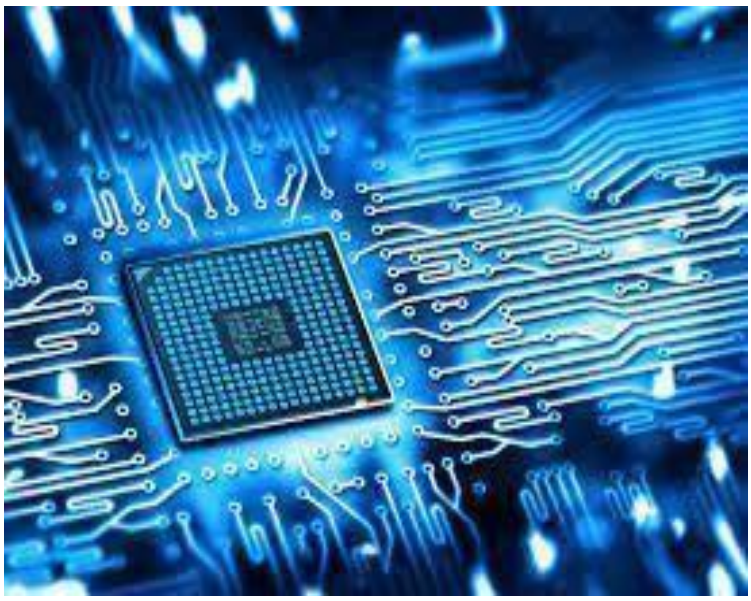
Pimpri Chinchwad Education Society's

Pimpri Chinchwad College of Engineering and Research, Ravet, Pune

Department of Electronics & Telecommunication

Electronica–2024

A.Y. 2024-25 (Sem-II)



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Chief Editor : Dr. Rahul G. Mapari
(HOD, E&TC Department)

Editor : Mrs. Mrunmayee D. Rahate
(Assistant Professor, E&TC Department)

Student Member : Ms. Aayushi S. Narkhede

Department at a Glance
Department of Electronics & Telecommunication

About the Department:

The Electronics & Communication engineering degree program at PCCOER focus on problem-solving skills development for real-world applications. Our student-centric learning environment provides a variety of opportunities, including research experience, graduate degree with Honors & Minors, project based learning, and internship opportunities. Moreover, the department is involved in a number of technical and co-curricular activities encouraging students to broaden their horizons of thought, innovate and implement their ideas. Also, it maintains a great rapport with industries.

The Electronics & Communication Engineering Department at PCCOER has been established in the year 2014 and since then, has been making a steady and continuous progress. The Department works on Outcome Based Philosophy (OBE), in which, we focus and organize the entire program and all the instructional efforts around the clearly defined outcomes that we want our students to demonstrate when they leave institute. We endeavor to deliver such contents and to exercise such pedagogies and assessment that our students achieve high order learning and mastery, instead of just accumulating credits.

Vision of the Department:

To be a premier department in the field of Electronics and Telecommunication Engineering with emphasis on hands-on activities.

Mission of the Department:

Mission 1: Producing engineers of academic excellence, ready with skill set required to handle the state-of-art technologies in the field of Electronics and Telecommunication Engineering.

Mission 2: Producing skilled graduates with leadership and managerial quality for the modern software and hardware industry.

Mission 3: Imparting research and innovative aptitude with moral and professional ethics for overall development of students to achieve desired outcomes.

Message from HOD's Desk

Prof. Dr. Rahul Mapari

Dear All,

Greetings from the E&TC department…

Department of Electronics & Telecommunications is located on the fourth floor of Pimpri Chinchwad College of Engineering & Research, Ravet, Pune**.** The department works with the objective of addressing critical challenges faced by the industry, society and academia. The department is equipped with 04 software labs and 05 hardware labs with all necessary infrastructure and instruments for Signal Processing, Power Electronics, Antenna and Wave, Digital Communication and Embedded Systems. The department faculty works with excellent team spirit with specialization in different areas like Electronics, Communication, Signal Processing, VLSI, Embedded System, Wireless Sensor Network etc. Importance is given to quality teaching and learning process adapting various innovative techniques by teachers and soft skill programmers for students. Special care is taken about the students whose performance is poor in the examinations through counseling and extra classes.

