# Laser Communication Systems: Revolutionizing Data Transmission

BY AKASH ( 2 - A )

Laser communication systems, also known as free-space optical communication (FSO), are emerging as one of the most innovative technologies in the field of communication. These systems utilize lasers to transmit data through the air, offering several significant advantages over traditional radio frequency (RF) communication methods. Laser communication systems provide high-speed, secure, and interference-resistant communication, which is crucial for modern applications that require large bandwidth, low latency, and secure data transfer.



The advent of 6G networks is expected to further revolutionize communication systems, with laser communication playing a central role. As the demand for faster, more reliable, and more secure communication systems continues to grow, laser communication technologies are poised to meet these needs. With 6G expected to enable ultra-low latency, massive connectivity, and unprecedented data speeds, laser communication will likely become a cornerstone of next-generation global communication infrastructure.

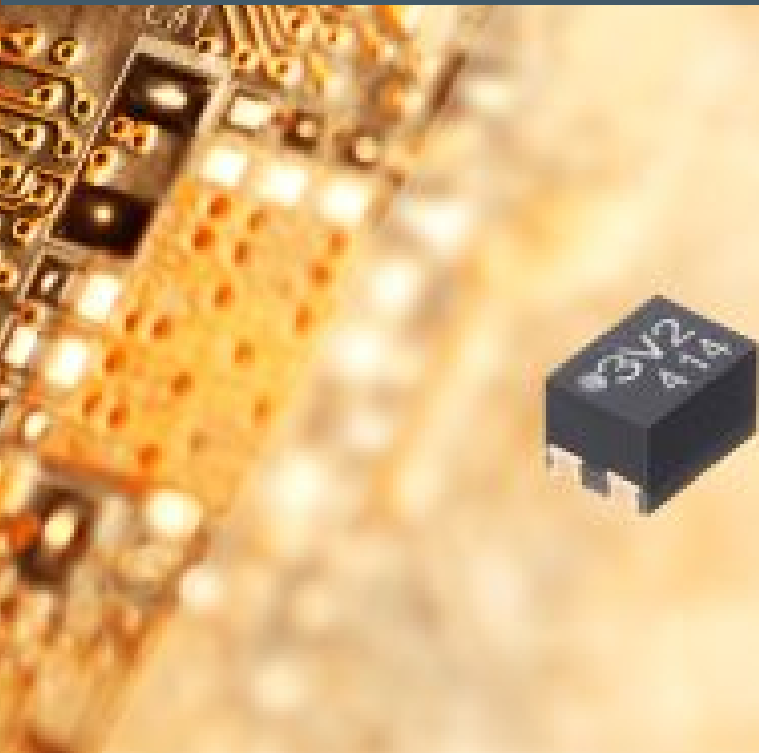
## High-Speed Data Transmission

ONE OF THE MOST REMARKABLE FEATURES OF LASER COMMUNICATION IS ITS ABILITY TO ACHIEVE EXTREMELY HIGH DATA TRANSMISSION RATES. THESE SYSTEMS CAN REACH SPEEDS OF UP TO 100 GIGABITS PER SECOND, FAR EXCEEDING THE CAPABILITIES OF TRADITIONAL RF SYSTEMS. THIS MAKES THEM IDEAL FOR APPLICATIONS THAT REQUIRE THE TRANSFER OF LARGE AMOUNTS OF DATA, SUCH AS SATELLITE COMMUNICATIONS, SPACE EXPLORATION, AND MILITARY COMMUNICATIONS. THE HIGH-SPEED NATURE OF LASER COMMUNICATION ENSURES THAT DATA CAN BE TRANSFERRED QUICKLY, REDUCING DELAYS AND ENHANCING SYSTEM PERFORMANCE.



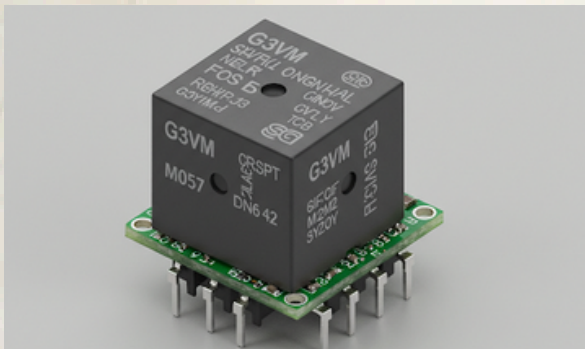
# High temperature relay permits denser board designs

BY SUDHARSAN NAYIK. V ( 2 - B )



Omron Electronic Components Europe has launched the G3VM S-VSON(L) MOS FET relay, designed for use in semiconductor test equipment, communication equipment, and test and measurement equipment. The relay is capable of operating at ambient temperatures of up to 125°C, improving on previous iterations which were limited to ambient temperatures of 110°C. As a MOS FET relay, the device is voltage-driven, removing the need for input side resistor selection, while freeing up additional board space.

