Tech-Tide

Bi Annual Newsletter

January - June 2023

Volume 2 Issue 1

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Editorial Board Members

Message from HoD

Dear Students, Faculty, Alumni, and Respected Readers,

Warm greetings to each one of you!

It gives me immense pleasure to introduce this edition of Tech Tide, the biannual newsletter of the Department of Electronics and Communication Engineering, capturing the vibrant activities and achievements of the January to June 2023 semester. As the world around us continues to be reshaped by innovations in communication, electronics, and automation, our department remains committed to fostering a learning ecosystem that encourages curiosity, creativity, and technical competence. From core subjects like signal processing and Digital electronics to emerging domains, our curriculum and activities are designed to prepare students for the evolving demands of the industry and research.

Celebrating Growth and Excellence

The past six months have witnessed a dynamic blend of academic achievements and student-led initiatives. Industrial collaborations, expert lectures, and hands-on workshops further enriched the learning landscape. We are especially proud of our students who represented the department at various intercollegiate competitions and brought laurels through their innovation and teamwork. Such endeavors reflect the spirit of excellence that defines our department.

As we move forward, our focus remains on holistic development—integrating technical education with ethics, leadership, and social responsibility. I would like to extend my heartfelt thanks to the editorial team, contributors, and supporters of this newsletter. Your dedication helps document and share the pulse of our department's journey with pride and purpose.

Let us continue to learn, innovate, and lead.

With best wishes,
Dr. V. Balamurugan
Head of the Department
Electronics and Communication Engineering

Institution Vision & Mission

Vision

Grow as a center of learning and research, transforming students to professionals with knowledge, skill, competence, commitment, confidence and ethics to serve the society.

Mission

- **Mission 1**

  To impart value-based education and promote curricular, co-curricular and extracurricular activities amongst students through extensive theoretical and practical training by qualified and experienced personnel using state-of the-art facilities.

- **Mission 2**

  To promote research and consultancy for institution development and contribution to the society.

About ECE Department

The Department of Electronics and Communication Engineering (ECE) at Ahalia School of Engineering and Technology stands as a vibrant academic community dedicated to shaping future-ready engineers through a blend of foundational knowledge and emerging technology exposure. With a strong emphasis on academic rigor, innovation, and ethical practice, the department continues to evolve in alignment with the rapidly changing technological landscape.

Our academic programs are carefully curated to balance essential core areas—including analog and digital electronics, communication networks, control systems, and microprocessors—with advanced topics. The integration of project-based learning and simulation tools equips students with the skills required to navigate complex engineering challenges.

The department is powered by a committed team of faculty members who actively engage in research, consultancy, and interdisciplinary collaborations. Through continuous mentoring, students are guided to participate in mini-projects, national conferences, innovation challenges, and certification programs that build both technical acumen and leadership potential.

In the January to June 2023 semester, the department hosted a range of enriching initiatives—spanning hands-on training sessions, industrial visits, alumni talks, and skill development workshops. These activities were instrumental in enhancing practical exposure and fostering industry connectivity.

Our alumni have consistently demonstrated excellence across diverse fields—whether in core electronics, automation, higher education testifying to the department's commitment to academic excellence and professional growth.

Department Vision & Mission

Vision

The Department of Electronics and Communication Engineering aims to achieve excellence in academics and research and develop globally competent professionals with social commitment.

Mission

- **Mission 1**

  To empower the students with the right attitude, knowledge and leadership skills through value based education using modern technologies and innovative teaching pedagogies.

- **Mission 2**

  To develop students' personality through participation in extra and co-curricular activities.

Program Educational Objectives (PEOs)

1. Apply the concepts of Electronics and Communication Engineering to provide solutions to the emerging problems in the society.
2. To solve problems of social relevance applying the knowledge of ECE and pursue higher education.
3. Work effectively as individuals and as team members in multidisciplinary projects.
4. Engage in lifelong learning, career enhancement and adapt to changing professional and societal needs.

