CONSOLIDATED REPORT 2026

1. IEEE SB MBCET – Annual General Meeting 2026

The IEEE Student Branch MBCET held its Annual General Meeting (AGM) on 13 February 2026 at Senatus Hall, Mar Baselios College of Engineering and Technology, Trivandrum. Forty-two members attended, marking the close of one term and the start of another. Pretty Maria Leslie opened the meeting with a warm welcome, establishing a positive tone. Bhadhra G. Nair then recited the IEEE Code of Ethics, reinforcing professionalism among attendees. Outgoing Chairperson Sreya Krishnan reflected on the 2025–2026 term, highlighting key achievements and challenges. A detailed overview of the student branch's activities was then presented through the Annual Report by Anagha K Radhakrishnan. Chris Thomas Abraham followed with the Financial Report, followed by the certificate distribution and special appreciations. Principal, Dr. S. Viswanatha Rao, delivered an inspiring address, emphasizing innovation, leadership, and continuous learning, and encouraging all members. Next was the announcement of the new Executive Committee. The new Chairperson Afrin Shamnath outlined her vision for the term. Dr. M. J. Jayashree and IEEE Branch Counsellor Dr. Lani Rachel Mathew offered felicitations, providing guidance and encouragement to the new team and reinforcing the value of commitment and teamwork. Outgoing Vice-Chair, Chandrasekhar S Nair concluded the AGM with a vote of thanks, expressing gratitude to all contributors. The meeting marked a smooth leadership transition and laid a strong foundation for future growth and innovation within the IEEE SB MBCET community.

2. TINK-HER-HACK 4.0 (MBCET Edition) - IEEE WIE with Catalyst IEDC

Tink-Her-Hack 4.0 (MBCET Edition), an 18-hour overnight women-only hackathon, was held on 20 and 21 February 2026 at Mar Baselios College of Engineering and Technology, Trivandrum. The event was organized by Catalyst IEDC with support from TinkerHub, IEEE Women in Engineering (WIE) Society, and IEEE SB MBCET. The hackathon commenced at 5:00 PM and continued overnight until 10:30 AM the following day, fostering an environment conducive to innovation and teamwork. 43 female students attended the session. Tink-Her-Hack 4.0 sought to address gender disparities in technology by encouraging greater participation of women in technical fields. Participants from multiple institutions formed diverse teams, which facilitated the exchange of ideas and collaborative problem-solving. The mentorship-driven model further supported participants, with mentors available throughout the event to help overcome challenges and refine project ideas. The hackathon concluded with participants presenting their innovative projects to a panel of judges, who evaluated submissions based on creativity, technical proficiency, and impact.

TINKHER HACK WINNERS

1st Prize : Team Codilla (Arpitha P Ajay & Aiswarya V S, S4 CS)

College: LBS Institute of Technology for Women

2nd Prize: Code_blooded_121

Alena Thankamullas (S2 CS) & Elizabeth Biju (S2 CT)

College: Mar Baselios College of Engineering & Technology

3. Inclusive Innovation: Enabling Access: **IEEE EMBS**

The event titled *"Inclusive Innovation: Enabling Access" was held on 27* February 2026 at Shannon Hall, Mar Baselios College of Engineering and Technology, Trivandrum. Organized by the IEEE Engineering in Medicine and Biology Society (EMBS) of MBCET and the Assistive Technology Group, MBCET, with support from the National Institute of Speech and Hearing (NISH), the session aimed to raise awareness of assistive technologies and promote understanding of various disabilities.

Registration for the event was open from 26 March 2026 at 7:00 PM to 27 March 2026 at 10:00 AM. A total of 106 participants registered, comprising 11 IEEE members and 95 non-members, indicating the event's appeal to a diverse audience beyond the IEEE community.

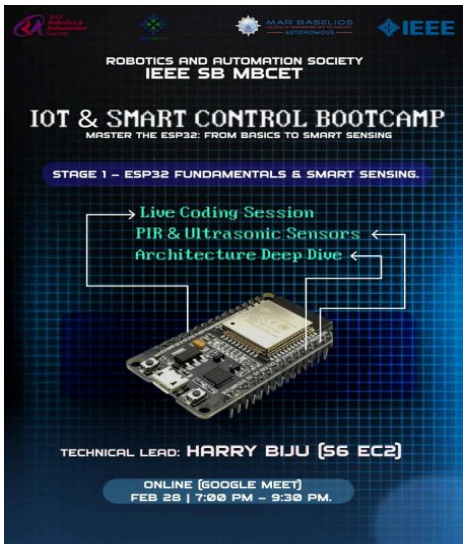
Mr. Deepu Raj and Mr. Muhammed Janish from NISH led the session, sharing their expertise and practical insights. They explained how assistive technology improves accessibility, communication, and independence for individuals with disabilities. They also discussed various types of disabilities and underscored the need to sensitize future engineers and technologists to promote inclusivity in innovation.

