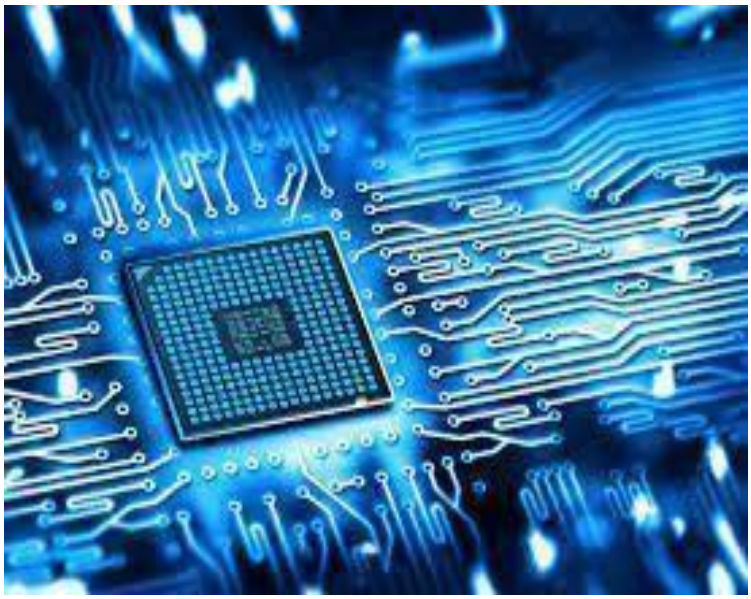
Pimpri Chinchwad Education Society's

Pimpri Chinchwad College of Engineering and Research, Ravet, Pune

Department of Electronics & Telecommunication

Electronica–2024

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



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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

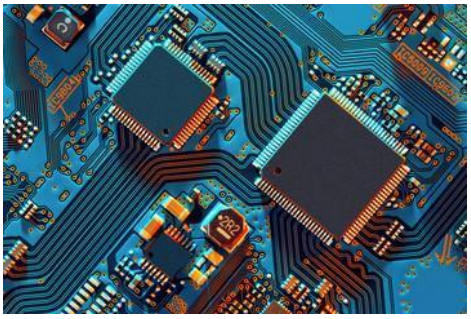
Sr. No.	Name of the Faculty	Specialization	Designation
1	Dr. Rahul G. Mapari	PhD (Electronics & Telecommunication)	Professor & HOD
2	Mrs.Vijayalaxmi S. Kumbhar	ME (Electronics & Telecommunication	Assistant Professor
3	Dr. Santosh N. Randive	PhD (Electronics & Telecommunication)	Associate Professor
4	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	Ms. Rupali R. Kawade	ME (Electronics)	Assistant Professor
9	Mrs. Dipali N. Dhake	ME (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

MICROCHIPS: THE TINY GIANTS SHAPING THE FUTURE OF ENTC ENGINEERING



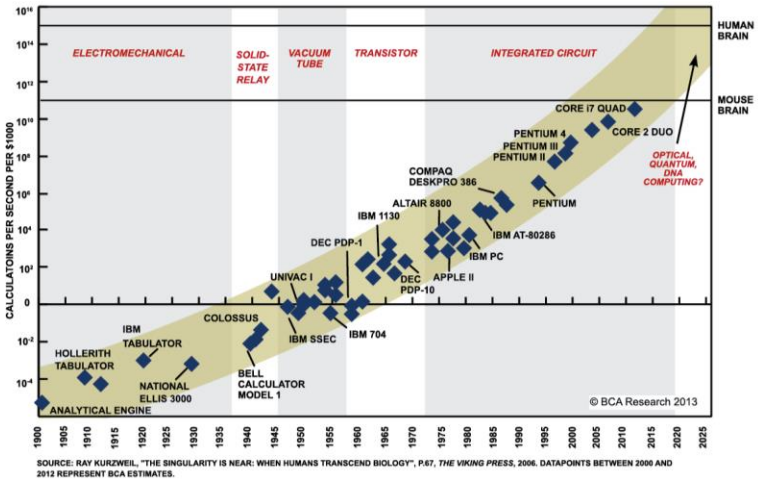
In the era of digitization, the microchip stands as one of the most revolutionary technologies ever conceived. Once limited to powering calculators and basic electronic gadgets, today's microchips form the beating heart of innovation - driving everything from smart phones and satellites to self-driving cars, medical equipment, and artificial intelligence.

But what exactly makes these tiny silicon wafers so powerful? And more importantly - why should ENTC (Electronics and Telecommunication) engineers care?

For today's ENTC students, staying abreast of emerging microchip trends is no longer optional. It's both an academic necessity and the key to unlocking exciting careers and groundbreaking research opportunities.