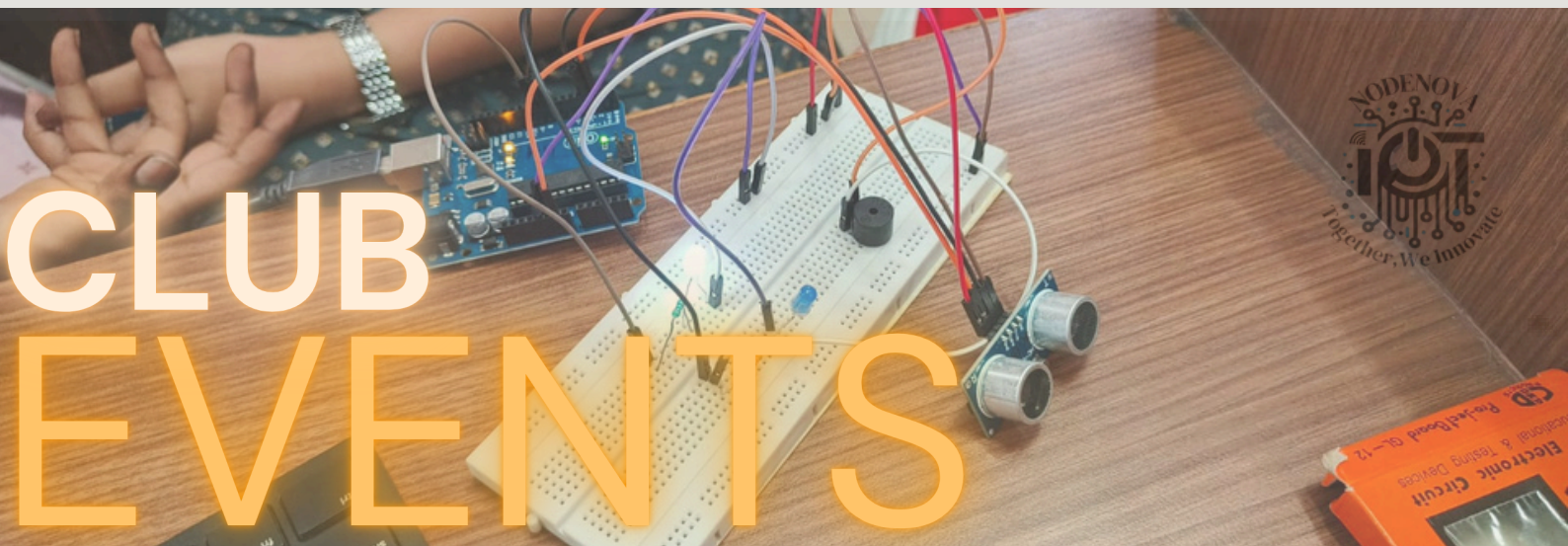
As applications become smaller and more complex, designers must attempt to fit more components onto each board. However, each electronic component generates heat in operation, which can compromise efficiency and reliability. The G3VM relays improved temperature performance permits the design of more densely packed boards. In practice, for testing applications this can allow more tests to be carried out simultaneously, and in a shorter amount of time.



The temperature performance also facilitates smaller application designs, as the G3VM can withstand higher amounts of heat dissipation without losing efficiency. The relay weighs just 0.1 g, and measures 2.0 mm (L) x 1.45 mm (D) x 1.3 mm (H). The G3VM S-VSON(L) is available in four variants with input forward currents ranging from 0.54 mA up to 6.6 mA, and continuous load current ranging from 0.4 A to 1.5 A.







# CLUB EVENTS

## FRENZY FIX CHALLENGE

On February 20th, 2025, the Nodenova IoT Club organized the "Frenzy Fix" challenge at the Communication Lab, designed to test participants' technical skills and problem-solving abilities. The event included hands-on troubleshooting tasks and various technical challenges, catering to both beginners and experts in IoT and electronics.

Participants enjoyed the engaging experience, appreciating the opportunity to innovate and collaborate in a competitive setting. The event highlighted the importance of practical skills and innovation in the tech field, leaving attendees with valuable insights and new learning experiences.



## POSTER PRESENTATION 2025

On February 27th, 2025, the Nodenova IoT Club and Renewables Club hosted the "Poster Presentation 2025" event at the ECE Seminar Hall, providing a platform for participants to showcase innovative projects and research in IoT and renewable energy. The competition featured visually impactful posters highlighting concepts, methodologies, and the potential impact of the work.

The event fostered community engagement, allowing attendees to interact with tech enthusiasts and industry experts. Participants appreciated the opportunity to bring their ideas to life and collaborate on shaping the future of technology and sustainability, with the event successfully emphasizing the importance of innovation and sustainability in the tech industry.