The session was conducted in an interactive format, encouraging active engagement and reflection on the societal impact of technology. Participants gained a deeper understanding of the challenges encountered by individuals with disabilities and explored how engineers can address these issues through innovative solutions. The event promoted the use of assistive technologies and fostered inclusive thinking among students. It concluded with enthusiastic participation and substantive knowledge exchange, reinforcing the significance of accessibility-driven innovation in contemporary society.

Student coordinators: **Aaron S. Varghese** (S4 ECE), **Malavika A.** (S6 CSE)

Faculty coordinators: **Dr. Lani Rachel Mathew, Ms. Amritha B.J.** (ECE)

4. Session 1: IoT and Smart Control Bootcamp Using ESP32: IEEE RAS



The IEEE Robotics and Automation Society Student Branch at MBCET initiated the IoT and Smart Control Bootcamp Using ESP32 with its first session on 28 February 2026. The session was conducted online via Google Meet from 7:00 PM to 9:30 PM. Mr. Harry Biju (S6 EC2) served as the technical speaker and facilitator. The program was coordinated by Mr. Sunny Abraham Mathew (S4 EL) and Mr. Shiras SN, Assistant Professor, ECED

This session marked the beginning of a three-part bootcamp series focused on the Internet of Things (IoT) and smart control systems. The content was structured to provide foundational knowledge and to present complex IoT concepts in an accessible manner, enabling participants from diverse backgrounds to engage with practical automation applications.

A total of 96 participants registered for the event, with 59 attending the session. Among the attendees, 4 were IEEE members, and 55 were non-IEEE members. Registration was open on 25 February 2026 from 7:30 PM to 10:20 PM. The session utilized a hands-on, interactive format, featuring live coding demonstrations with the ESP32 microcontroller. The speaker systematically explained each step, emphasizing practical aspects of IoT system development. Key topics included the operation of PIR and ultrasonic sensors and their applications in smart automation and architecture, which clarified the interaction among IoT system components. Real-time simulations visually demonstrated automation scenarios and the functioning of sensors and controllers in practical settings.

Experiential learning was prioritized, encouraging participants to move beyond theoretical concepts and engage in practical discovery. Simulations and live demonstrations contributed to an engaging and effective learning environment.

In summary, the opening session was informative and established a strong foundation for the remainder of the bootcamp. Participants gained a deeper understanding of IoT and smart systems, fostering continued interest in automation and embedded technology.

5. Field Visit to Precision Fabrication Laboratory and Biosensors Laboratory, SCTIMST: IEEE EMBS with Catalyst IEDC

A field visit to the *Precision Fabrication Laboratory* and *Biosensors Laboratory* at the Bio-Medical Technology (BMT) Wing of Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Thiruvananthapuram, took place on 25 February 2026 from 1:30 PM to 3:30 PM. The IEEE Engineering in Medicine and Biology Society (EMBS) of Mar Baselios College of Engineering and Technology (MBCET) organized the event in collaboration with the Institution's Innovation Council (IIC), Catalyst Innovation and Entrepreneurship Development Centre (IEDC), and the Biomedical Research Group (ECED). The program involved 22 students representing various academic backgrounds, including S4 Biomedical Minor Basket, S6 Electronics and Communication Engineering, and M2 (M.Tech IoT and Sensory Systems). Ms. Teena Rajan and Dr. Lani Rachel Mathew coordinated the event, ensuring a structured and informative experience.

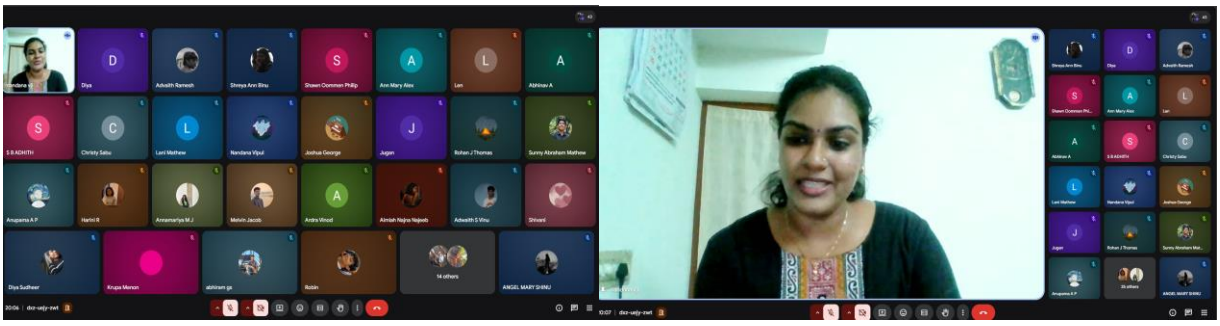
Dr. Jithin Krishnan, Engineer D from the Division of Medical Instrumentation, and Mr. Vinod Kumar V, Engineer G from the Division of Precision Fabrication, led the session. Their guidance provided participants with exposure to practical biomedical engineering practices and advanced laboratory operations.