Beyond Moore's Law: A New Era of Innovation

For decades, the microchip industry followed Moore's Law - the prediction that the number of transistors on a chip would double roughly every two years. This relentless scaling made chips faster, smaller, and more powerful.



SOURCE: RAY KURZWEIL, "THE SINGULARITY IS NEAR: WHEN HUMANS TRANSCEND BIOLOGY", P.67, *THE VIKING PRESS*, 2006. DATAPOINTS BETWEEN 2000 AND 2012 REPRESENT BCA ESTIMATES.

But how long can you keep shrinking something that's already smaller than a virus?

As we approach the physical limits of silicon - with transistors now shrinking below 5 nanometres - the industry is undergoing a radical transformation.

Welcome to the Post-Moore's Law era, where progress is defined not just by size, but by smarter, specialized chip designs.

AI Chips: Intelligence at the Edge

Imagine a chip that doesn't just compute - it thinks. That's the promise of AI-integrated chips, which are built specifically to accelerate machine learning and deep learning algorithms. Unlike traditional CPUs, these chips are designed for real-time inference at the edge.

Why does this matter?... Because it means faster voice recognition, sharper computer vision, and smarter autonomous systems.

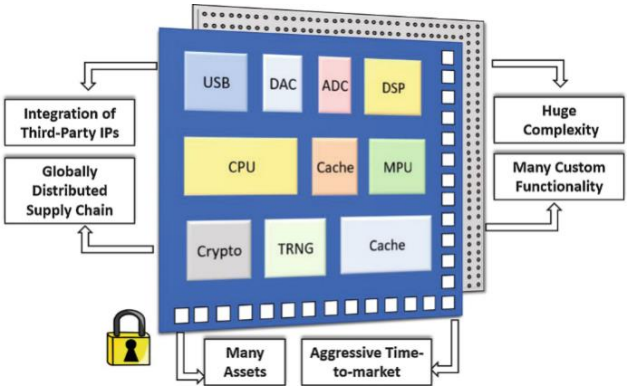
Companies like Google (with its TPU) and Apple (with its Neural Engine) are already integrating these AI chips into consumer devices. For ENTC students, this means understanding both the hardware and the machine learning models these chips support.

SoCs and Chiplets: Compact Powerhouses

Why build ten chips when one can do it all?

System-on-Chip (SoC) designs now integrate processing, memory, and communication into a single chip. Chiplet-based designs let engineers build systems using modular blocks - like Lego for microchips.

This makes communication systems and VLSI design essential for ENTC students.



The Rise of Open-Source Hardware

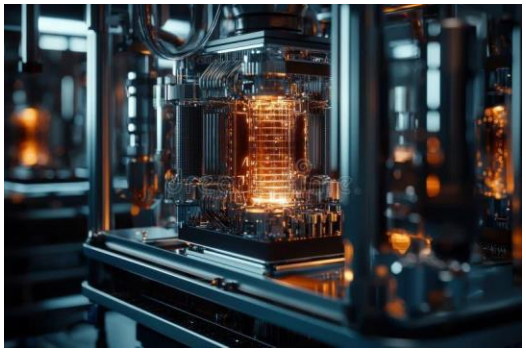
If software can be open source, why not hardware?
RISC-V, an open-source instruction set architecture, is enabling custom processor design at universities, start-ups, and labs.

For ENTC students, this means opportunities to contribute to real projects and even design their own chips.

Tomorrow's Chips: Neuromorphic and Quantum

What if chips could think more like humans - or function on principles that defy classical physics? Neuromorphic chips mimic brain structures, enabling efficient processing of time-based data. Quantum chips, still emerging, use qubits for computations far beyond classical capabilities.

These areas are especially relevant for students interested in signal processing and communication theory.

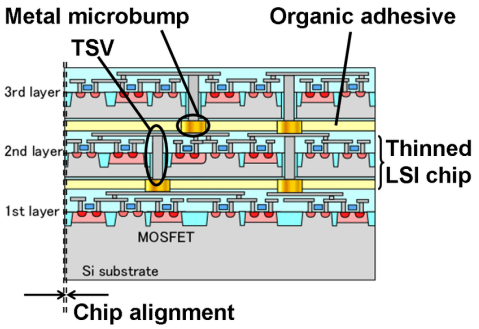


3D ICs and the Power of Vertical Thinking
What if we stopped thinking horizontally - and started stacking upward?

3D Integrated Circuits stack components vertically to reduce latency and save space, requiring new skills in thermal management, RF integrity, and interconnect.

Security and Sustainability: The New Priorities
How secure is your chip? How sustainable is your design?