Program Specific Outcomes (PSOs)

PSO1: Develop electronics-based solutions for real-life challenges integrating entrepreneurship and sustainability.

PSO2: Uphold ethics and values in designing sustainable technologies while embracing lifelong learning for professional growth.

Program Outcomes (POs)

PO1. Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. Design/Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5. Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

Program Outcomes (POs)

PO7. Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. Life-long Learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Department of ECE
Faculty Members

The ECE Department takes pride in its dedicated faculty team whose expertise, mentorship, and commitment to excellence play a key role in shaping technically skilled and industry-ready graduates.

Dr. Krishna Kumar Kishor
Vice Principal

Dr. Balamurugan V
HoD

Dr. Aneesh K
Assistant Professor

Divya Mohan
Assistant Professor

Vijitha Khan
Assistant Professor

Swetha C
Assistant Professor

Santhosh C
Assistant Professor

Abhijith V
Assistant Professor

Sathyan P
Senior Lab Instructor

Sindhu V. R
Senior Lab Instructor

KTU Sponsored Three-day FDP on "Future Scope of 5G Communications"

18, 19 & 20 January 2023

The Department of Electronics and Communication Engineering, Ahalia School of Engineering and Technology (ASET), successfully organized a KTU-sponsored three-day Faculty Development Programme (FDP) on the "Future Scope of 5G Communications" from 18th to 20th January 2023. The event was inaugurated by Er. A. Kesavan, Past Chairman, IEI Palakkad Centre, who emphasized the critical role of FDPs in equipping faculty with the skills required for sustainable growth in higher education. Dr. Krishna Kumar Kishor, Vice-Principal and Executive Director, Ahalia Group, highlighted the need for continuous upskilling in emerging technologies, while Prof. Abhijit V welcomed the gathering and outlined the objectives of the programme.

The FDP featured 18 sessions led by eminent experts from both academia and industry, covering a range of advanced topics in 5G communications, including machine learning techniques like SVM, CNN, and deep learning applications. With active participation from 36 faculty members across Kerala, the programme provided a valuable platform for knowledge exchange and professional development. The valedictory session, presided over by Dr. P.R. Sreemahadevan Pillai, Principal, ASET, and graced by Mr. Vijay Nair, CTO, Assyst International Pvt. Ltd., underscored the importance of academic-industry collaboration in shaping future-ready curricula. The event concluded on a high note, with enthusiastic feedback from participants and the distribution of certificates to 35 eligible attendees.


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AHALIA HEALTH, HERITAGE & KNOWLEDGE VILLLAGE, PALAKKAD - 678557. PH: 04923-229666
KTU Sponsored Three - Day
Faculty Development Programme on
Future Scope of 5G
Communications
January 18 - 20, 2023

IV to National Institute of Oceanography

3rd March 2023

The third-year students of the Department of Electronics and Communication Engineering visited the CSIR–National Institute of Oceanography (NIO), Goa, on 3rd March 2023, under the supervision of Mr. Sathyan and Mrs. Vijitha Khan. The visit offered students a unique opportunity to explore the interdisciplinary applications of oceanographic research and its connection with emerging technologies.

Founded in 1966, NIO is renowned for its pioneering work in the domains of ocean geology, climatology, biotechnology, and marine archaeology. Students were introduced to the institute's cutting-edge research efforts, including the use of autonomous systems like the underwater vehicle Maya and vertical profilers for studying climate impacts and pollution in marine ecosystems.

The Industrial Visit also highlighted NIO's extensive work in marine biotechnology, such as the isolation of antimicrobial compounds with commercial and medical relevance. Insights into projects on polymetallic nodules, gas hydrates, and the impact of ballast water on marine biodiversity gave students a broader perspective on sustainable ocean resource management. The archaeological exhibit featuring the submerged city of Dwarka was particularly captivating. The visit proved to be highly educational, leaving students inspired by the fusion of science, technology, and environmental stewardship demonstrated by the institute.