At the Precision Fabrication Laboratory, participants learned about the workflow for converting conceptual designs into functional prototypes and deployable medical hardware. The session emphasized the necessity of strict dimensional accuracy and compliance with medical-grade standards, demonstrating how engineering precision influences clinical outcomes.The visit to the Biosensors Laboratory provided insight into contemporary biosensing technologies used in healthcare diagnostics and patient monitoring systems. Participants examined how interdisciplinary approaches integrating electronics, biology, and materials science advance biosensor development.

6. “Engineering Your Own Path: Career and Confidence” – IEEE WIE with ISTE SHE

The session titled *“Engineering Your Own Path: Career and Confidence”* was held on 12 March 2026 from 7:30 PM to 8:15 PM via Google Meet. Organized collaboratively by the IEEE Women in Engineering (WIE) Society and ISTE SHE, the event aimed to offer students insights into career development, confidence-building, and the transition from academia to the professional world.

The event attracted 100 registrations, with 54 participants attending the session. Registration was open from 3 March 2026 to 5 March 2026, facilitating broad outreach and participation. Ms. Nandana Radhika, Assistant System Analyst at Tata Consultancy Services (TCS) and alumna of Mar Baselios College of Engineering and Technology (Electronics and Communication Engineering, 2016–2020), led the session. Her professional trajectory from student to industry practitioner provided a model for participants. The speaker discussed her professional experience, including her tenure as a Systems Engineer at Infosys (2020–2021) and her current position at Tata Consultancy Services. She outlined her academic achievements, including completing an MBA in 2024, earning first rank in Marketing and Business Analytics. Additional distinctions include receiving the Kerala Student Star Reporter Award from Business Standard in 2023 and participating in the South Asian Pacific Leadership Institute Meeting organized by the Project Management Institute (PMI).



The session offered students guidance on navigating academic pathways while preparing for future careers. Participants were encouraged to prioritize skill development, actively seek opportunities, and maintain confidence in their abilities.

7. “The Unseen Problem – What the World Overlooks, You Illuminate” - IEEE WIE with ISTE SHE

The event, titled *“The Unseen Problem – What the World Overlooks, You Illuminate,” took place* on 7 March 2026 as part of Women’s Day Celebration Week. Jointly organized by the IEEE Women in Engineering (WIE) Society and ISTE SHE, the event was a women-focused innovation challenge that encouraged participants to identify and address real-world issues often overlooked in the context of women’s experiences.

The event was held online to ensure accessibility and flexible participation. Nine participants engaged in the challenge, contributing thoughtful analyses and developing solutions aligned with the event’s theme.

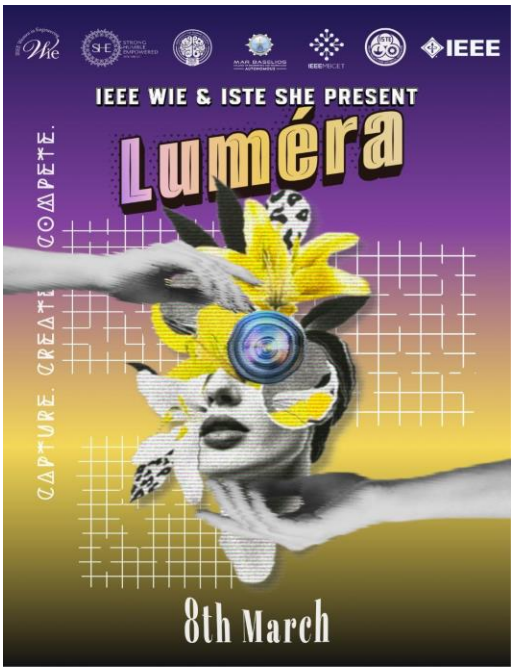
The primary objective was to inspire critical thinking regarding societal issues affecting women and to promote the development of innovative, technology-driven solutions. Participants submitted one- to two-page documents outlining a frequently neglected problem, explaining its significance, and presenting a feasible solution. This submission format fostered clarity, structured problem-solving, and creative ideation.