Magazine Coordinator

Assistant Prof. Mrunmayee Rahate
(Faculty Coordinator)

Ms. Aayushi S. Narkhede
(Student Coordinator)

Faculty List

Sr. No.	Name of the Faculty	Specialization	Designation
1	Dr. Rahul G. Mapari	PhD (Electronics & Telecommunication)	Professor & HOD
2	Mrs.Vijayalaxmi S. Kumbhar	ME (Electronics & Telecommunication	Assistant Professor
3	Dr. Santosh N. Randive	PhD (Electronics & Telecommunication)	Associate Professor
4	Mrs. Maithili S. Andhare	ME (Electronics)	Assistant Professor
5	Dr. Kiran M. Napte	PhD (Electronics & Telecommunication)	Assistant Professor
6	Dr. Triveni D. Dhamale	PhD (Electronics & Telecommunication)	Assistant Professor
7	Mrs. Arti A. Tekade	ME (Electronics)	Assistant Professor
8	Dr. Rupali R. Kawade	PhD (Electronics & Telecommunication)	Assistant Professor
9	Dr. Dipali N. Dhake	PhD (Electronics & Telecommunication)	Assistant Professor
10	Dr. Kishor B. Bhangale	PhD (Electronics & Telecommunication)	Assistant Professor
11	Dr. Pallavi G. Adke	PhD (Electronics & Telecommunication)	Assistant Professor
12	Mrs. Priti R. Kale	ME (Electronics & Telecommunication)	Assistant Professor
13	Dr. Dipali K. Shende	PhD (Electronics & Telecommunication)	Assistant Professor
14	Dr. Vijaya A. Yaduvanshi	PhD (Electronics & Telecommunication)	Assistant Professor
15	Mrs. Mrunmayee D. Rahate	MTech (Electronics & Telecommunication)	Assistant Professor
16	Mrs. Priti J. Rajput	ME (Electronics & Telecommunication)	Assistant Professor

Supporting Staff

Sr. No.	Name of the Staff	Specialization	Designation
1	Mr. K. D. Bhalekar	Diploma (E&TC)	Lab Assistant
2	Mrs. S. B. Gholap	BE (E&TC)	Lab Assistant
3	Mrs. B. L. Gawali	Diploma (E&TC)	Lab Assistant
4	Mr. S. Satpute	BE (E&TC)	Lab Assistant
5	Mr. M. S. Garade	I.T.I (Electrician)	Peon

Technical Article

Edge AI: When Intelligence Moves Closer to Devices

Imagine you're playing a game like Detroit: Become Human. You make a series of choices, and the in-game character, instead of blindly following a scripted path, begins learning from your decisions, adapting its personality, tone, and even resistance based on how you play. Now, imagine all that computing—decisions, logic, behavioural tweaks—being done not in a distant cloud server, but on the console itself, in real-time. Welcome to the world of Edge AI—where intelligence doesn't reside in a data centre miles away, but at the edge, right next to the device you use.

Prior to proceeding further, let's take a moment to understand what is Edge AI and why is it a big deal? Edge AI is the deployment of AI applications in devices throughout the physical world. It's given the name 'Edge AI' because the AI computation is done near the user at the edge of the network, close to where the data is located, rather that centrally in a cloud computing facility of a private data centre. Think of smart watches detecting arrhythmias or surveillance cameras identifying suspicious behaviour, or robots that learn how you move – all without needing to upload that data to a server first. Unlike traditional AI systems that rely heavily on cloud computation, Edge AI is faster, more secure, energy-efficient, and ideal for applications where real-time responses matter. This makes it a 'big deal' in our today's world. What do people and especially us, engineers, love more – Low latency. This helps us in understanding and applying it in various fields like autonomous vehicles (say, Tesla dodging a pedestrian), healthcare devices (say, a pacemaker detecting irregular rhythms), surveillance systems (say, identifying a weapon in a crowd), etc.

Now, get this clear, there are differences between Edge AI and Cloud AI. Firstly, Latency, the higher the latency (and the slower response times) the more these areas suffer. Edge AI provides reduced latency by processing data directly on the device, whereas cloud AI involves sending data to distant servers, leading to increased latency. We also have, Bandwidth, Edge AI calls for lower bandwidth due to local data processing on the device, whereas cloud AI involves data transmission to distant servers, demanding higher network bandwidth. Let's not forget the security part, one of the most important ones given the current scenarios, Security, Edge architecture offers enhanced privacy by processing sensitive data directly on the device, whereas cloud AI entails transmitting data to external servers, potentially exposing sensitive information to third-party servers.