सी एस आई आर-राष्ट्रीय समुद्र विज्ञान संस्थान
CSIR-NATIONAL INSTITUTE OF OCEANOGRAPHY

ASET Football Team in 7's Football Championship

he ASET Football Team participated in the 7's Football Championship held at IES College of Engineering on 14th and 15th March 2023. The team delivered a spirited performance, securing a victory in their first match against Jyothi Engineering College. However, they faced a tough contest in the second round and narrowly lost to the IES Mechanical Team.

The team featured enthusiastic participation from Electronics and Communication Engineering (ECE) students, who showcased excellent teamwork, dedication, and sportsmanship throughout the tournament. Their involvement not only highlighted their athletic capabilities but also reflected the department's encouragement of holistic student development beyond academics.

IEDC Workshop on ‘Arduino and Python GUI Interface’

17th March 2023

The Innovation and Entrepreneurship Development Cell (IEDC) of ASET conducted an engaging workshop on ‘Arduino and Python GUI Interface’ on 17th March 2023. The workshop, held from 10:00 a.m. to 4:00 p.m., was led by Mr. Abhinav Rajeev, Junior Research Scholar from the Electrical Department, IIT Palakkad. Known for his extensive experience as a technical trainer, Mr. Abhinav guided the participants through practical sessions on Arduino programming and Python GUI integration.

ECE students actively took part in both programming and sensor integration sessions, showcasing strong technical aptitude and teamwork. Divided into groups, they explored real-time applications of embedded systems, reinforcing their academic learning with hands-on experience. Their involvement reflected the department’s commitment to promoting technical skill development and innovation among its students.


Measuring & Test Instruments
Security Applications


PLEASE
SHUT DOWN
THE PC
AFTER USE

Arya R Krishna Placed in HCL Technologies

We are proud to announce that Ms. Arya R. Krishna of the 2019–2023 batch, Department of Electronics and Communication Engineering, has been offered placement at HCL Technologies.

Heartfelt congratulations to Arya on this remarkable achievement! Her success reflects the hard work, determination, and technical excellence nurtured through the ECE program. We wish her all the very best in her professional journey ahead.

ECE Alumni Join Ahalia Group

We are delighted to share that Mr. Neeraj N. and Mr. Vishnu Santhosh, alumni of the Department of Electronics and Communication Engineering, have joined the Ahalia Group in various esteemed positions.

Congratulations to both on this new chapter in their careers! Their achievement stands as a testament to the strong foundation built during their time at ASET. We wish them continued success and growth in their professional journey.

2023 Annual Athletics Meet

13th April 2023

The Annual Athletics Meet 2023 of ASET was held on 13th April 2023 at the college ground, organized by the Students Council and coordinated by Mr. Bibin B., Assistant Professor in Physical Education. The event commenced with a 1500m race followed by an inaugural ceremony graced by Principal Dr. P. R. Sreemahadevan Pillai and Vice Principal Dr. Krishna Kumar Kishor.

A total of eight events for boys and six for girls were conducted, with participation from all academic years. Over 100 students enthusiastically competed, showcasing true sportsmanship. The third-year students emerged as overall champions with 54 points, and notably, students from the Electronics and Communication Engineering (ECE) department contributed significantly to this victory with strong performances across multiple track and field events.

The meet concluded with a prize distribution ceremony and a vote of thanks by Ms. Prabha R. (AP, S&H). The spirited participation and outstanding performance by ECE students highlighted the department's excellence not only in academics but also in co-curricular achievements.

2019–2023 Batch S7
Academic Topper

Congratulations to Ms. Arya R. Krishna of the 2019–23 Electronics and Communication Engineering batch for securing the highest SGPA of 9.30 in Semester 7.

Her consistent academic excellence and dedication continue to inspire her peers and reflect the strong academic culture of the department. Best wishes for continued success in all future endeavors!

Congratulations

2021–2025 Batch
S3 Academic Topper

Kudos to Ms. Megha P of the 2021–25 Electronics and Communication Engineering batch for securing the highest SGPA of 8.86 in Semester 3.

Her hard work and commitment to academic excellence are truly commendable. We wish her continued success in the semesters ahead!