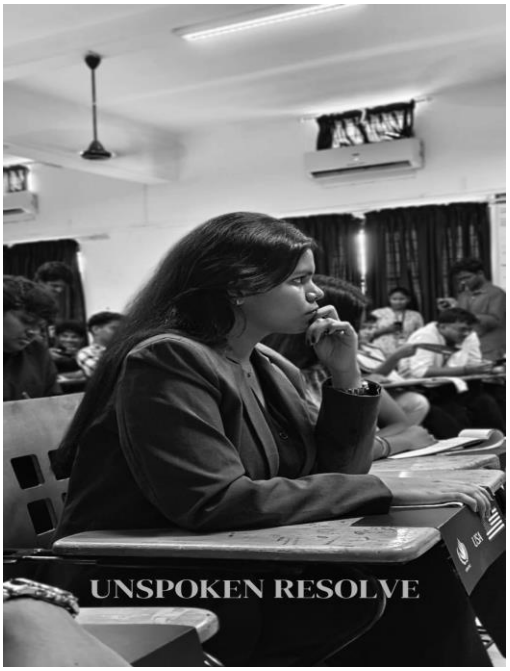
The submissions addressed a range of themes, including women’s safety, healthcare, education, and social awareness. Each entry demonstrated social responsibility, innovative thinking, and technical awareness. The event served as a platform for participants to explore significant problems and propose impactful solutions. After a thorough evaluation, Abhirami D S (S2 ME1) was selected as the winner for her exemplary work on *Menstrual Hygiene Management*. Her submission highlighted a critical and frequently overlooked issue and proposed a thoughtful, practical approach to addressing it, making her selection well justified.

The event was efficiently coordinated by Angel Rose Prince and Shreya Ann Binu, with guidance and mentorship from Dr. Soumya A. V., ISTE Faculty Advisor, and the IEEE WIE Faculty Advisor. This support ensured smooth execution and successful completion of the event.

“The Unseen Problem” encouraged participants to move beyond conventional perspectives and address socially relevant challenges. The event achieved its objectives by promoting awareness, innovation, and empathy, and by empowering participants to contribute to positive societal change through technology and structured problem-solving.

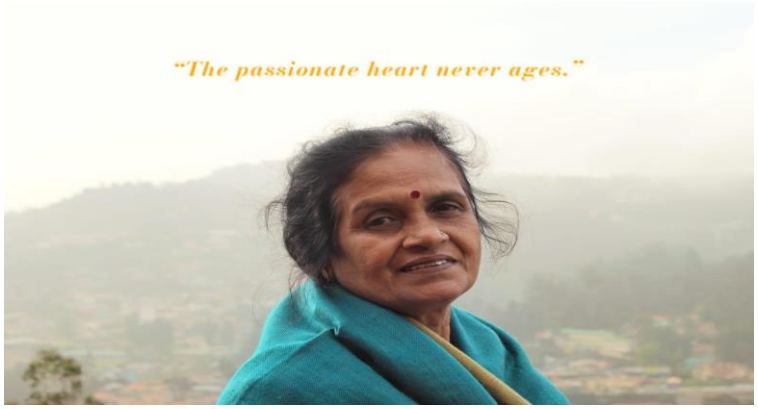
8. “LUMERA” – Photography & Reel Competition: IEEE WIE with ISTE SHE





On 14th March 2026, the vibrant online event “LUMERA” brought together creative minds for a Photography and Reel-Making Competition. Jointly hosted by the IEEE Women in Engineering (WIE) Society and ISTE SHE, the competition celebrated the theme of *“Women Empowerment,” inviting participants to capture the spirit*, achievements, and impact of women through compelling visual stories.

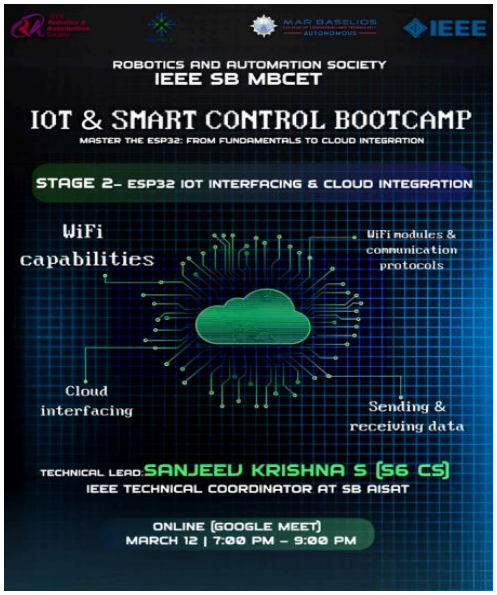
Seventeen enthusiastic participants answered the call, registering between 4th and 14th March 2026. Student coordinators Shreya Ann Binu, Angel Rose Prince, and Niranjan SS, guided by faculty coordinators Dr. Lani Rachel Mathew and Ms. Ann Mary Alex, worked seamlessly together to ensure the event ran smoothly from start to finish. Eshan M S earned the Best Entry Award and a cash prize for his powerful and memorable submission.