Let's take this learning to a next step, and in an entertainment industry, Gaming. Like in Middle Earth: Shadow of Mordor, enemies remember your past moves. But take it a notch further: your console observes your play style using a local neural network, and adapts on the fly without needing cloud updates. That's Edge AI at work. A more chilling example? An AI boss that learns from every player on the device. It adjusts difficulty based on how aggressively or passively you play. Think of a Dark Souls boss that doesn't just get harder—it studies you. Every dodge. Every parry. Every hesitation. It's not sci-fi. It's Edge AI in consumer entertainment.

We have discussed what is Edge AI, its benefits and differences with Cloud AI. However, as an electronics and telecommunication undergraduate, I wondered what would be our role in this very concept, so after a bit of research, here's my opinion. Edge AI lives on microcontrollers and SoCs (System-on-Chip)—from Raspberry Pi to NVIDIA Jetson and even custom ASICs. ENTC engineers build and optimize these platforms for which Knowledge in embedded C, real-time OS, and VLSI design makes it possible to run AI models efficiently on

edge hardware. Since edge devices process sensitive data (like facial recognition or medical info), they must be secure—at the hardware level. So, courses in cyber security, secure communication protocols, and hardware encryption help ENTC engineers design secure Edge AI solutions.

From smart devices that respond instantly to game villains that learn from you, Edge AI is reshaping how machines interact with the real world. For us ENTC engineers, this is more than innovation—it's our playground. Where signals become decisions, and devices think before they speak. The future isn't far. It's right here, at the edge. And we're the ones engineering it.

SE ENTC
Hardik Chaudhari

Technical Article

The Electric Surge: How EVs are Driving the Future of Transportation

The rise of electric vehicles (EVs) marks a pivotal shift in the global transportation landscape, driven by increasing concerns over climate change, environmental pollution, and the depletion of fossil fuels. Although EVs have historical roots dating back to the 19th century—with early innovations by inventors like Thomas Parker and William Morrison—their resurgence in recent decades is fueled by rapid technological advancements, growing environmental awareness, and strong policy support. Modern improvements such as lithium-ion batteries, regenerative braking, and smart charging systems have significantly enhanced the performance, range, and convenience of EVs, making them a practical alternative to internal combustion engine vehicles.

Governments around the world are playing a crucial role in promoting EV adoption through various incentives like tax benefits, subsidies, and investments in charging infrastructure. At the same time, the automotive industry is witnessing a major transformation, with automakers and startups alike competing to innovate and reduce costs. EVs are not only contributing to a reduction in greenhouse gas emissions but are also influencing social change. In urban areas, electric cars, scooters, and buses are offering cleaner and more efficient transportation options, while car-sharing and ride-hailing services are increasingly relying on electric fleets to minimize their environmental footprint and improve accessibility.

Looking ahead, the future of electric vehicles is being shaped by several exciting trends. The integration of EVs with renewable energy sources, such as solar and wind, is enabling smarter energy management through technologies like vehicle-to-grid (V2G). Autonomous electric vehicles are on the horizon, promising safer and more efficient transport systems. Furthermore, ongoing efforts to expand charging infrastructure—through innovations like wireless charging and ultra-fast chargers—are addressing one of the key barriers to EV adoption. With strong support from governments, businesses, and consumers, electric vehicles are set to become a cornerstone of sustainable transportation and a driving force for cleaner, smarter mobility worldwide.