# ACHIEVEMENTS

## Celebrating Outstanding Achievements of Our ECE Students!

**5G Technology Event:** Our students emerged victorious in the highly competitive 5G Technology Event, demonstrating their exceptional understanding and innovation in cutting-edge technology. Their dedication and expertise in this rapidly evolving field earned them this prestigious win.



**Prof. KRS Innovation Challenges:** Our students participated in the Prof. KRS Innovation Challenges, where they presented groundbreaking ideas and solutions. Their innovative spirit was recognized, and they secured top positions, further cementing their place as future leaders in technology and innovation.



**HACKINTYM'24:** The ECE department's brightest minds showcased their coding and problem-solving skills in HACKINTYM'24, bringing home a well-deserved victory. Their creativity and teamwork proved to be the perfect formula for success.





# ACHIEVEMENTS

## Celebrating Outstanding Achievements of Our ECE Students!



The ECE girls have triumphed in the overall sports competition, showcasing exceptional skill and teamwork. Their dedication and hard work paid off, earning them the top position in multiple events. From athletics to team sports, they displayed unmatched determination and sportsmanship. This victory is a testament to their commitment to excellence and passion for sports. The achievement not only reflects their individual abilities but also their collective spirit and support for one another.



The ECE boys have emerged as the overall champions in the sports competition, demonstrating impressive strength and strategy. Their performance in both individual and team events was nothing short of outstanding. With a strong sense of unity, they excelled in various disciplines, proving their versatility and athleticism. The victory highlights their relentless training and competitive spirit. This success marks a proud moment for the ECE boys, who have set a high standard for future sports events.



The ECE students took center stage in Euphoria 2K24, marking a historic moment in our college's cultural history. This was the very first time our college organized a dedicated cultural fest, and the ECE department made sure to make it unforgettable. From dance performances to drama, music to creative arts, the ECE students displayed an incredible range of talent, each event showcasing their passion, dedication, and creativity. Their hard work paid off as they clinched the coveted Overall Championship in cultural events.

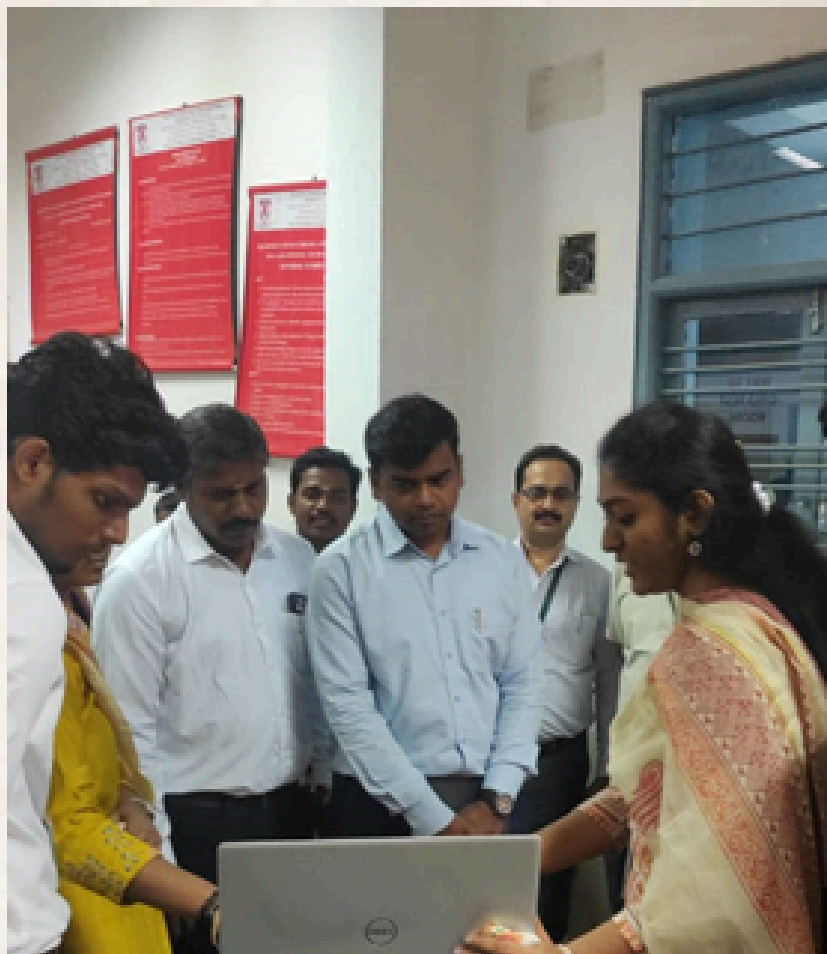
# SOLUTIONS FOR TOMORROW: A PROJECT SHOWCASE



## Visiting Company: SIEMENS

The Nodenova IoT Club presented their long-term projects to Siemens experts on 7th February 2025. Siemens provided valuable feedback on scalability, security, and collaboration opportunities. This presentation marked a significant milestone for the club, offering valuable industry insights and recognition. It also strengthened the students' connections with the professional tech community.