9. From Dropshipping at 16 to Building AI: “WHAT SCHOOL NEVER TAUGHT ME” - Talk Session – IEEE WIE and ISTE SHE

The session *“From Dropshipping at 16 to Building AI: What School Never Taught Me”* took place on 9th March 2026 from 11:30 AM to 12:30 PM at Senatus Hall, Mar Baselios College of Engineering and Technology (MBCET). Organized by the IEEE Women in Engineering (WIE) Society and ISTE SHE, the event provided students with practical insights into entrepreneurship, innovation, and how artificial intelligence is changing the world today. Sixty-five students participated in the session, demonstrating strong interest and engagement. Ms. Meenakshi Bindu Suresh, CEO of Innov8or, was the keynote speaker. The speaker introduced Innov8or as a company working in areas like artificial intelligence, education, and early-stage investing. A major focus of the talk was on developing an entrepreneurial mindset. The key part of the talk was about building an entrepreneurial mindset. The speaker discussed the inevitability of initial failures and stressed that persistence and adaptability are key to long-term success. During the session, students participated in an activity in which they had to develop a solution within 60 days with a budget of ₹10,000. The speaker reinforced that confidence, consistent action, and resilience are essential qualities for achieving success.

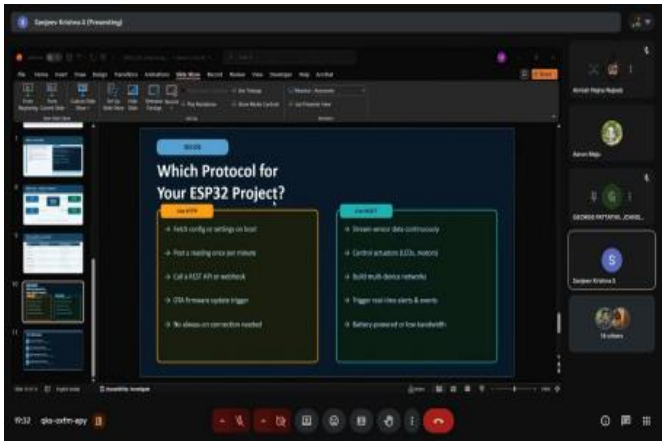
10. Session 2: IoT and Smart Control Bootcamp Using ESP32: IEEE RAS



The IEEE Robotics and Automation Society Student Branch at MBCET conducted the second session of the IoT and Smart Control Bootcamp Using ESP32 on 12 March 2026, from 7:00 PM to 8:00 PM, via Google Meet. Mr. Sanjeev Krishna S (S6 Computer Science) served as the technical speaker and facilitator, providing expert guidance throughout the session.

The session was designed to deepen participants' understanding of Internet of Things (IoT) systems by introducing essential concepts in ESP32 interfacing and cloud integration. The combination of theoretical instruction and practical demonstrations facilitated the development of skills necessary for smart device communication and connectivity. A total of 40 participants registered for the event. Registration opened on 9 March 2026 at 7:30 PM and closed on 12 March 2026 at 6:30 PM. The session was offered free of charge, enabling broad participation from a diverse audience. The session explored the Wi-Fi capabilities of the ESP32 and demonstrated how wireless communication supports IoT applications. A comparative analysis of widely used protocols, including HTTP and MQTT, was presented to highlight their respective strengths, limitations, and optimal use cases.

Participants were also introduced to cloud interfacing. The session also introduced cloud interfacing, illustrating how IoT devices connect to online platforms for real-time monitoring and control. Through detailed explanations and practical examples, participants learned about data transmission between devices and servers, with an emphasis on reliable, efficient communication. Overall, the second bootcamp session was informative and built upon the foundation established in the first session, providing participants with enhanced insights into IoT system design, smart control, and cloud-based applications. The event was coordinated by Sunny Abraham Mathew (S4 EL) and Mr. Shiras SN, Assistant Professor, ECED.



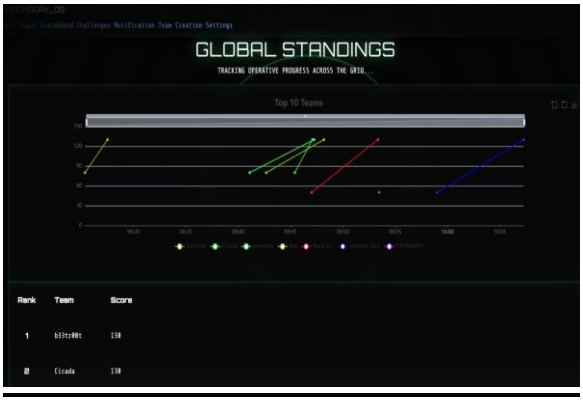
11. CAPTURE THE FLAG (CTF) – IEEE PES at Trydan