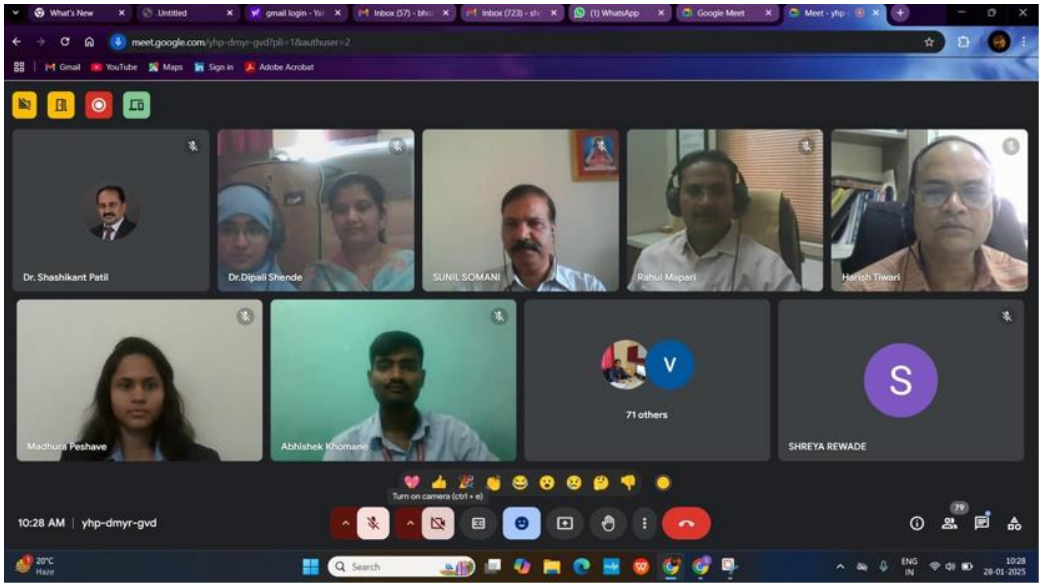
SE ENTC

Aayushi Sunil Narkhede

Departmental Activities

National Conference on Engineering Design and Computational Science (NCEDCS 2K25)

The conference successfully brought together researchers, academicians, and industry experts to explore innovations in engineering design and computational science. With diverse tracks ranging from AI and data science to electronics and advanced modelling, it offered a rich platform for interdisciplinary learning. Participants presented groundbreaking research and engaged in thought-provoking discussions. The event fostered meaningful collaborations and knowledge exchange.



Departmental Activities

IETE 2024-25 Chapter Integration and Membership Drive

The drive increased awareness and understanding of the IETE chapter's goals and activities among students and faculty, boosted membership numbers through effective promotion and engagement strategies, enhanced networking opportunities and connections within the Electronics and Communication community and fostered enthusiasm for upcoming technical events and workshops, laying the groundwork for active participation.

Departmental Activities

Drone-hands on Workshop

The Drone Workshop offered students a comprehensive introduction to drone technology, covering both theoretical foundations and practical applications. Participants gained insights into drone components, aerodynamic principles, and the wide-ranging uses of drones across various fields. A live flying demonstration brought concepts to life, followed by an engaging hands-on session where students assembled and flew drones themselves. The workshop enhanced students' understanding of drone construction, programming, and piloting.

Departmental Activities

One Week International Level Faculty Development Program on AI Innovations and MATLAB Solutions

The AI and MATLAB workshop from 23rd to 28th September 2024 provided participants with valuable insights into emerging trends in artificial intelligence and its real-world applications. Faculty members gained practical skills through hands-on sessions focused on model building, data analysis, and problem-solving using MATLAB. The event fostered critical thinking and encouraged innovative approaches to integrating AI into academics and research. By bridging theory with practice, the workshop empowered attendees to enhance their curriculum and explore interdisciplinary collaborations. Overall, the program was a dynamic platform for knowledge sharing and skill development in the evolving field of AI.

Departmental Activities

Battle of Bids – A National Level Competition

The National Level Competition “Battle of Bids,” held on 3rd April 2025, offered a dynamic platform for students to showcase their strategic thinking, market analysis skills, and financial acumen. Designed to simulate real-world trading and investment scenarios, the competition challenged participants to make informed bidding decisions under pressure. Through multiple competitive rounds, teams demonstrated critical reasoning, teamwork, and adaptability in a high-stakes environment. The event not only promoted financial literacy but also encouraged innovative approaches to understanding market behavior.

Departmental Activities

Engineer’s Day Celebration

The Engineer’s Day Celebration 2025 was organized to honor Bharat Ratna Sir Mokshagundam Visvesvaraya and to inspire students by highlighting the transformative role of engineers in society. The event aimed to spark curiosity in emerging areas of engineering, with a particular focus on RF (Radio Frequency) Engineering. It provided participants with valuable insights into this specialized field, exploring its real-world applications and the wide range of career opportunities it offers in today’s tech-driven world.