Megha P
SGPA-8.86

2020–2024 Batch
S5 Academic Topper

Congratulations to Ms. Amritha M H of the 2020–24 Electronics and Communication Engineering batch for achieving the highest SGPA of 8.59 in Semester 5.

Her academic dedication and performance set a great example for her peers. Wishing her continued success in all future endeavors!

Congrats!

SGPA-8.59
Amritha M H

Arduino Training Program for Little Kites Students of Ellapully Government High School

17th June 2023

On 17th June 2023, Ahalia School of Engineering and Technology (ASET) organized an Arduino Training Program for the Little Kites students of Ellapully Government High School, in association with the Electronics and Communication Engineering Department and the IEEE Student Branch. A total of 32 high school students enthusiastically participated in this hands-on training session.

The program aimed to introduce young minds to the basics of electronics and embedded systems through Arduino, a platform that enables the control of electronic devices via computer programming. ECE student volunteers Amit Mathew Titus and Vignesh V. actively supported the session. The initiative sparked curiosity and a strong interest among the school students, laying the foundation for future exploration in electronics, automation, and manufacturing technologies.

Real-Time Operating Systems for Microcontroller Applications

Dr V Balamurugan

In the evolving world of embedded systems, microcontrollers have become essential components of applications ranging from smart home devices to autonomous vehicles. Traditionally used for simple control tasks, microcontrollers are now expected to manage multiple operations simultaneously and respond to events in real time. To meet these demands, Real-Time Operating Systems (RTOS) have emerged as a critical tool, enabling efficient task management, timing precision, and scalable system design.

An RTOS is a lightweight operating system designed specifically for time-sensitive embedded applications. Its primary function is to ensure deterministic task execution, meaning tasks are performed within strict time limits. This is vital in fields like medical electronics, industrial automation, and automotive systems where even a millisecond delay can be critical. Unlike general-purpose operating systems, RTOS platforms are optimized for predictable behavior and minimal overhead, making them ideal for use with 32-bit microcontrollers such as ARM Cortex-M, RISC-V, and AVR families.

One of the key technical features of an RTOS is task management. Through a built-in scheduler, the RTOS handles multiple tasks concurrently by assigning priorities and switching context between tasks as needed. This multitasking capability allows embedded systems to simultaneously handle sensor data, communication protocols, and user inputs. Moreover, RTOSs support inter-task communication mechanisms like queues, semaphores, and mutexes, ensuring data consistency and synchronization across concurrent processes.

Another important aspect is time management. RTOS platforms include system tick timers and real-time clocks to handle delays, periodic task scheduling, and deadline enforcement. This makes it easier for developers to implement time-triggered operations with precision. Additionally, RTOSs offer hardware abstraction layers, allowing developers to write code that is more modular and portable across different hardware platforms.

Several RTOS platforms are widely used in the industry and academia. FreeRTOS, for instance, is an open-source RTOS that supports over 40 microcontroller architectures and is known for its small footprint and real-time performance. Zephyr OS is another modern RTOS tailored for IoT and wearable devices, offering native support for low-power connectivity. Others like ChibiOS/RT and Micrium uC/OS provide extensive middleware libraries and debugging tools for professional-grade embedded development.

In terms of applications, RTOSs are being used in a wide range of ECE-related systems. These include real-time data acquisition in biomedical devices, multitasking in robotics, wireless communication in IoT networks, and responsive energy control in smart grid systems. Compared to bare-metal programming—where tasks are managed manually and sequentially—RTOS-based development allows for greater scalability, modularity, and efficiency. Tasks can be prioritized and independently tested, leading to faster development and easier maintenance.

In conclusion, Real-Time Operating Systems have become a cornerstone in the development of intelligent embedded systems. For ECE students and researchers, understanding how to implement and utilize an RTOS is a crucial step in mastering modern embedded development. With the increasing complexity of electronics systems, RTOSs provide the structure and reliability needed to design applications that are not only functional but also responsive and efficient.

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