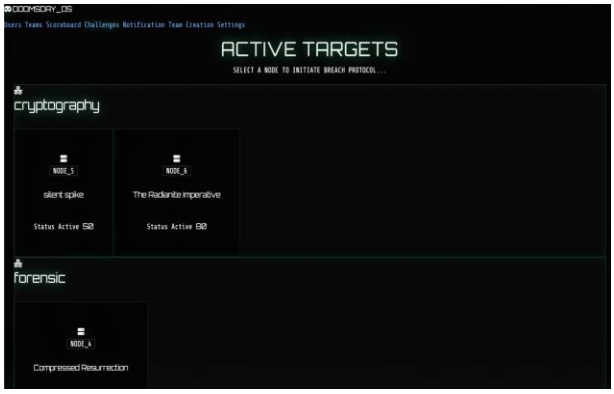
The Online Capture The Flag (CTF) competition energized TRYDAN, the Tech Fest of the EEE Department at Mar Baselios College of Engineering and Technology. Held in collaboration with IEEE PES SB MBCET, Offenso Hackers Academy, Trivandrum, and Illumina, the event took place on 21 March 2026 from 10:45 AM to 12:00 PM via Google Meet. The competition offered hands-on cybersecurity challenges designed to foster curiosity, enhance problem-solving skills, and encourage analytical thinking in a dynamic online setting.

The competition attracted 31 participants, including 21 IEEE members and 10 non-IEEE members, who registered between 18 March 2026 at 6:00 PM and 21 March 2026.

Participants engaged with a range of technical challenges in cybersecurity, including cryptography, reverse engineering, web exploitation, digital forensics, and logical analysis. The platform featured tasks of increasing difficulty, allowing competitors to choose challenges and submit flags through an interactive interface.

Teams and iTeams worked collaboratively to analyze clues, identify vulnerabilities, and decode hidden information to capture flags and earn points. A live scoreboard and dynamic scoring system encouraged quick thinking and precision, motivating teams to strategize effectively.





The event provided a dynamic environment for students to explore cybersecurity concepts and apply theoretical knowledge in practical settings. A highly informative and engaging event that effectively enhanced participants' problem-solving abilities and interest in cybersecurity and ethical hacking. It stood out as a valuable and impactful addition to TRYDAN's technical lineup.

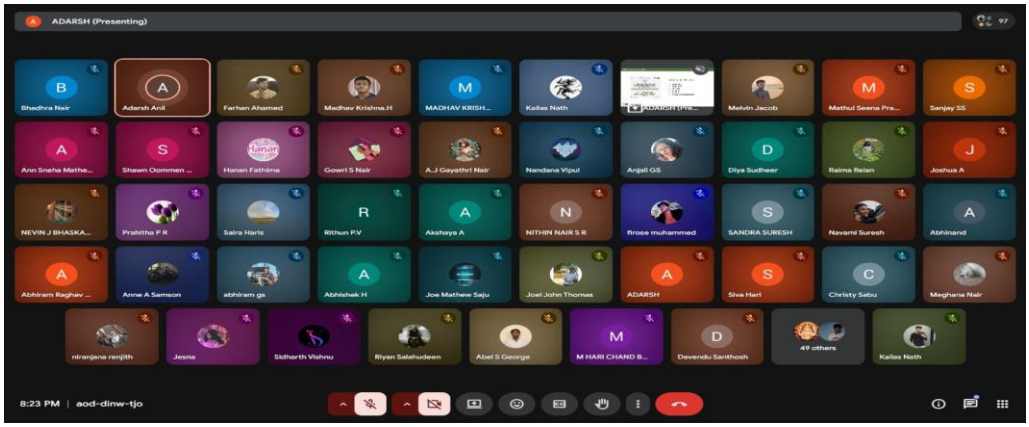
12. IEEE PES Membership Development Session : IEEE PES

IEEE PES hosted a virtual Membership Development Session on 22 March 2026 via Google Meet, bringing together students and professionals. Adarsh Anil, IEEE Travancore Chapter MDC, served as the keynote speaker.

The session introduced students to the IEEE Power & Energy Society (PES) and highlighted its benefits for professional and technical growth. The speaker emphasized the value of membership and encouraged active participation, volunteering, networking, and career development in the energy sector.

Attendees learned about IEEE PES membership benefits, including access to technical resources, industry exposure, participation in global competitions, leadership opportunities, and collaboration with experts. The speaker encouraged students to participate in IEEE activities, contribute to technical events, and build a strong professional profile.

The event drew an enthusiastic crowd. The event attracted 100 registrants and 97 active participants, including both IEEE members and newcomers. This strong turnout demonstrates the increasing interest in IEEE PES and its initiatives. An engaging Q&A session empowered participants to ask questions and deepen their understanding of IEEE PES membership. The attendees' enthusiasm and active involvement played a key role in making the event a resounding success.



13. ROBORACE– IEEE PES at Trydan

RoboRace, held as part of Trydan'26, was organized by Illumina in collaboration with the IEEE PES Student Branch MBCET on 23 March 2026 from 12:30 PM to 4:30 PM at Mar Baselios College of Engineering and Technology, Nalanchira, Trivandrum. The event served as a dynamic platform for students and technology enthusiasts to demonstrate innovation, engineering skills, and strategic thinking through a competitive robotics racing challenge.