Departmental Activities

Contraption 2k25 – A National Level Competition

The National Level Contraption Competition, organized by the E&TC department on 26th March 2025, served as an exciting platform for promoting innovation, hands-on learning, and collaborative engineering. The event encouraged participants to design and build creative contraptions, fostering a spirit of problem-solving and technical excellence. It offered students a unique opportunity to apply theoretical knowledge in practical settings, enhance their engineering skills, and work as teams across disciplines. Accompanied by faculty, students had a rewarding experience as they interacted with peers from various institutes and witnessed a wide range of inventive solutions. The competition not only showcased engineering ingenuity but also inspired participants to push the boundaries of creativity and pursue excellence in their future endeavors.

Departmental Activities

Valorant – A National Level Competition

On 3rd April 2025, a national-level e-sports competition was organized with the objective of engaging students in a strategic, team-based gaming environment. The event aimed to promote active participation in e-sports while fostering essential skills such as teamwork, communication, and real-time problem-solving. It provided an exciting platform for gaming enthusiasts from various institutions to compete, collaborate, and showcase their talent on a larger stage. The competition not only highlighted the growing relevance of e-sports but also emphasized its potential as a dynamic field for skill development and innovation.

Departmental Activities

One Minute Jam

On 7th February 2025, a thought-provoking debate competition was organized to encourage critical thinking and informed discussions on the topic of Artificial Intelligence (AI). The event provided students with a platform to express their views, enhance their public speaking abilities, and engage in constructive dialogue. Participants explored the ethical, societal, and technological implications of AI, sparking meaningful conversations around its impact on the future. The competition successfully fostered a deeper understanding of AI while promoting analytical thinking and confident communication among students.

Departmental Activities

Workshop on Antenna Design & Fabrication

On 16th July 2024, a specialized session was conducted to raise awareness among students about the scope and growing need of the antenna field in modern communication systems. The event aimed to familiarize participants with the fundamentals of antenna fabrication and testing techniques through interactive demonstrations and expert guidance. It provided valuable insights into real-world applications of antenna technology, enhancing both theoretical understanding and practical knowledge among the attendees.

E&TC Faculty Publications in Scopus/ SCI Indexed Journal

Sr. No.	Name of the Faculty	Title	Volume/ Issue/ ISSN No./ DOI	Name of the Journal
1	Dr. Rupali R. Kawade	Indian Cross Corpus Speech Emotion Recognition Using Multiple Spectral-Temporal-Voice Quality Acoustic Features and Deep Convolution Neural Network	https://doi.org/10.18280/ria.380318	Revue d'Intelligence Artificielle
2	Dr. Vijaya A. Yaduvanshi	Automatic Oral Cancer Detection & Classification using Modified Local Texture Descriptor & Machine Learning Algorithms	https://doi.org/10.1007/s11042-024-19040-y	Multimedia Tools & Applications
3	Mrs. M. S. Andhare	Optimizing Lithium-Ion Battery Discharge Capacity Prediction Using Light GBM and Explainable AI (XAI) Framework	https://doi.org/10.63278/10.63278/mme.v31.1	Metallurgical and Materials Engineering
4	Dr. Kiran M. Napte	A method for IoT devices test case generation using language models	https://doi.org/10.1016/j.mex.2025.103340	Methodx
5	Dr. Kiran M. Napte	Face Recognition System for Criminal Identification in CCTV Footage Using Keras and OpenCV.	https://doi.org/10.1186/s13634-025-01213-y	Ingénierie des Systèmes d'Information
6	Mrs. Priti J. Rajput	DESIGN AND ANALYSIS OF SPIN-BASED LOGIC GATES FOR ENHANCING COMPUTATIONAL EFFICIENCY	15th May 2025. Vol.103. No.9 ISSN: 1992-8645 E-ISSN: 1817-3195	Journal of Theoretical and Applied Information Technology

E&TC Faculty Publications in International Conferences

Sr. No.	Name of the Faculty	Title	Name of the Conference	Venue
1	Mrs. Vijayalaxmi S. Kumbhar	Design and Performance Evaluation of Current Starved VCO using 14nm FinFET Technology	2025 IEEE International Conference on Interdisciplinary Approaches in Technology and Management for Social Innovation (IATMSI) DOI: 10.1109/IATMSI64286.2025.10985133	Gwalior, India
2	Dr. Dipali N. Dhake	Neural Stress Mapping with Machine Learning from EEG Data	International Conference on Intelligent Computing and Big Data Analytics	Navi Mumbai, Maharashtra, India