We extend our heartfelt thanks to our Head of Department (HoD) for providing valuable opportunities and supporting our growth throughout this project. Their guidance and encouragement were instrumental in making this presentation possible. We also express our gratitude to the departmental staff for their unwavering support and assistance, which helped bring our ideas to fruition. Their contributions played a vital role in the success of this initiative.







✦ SPEAKER:

*Mr. Jayachandar Punniyakotti*



The ECE Department hosted an inspiring **Alumni Talk** with **Mr. Jayachandar Punniyakotti**, an **Electronic Design Engineer at Aerolyt** and an alumni of our college. He shared valuable insights from his career in electronic design, discussing industry challenges, the importance of problem-solving, and the need for continuous learning and innovation in the field.

Mr. Punniyakotti emphasized how students can apply theoretical knowledge to real-world scenarios and the significance of teamwork in driving technological advancements. The event was highly engaging, with students actively participating in discussions and asking questions. Mr. Punniyakotti's talk motivated students to pursue excellence in their studies and future careers. The Alumni Talk successfully connected current students with an experienced professional, offering them a glimpse into the opportunities in the electronics industry. We are grateful to Mr. Punniyakotti for sharing his expertise and inspiring the next generation of engineers.



# VALUE ADDED COURSE

## BIOLOGY FOR ENGINEERS

FEB 2025

### Guest Lectures

The course featured expert lectures from renowned professionals:

Dr. Pramod Jaiswal: A Senior Cardiologist at SIMS Hospital, with expertise in applying biological principles to cardiac medicine.

Dr. Senthilkumar T: A Neuro Anesthetist at SIMS Hospital, focusing on the intersection of biology and anesthesia in the nervous system.

Dr. Nishanth Sampath: A Senior Neurophysiologist at SIMS Hospital, specializing in the biological functions of the nervous system.

Dr. K. Suresh Babu: Director & Senior Consultant at the Institute of Neuroscience, SIMS Hospital, with a broad expertise in neuroscience and its biological aspects.

Dr. D. Karthikeyan: HOD of the Institute of Radiology at SIMS Hospital, with a focus on biological applications in radiology.

Dr. Jayanivas J: A Senior Nephrologist at SIMS Hospital, specializing in the biological aspects of kidney function and disease.

Dr. S. Saranya: Assistant Professor in the Department of BME at SSN College of Engineering, Chennai, with expertise in biomedical engineering and the integration of biology and engineering.

## WHOLE TOPIC

### TOPIC 1

Biomaterials, natural or synthetic, interact with biological systems and are crucial in medical applications like implants, prosthetics, and tissue engineering.

### TOPIC 2

Biomedical devices have transformed healthcare by improving diagnosis, treatment, and patient outcomes.

### TOPIC 3

Genetic engineering allows scientists to modify DNA for desired traits, impacting agriculture, medicine, and industry.





# SPORTS

We are thrilled to announce the outstanding performances in the recent sports competition held in our college. A big congratulations to all the participants for their hard work and dedication. Here are the winners and runners-up:



## **Chess:**

Girls-Winners

Boys-Winners

## **Carrom:**

Girls-Winners

Boys-Runner-up

## **Table Tennis:**

Girls-Winners

Boys-Winners

## **Throwball:**

Girls-Winners

Boys -Runner-up

## **Basketball:**

Girls-Winners



It was an exciting competition, and the sportsmanship displayed by both teams were commendable. We celebrate the victories and achievements of all participants. Congratulations again to the winners, and thank you to everyone for making this event a success!



**A big thank you to all for your amazing efforts and sportsmanship!**



"Champions keep playing until they get it right."

# BACKROOM CREW

HEAD OF DEPARTMENT -

Mrs. Siji Sivanandan

STAFF IN-CHARGE - Dr. M. Rajendren

(Assistant Professor - ECE)

Design team:

- Sudharsan Nayik. V - Joint treasurer ( 2nd Year ECE )
- Santhosh. S - Executive Member ( 2nd Year ECE )

Data team:

- Rajadurai. S - Executive Member ( 2nd Year ECE )
- Dhivya. S. K - Executive Member ( 2nd Year ECE )

Content writing:

- Harini. M - Secretary ( 3rd Year ECE )
- Akash - Joint secretary ( 2nd Year ECE )

Publication and Documentation

- Kavya Catherine J - President ( 3rd Year ECE )



Mark your calendars for next  
month's reveal

# SEE YOU SOON

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