The primary objective of the event was to promote hands-on learning and the practical application of robotics and automation concepts. Participants designed and operated their robots on a challenging track, evaluating precision, speed, and control in a competitive setting. The competition attracted 11 participants, comprising 7 IEEE members and 4 non-IEEE members. Registration opened on 17 March 2026 at 9:30 AM and closed on 23 March 2026 at 12:00 PM. The event implemented a structured registration model, charging ₹400 for participants without a robot and ₹500 for those with one.

IEEE PES SB MBCET contributed to the event by sponsoring ₹2000 as the third prize, further motivating participants to demonstrate technical excellence.

The winners of RoboRace were: first prize, Ryan Mathew Manual (MBCET); second prize, KailasNath and Abraham Jacob Palamootil (MBCET); and third prize, Hanok Samuel Boban (MBCET).

14. EV EXPO– IEEE PES & Illumina

IEEE PES, in collaboration with Illumina, organized the Electric Vehicle (EV) Expo on 23 March 2026 at Mar Baselios College of Engineering and Technology, Trivandrum. The event promoted awareness of sustainable transportation and provided students with direct exposure to advancements in electric mobility.

The expo convened leading automobile manufacturers and showcased a diverse range of electric vehicles, highlighting advancements in innovation, performance, and environmentally conscious engineering. Attendees examined models from Tata, Mahindra, Hyundai, TVS, and Citroën, including the Hyundai Creta Electric, Citroën ë-C3, and TVS electric scooters, as well as other recently introduced EVs.

Company representatives provided comprehensive information regarding vehicle specifications, battery technologies, charging infrastructure, driving range, safety features, and cost efficiency. The expo became a vibrant hub for green mobility awareness, technological creativity, and the vital role of electric vehicles in cutting carbon emissions.

15. TECHNICAL ESCAPE ROOM - IEEE PES & GDGC

The Technical Escape Room was organized at Mar Baselios College of Engineering and Technology, with GDGC MBCET and the IEEE PES Student Branch collaborating to host this prominent Tech Fest event on 23 March 2026.

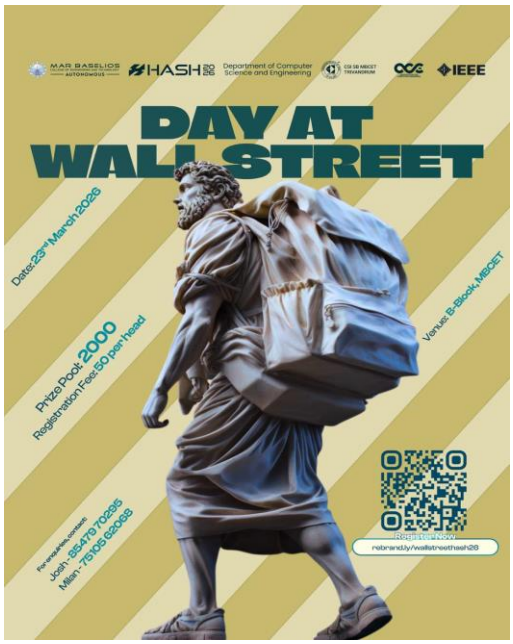
The event required participants to solve a series of technical puzzles under time constraints, with teams advancing through multiple stages, each limited to 30 minutes.

A total of 22 teams registered for the competition, comprising 17 IEEE members and 5 non-IEEE members. Registration opened on 20 March 2026 at 4:00 PM and closed on 23 March 2026 at 9:30 AM.

The challenges spanned various technical domains, including web technologies, data analysis, algorithms, binary decoding, and Linux-based problem-solving. Participants collaborated to analyze clues, debug issues, and progress through successive stages. The structured progression and escalating difficulty promoted critical thinking, teamwork, and effective time management.

The event concluded with Vikashini Shree and team (CT) being awarded First Prize, while Abhishek H (EEE) received Second Prize in recognition of their performance. The Tech Fest sparked curiosity, collaboration, and hands-on learning. Participants walked away with not only new skills but also lasting memories of an electrifying experience.

16. A Day at Wall Street- SB Tech Event - IEEE CS at Hash



The event, *"A Day at Wall Street," took place on 23* March 2026 from 9:30 AM to 4:30 PM at Pascal Hall, Mar Baselios College of Engineering and Technology (MBCET). Organized by IEEE SB MBCET, the program featured an immersive simulation designed to introduce participants to the dynamics of financial markets through practical, interactive activities.

A total of 37 students participated, with 30 registering online and 7 registering on the day of the event. Registration opened on 18 March 2026 and closed on 23 March 2026, accommodating both advance and on-site participants to ensure a diverse audience.