E&TC Faculty Books and Book Chapter

Sr. No.	Name of the Faculty	Title	ISBN	Name of the Publisher
1	Dr. Dipali K. Shende	Machine Learning	978-93-6674-194-9	Scientific International Publishing House
2	Dr. Dipali K. Shende	Computer Based Optimization	978-93-7128-268-0	Global Scholars Press
3	Mrs. Maithili S. Andhare	Microprocessor and Microcontrollers	978-93-6674-925-9	Scientific International Publishing House

E&TC Faculty Copyrights

Sr. No.	Name of Faculty	Title	Copyright Number	Status of the Copyright
1	Mrs. Vijayalaxmi K. Kumbhar	System To Alarm Freshwater Contamination Using IoT Devices	30988/2024-CO/L	Filed
2	Dr. Dipali N. Dhake	Multimodal Human Stress Detection using Deep Learning	31093/2024-CO/L	Filed
3	Mrs. Arti A. Tekade	Smart Gun with Fingerprint Authentication Integrated bullet Counting system	29442/2024-CO/L	Filed
4	Dr. Santosh N. Randive	Detection of Diabetes Retinopathy Using Image Processing	31967/2024-CO/L	Filed
5	Mrs. Mrunmayee D. Rahate	Cardiac Health Monitoring Using Deep Learning Algorithm	30914/2024-CO/L	Filed

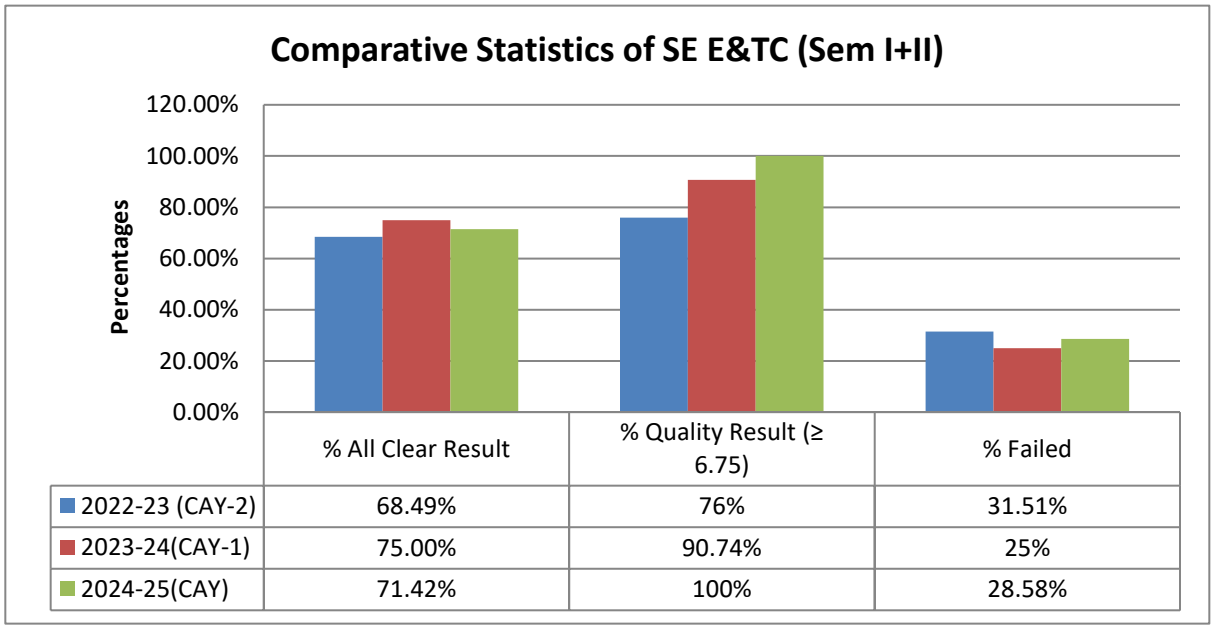
E&TC Faculty Patent/ Design Patent

Sr. No.	Name of the Faculty	Title	Patent Number	Status of the Patent
1	Dr. Rupali R. Kawade	A Cross-linguistic speech emotion recognition system for accurately identifying emotions in multiple languages	202421104724	Patent Published (FER Received)
2	Mrs. Priti R. Kale	Smart Shower Control System using Digital setup Box	202521014870	Patent Published