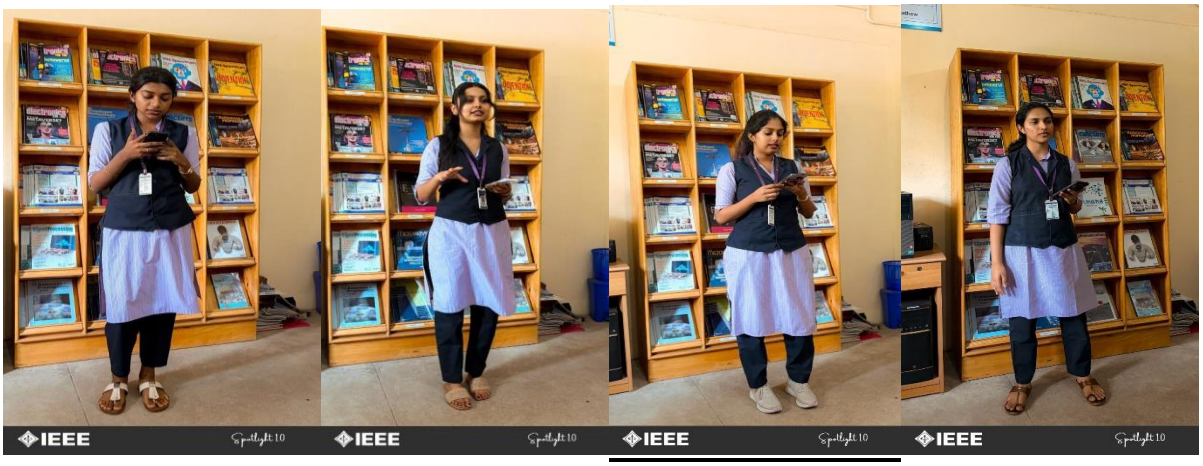
The event was structured as a simulation-based learning experience that replicated real-world financial trading environments. No prior knowledge of financial markets was required, making the event accessible to students from diverse academic backgrounds. This inclusive approach promoted curiosity and active engagement.

The participants were assigned to three trading stations, each serving as a hub for buying and selling assets. They engaged in simulated trading, analyzed market trends, interpreted graphical data, and responded to real-time updates and news affecting company performance. This environment facilitated understanding of how external factors influence market behavior and asset valuation. Its emphasis is on strategic thinking and decision-making under pressure.

The interactive simulation maintained participant engagement throughout the event. Each decision involved potential profit or loss, reinforcing the importance of careful analysis and strategic planning. The event integrated theoretical concepts with practical application, offering insights into financial market operations.

17. IEEE Spectrum Spotlight 1.0 : IEEE SB with eNiX

IEEE Spectrum Spotlight 1.0 was a two-session technical presentation series held on 1 and 7 April 2026 at the ECE Library (B115), organized by IEEE SB MBCET and eNiX under the guidance of Dr. Lani Rachel Mathew. The event aimed to bridge classroom learning with current technological advancements, encouraging students to explore emerging trends through IEEE Spectrum resources. Across both sessions, 22 participants engaged with archived and current issues of IEEE Spectrum, identified breakthrough technologies, and presented their findings in concise, well-structured presentations. The S4 EC-2 batch demonstrated notable enthusiasm, with presenters including Aaron S Varghese and Devananda S. R in Session 1, and Jaanie Ratheesh, Ardra Anand, Gopika Nair, and Gowri Parvathy in Session 2. The ECE Library facilitated active discussions and peer-to-peer learning, fostering an environment conducive to innovation. Participants developed competencies in technical summarization, presentation design, and public speaking within a defined timeframe. All presenters received Participation Certificates from e-NIX and IEEE SB, and the Best Presentation was recognized for clarity, creativity, and the effective communication of complex ideas. The winners of the contest were Aaron S Varghese and Devananda S. R of S4 EC2.



18. Introduction to Quantum Technology: Engineering the Next Revolution

The IEEE MBCET Computer Society SB organized an online session titled “Introduction to Quantum Technology: Engineering the Next Revolution” on April 14, 2026, marking World Quantum Day. The session was delivered by Dr. Indrajith V. S., Scientist, Qdit Labs, Bangalore, and covered the fundamentals, evolution and future prospects of quantum technology, including concepts such as superposition, entanglement, quantum communication, and quantum circuits. A total of 93 participants from across branches attended the inspiring session by Dr. Indrajith. Student co-ordinators: Ankit Jain (S6 ECE) and Anna Maria Joji (S4 CT). Faculty co-ordinators: Dr. Anne Dickson (CSED), Ms. Teena Rajan (ECED), Dr. Lani Rachel Mathew (ECED). The session provided a comprehensive journey through quantum technology fundamentals, beginning with the historical evolution of quantum computing from theoretical concepts to practical engineering challenges.

Key features such as **superposition and entanglement** were explained through intuitive engineering analogies, alongside the famous Schrödinger's Cat thought experiment and the **measurement problem** that distinguishes quantum from classical systems. The talk delved into **quantum communication** protocols enabling secure information transfer, and concluded with practical **quantum gates, circuits** and the **future scope** for quantum technology.