Result Analysis

Overall Result Summary: SE E&TC SEM - II

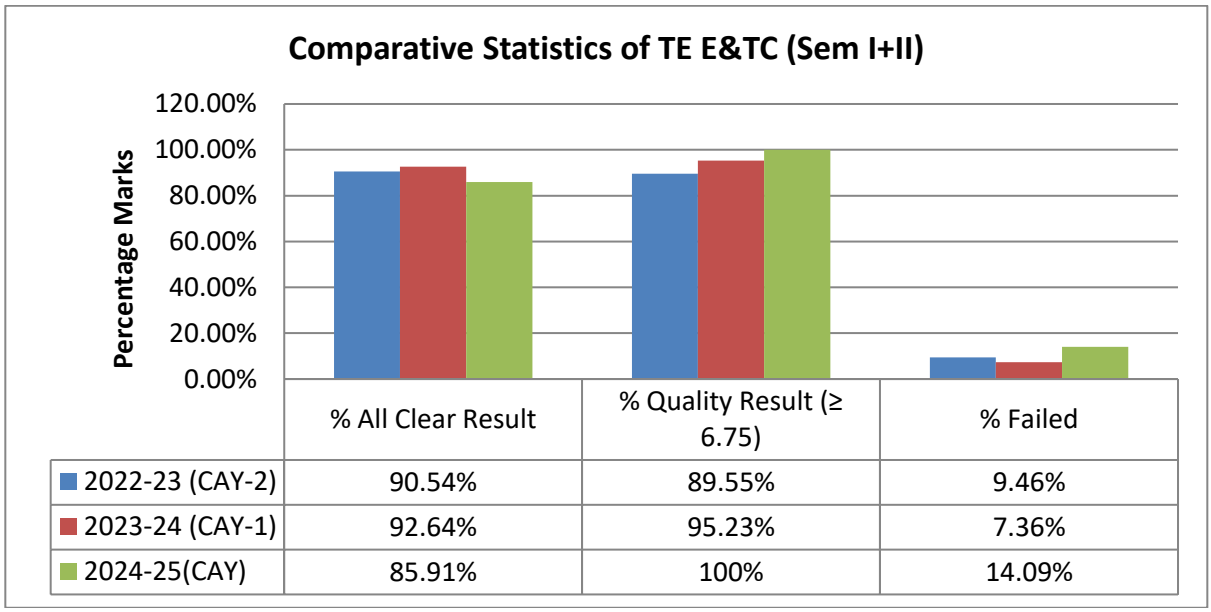
Academic Year	2024-25 (CAY)	2023-24 (CAY-1)	2022-23 (CAY-2)
% All Clear Result	71.42%	75.00%	68.49%
% Quality Result (≥ 6.75)	100%	90.74%	76%
% Failed	28.58%	25%	31.51%



Result Analysis

Overall Result Summary: TE E&TC SEM - II

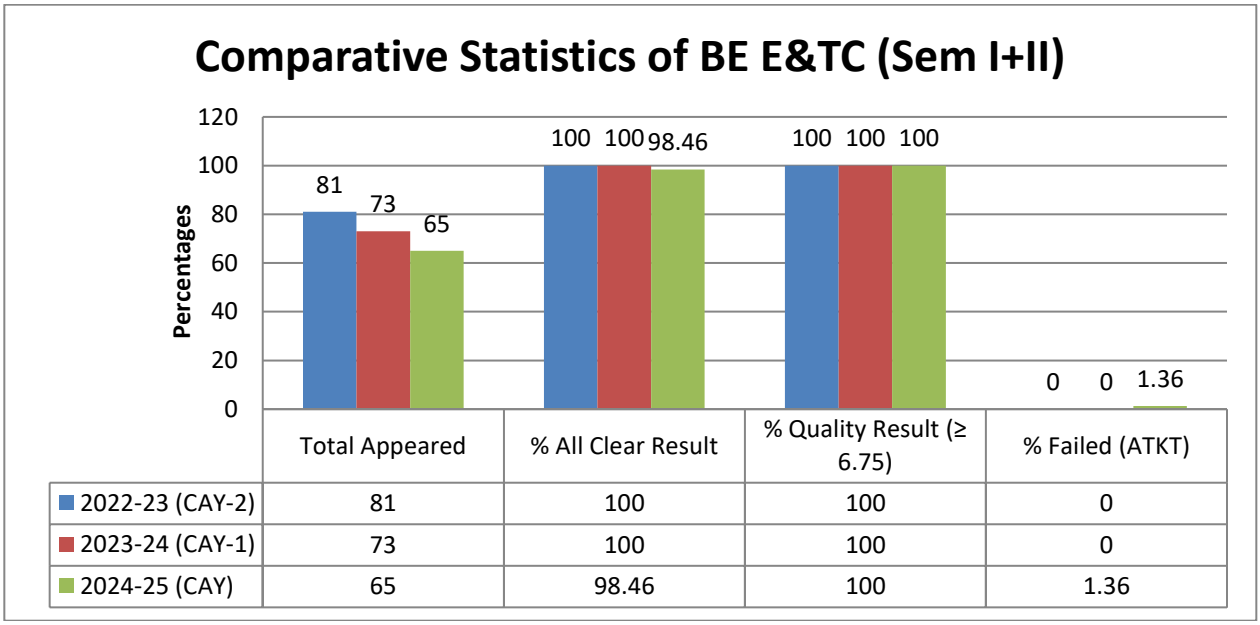
Academic Year	2024-25 (CAY)	2023-24 (CAY-1)	2022-23 (CAY-2)
% All Clear Result	85.91%	92.64%	90.54%
% Quality Result (≥ 6.75)	100%	95.23%	89.55%
% Failed	14.09%	7.36%	9.46%



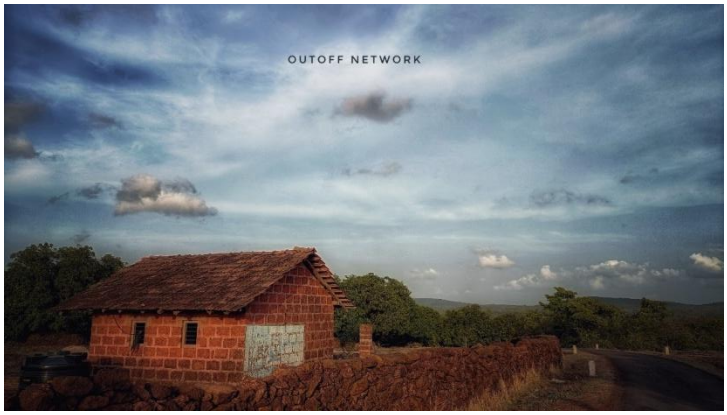
Result Analysis

Overall Result Summary: BE E&TC SEM - II

Academic Year	2024-25 (CAY)	2023-24 (CAY-1)	2022-23 (CAY-2)
% All Clear Result	98.46%	100%	100%
% Quality Result (≥ 6.75)	100%	100%	100%
% Failed	1.36%	Nil	Nil



Student Corner
Photography



SE ENTC
Atharva Patil

Student Corner

Sketches

SE ENTC

Maitreyee Bhoite

Testimonial

Anuradha Ajit
BE E&TC

My four years at Pimpri Chinchwad College of Engineering & Research's E&TC department were filled with enriching academic experiences, supportive faculty, and ample opportunities for personal and professional growth. The practical exposure and technical guidance provided by the department helped me build a strong foundation. I'm especially grateful for the encouragement I received to explore beyond textbooks and develop problem-solving skills. This college has played a vital role in shaping my career and confidence.

Testimonial

Deep Majukar
BE E&TC

Reflecting on my time at this institution, the most important thing I gained is a sense of belonging and purpose. It was more than just academics; it was a place where ideas blossomed, friendships formed, and values developed. The environment encouraged curiosity, resilience, and teamwork. These elements have greatly influenced who I am today. I leave with knowledge, memories, mentors, and a mindset that’s ready for the future. This college didn’t just prepare me for a job; it prepared me for life.

PIMPRI CHINCHWAD COLLEGE OF ENGINEERING AND RESEARCH, RAVET, PUNE - 412101

INSTITUTE VISION AND MISSION

Vision:

To be a premier institute of technical education & research to serve the need of society and all the stakeholders.

Mission:

To establish state-of-the-art facilities to create an environment resulting in individuals who are technically sound having professionalism, research and innovative aptitude with high moral and ethical values.

PIMPRI CHINCHWAD COLLEGE OF ENGINEERING & RESEARCH

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