Modern chips now include hardware-level protections and strive for energy efficiency. ENTC engineers must integrate security and sustainability directly into hardware designs.



The Global Chip Shortage: A Wake-Up Call

Can a shortage of microchips really bring industries to a halt?
Yes. The global chip shortage showed how vital semiconductors are across sectors, prompting nations like India to invest in local ecosystems - creating fresh opportunities for engineers.

Conclusion: Shaping the Silicon Future

So here's the real question: are you ready to shape the future? For ENTC students, this is more than a subject - it's a gateway to redefining how the world connects, computes, and evolves.

SE ENTC
Aayushi Sunil Narkhede

Departmental Activities

Quarter Tech Talk Table 13.0 (QT3)" in the form of a Panel Discussion on the topic - "Breaking Perceptions: Cyber security & its Opportunities"

The third in-person edition of "Spark to Impact" on 28th June 2024 proved to be an inspiring and impactful event, drawing over 150 participants from across Pune. With engaging panel discussions led by renowned cyber security professionals like Vaishali Nagori and Yogesh Kulkarni, the event explored diverse domains, career paths, and real-world applications in cyber security. Keynotes by global IEEE leaders and local dignitaries added depth and motivation to the program. The panel's emphasis on inclusivity, AI integration, and research opportunities sparked enthusiasm among students.

Departmental Activities

ICT Activity: Data Structure

The ICT activity which took place on 12th July 2024 provided SE E&TC students with a practical platform to explore and demonstrate core data structures like arrays, stacks, trees, and queues. Through group presentations and live demos, students deepened their conceptual understanding and problem-solving abilities. The interactive session encouraged collaboration, critical thinking, and effective communication. Coding implementation further reinforced theoretical learning with hands-on experience.

Departmental Activities

5 Days Hands-on Workshop on STM 32 Microcontrollers

The Embedded System Design workshop from 22nd to 26th July 2024 provided students with a hands-on introduction to STM32 microcontrollers and real-time applications. Participants explored the complete design flow, from understanding hardware and software fundamentals to developing embedded programs using HAL libraries. The event emphasized practical learning through interfacing various peripherals and building functional projects. Students gained valuable insights into modern embedded systems and microcontroller-based design.

Departmental Activities

4th Asian Conference on Innovation in Technology (ASIANCON'2024)

ASIANCON 2024, from 23rd to 28th August 2024 hosted by PCCOE&R and technically sponsored by IEEE Bombay Section, served as a premier international platform for knowledge exchange in emerging technologies. With a special focus on AI, data science, automation, and robotics, the conference attracted researchers and professionals from diverse fields. Engaging sessions and paper presentations highlighted innovations across disciplines like aerospace, biomedical engineering, and wireless communication. The event fostered global collaboration and encouraged cutting-edge research. Overall, ASIANCON 2024 was a landmark event, celebrating technological advancement and interdisciplinary innovation.

Departmental Activities

National Level One Week Faculty Development Program On “Offensive and Defensive Ethical Hacking”

The expert-led cyber security session was organized from 2nd to 6th September 2024 which provided valuable insights into modern cyber threats and the tactics used by attackers. Participants gained hands-on experience in ethical hacking, penetration testing, and vulnerability assessment. Emphasis was placed on proactive defense strategies and real-world applications. The session empowered attendees to implement robust security practices within their organizations. It fostered a deeper understanding of cyber defence and offensive techniques to build safer digital environments.

Departmental Activities

Workshop on “Arduino”

On 31st July 2024, a hands-on workshop was conducted for second year students to provide practical experience in Arduino programming and circuit design. The session focused on familiarizing participants with the Arduino IDE software, enabling them to write, test, and debug code effectively. Through interactive activities, students gained valuable skills in building and controlling electronic circuits, bridging the gap between theoretical concepts and real-world applications.

Departmental Activities

Induction & Fresher's Party

The Fresher's Party held on 9th August 2024 aimed to warmly welcome the new batch of SE E&TC students. The event was designed to help them feel comfortable and settle into the college environment by providing an opportunity to meet the faculty and interact with their peers. Through informal activities and socializing, the party fostered a friendly atmosphere that encouraged new students to build connections and become familiar with their academic community.

Departmental Activities

Teachers Day Celebration

On 5th September 2024, we had a special occasion to express our heartfelt gratitude to our teachers and acknowledge the vital role they have played in our success. This event gave us the chance to thank them for their relentless hard work, dedication, and guidance in shaping us into not just successful students but true human beings. Their unwavering support has been instrumental in our growth, both academically and personally, making this day a meaningful tribute to their invaluable contribution.

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. Kishor B. Bhangale	Speech emotion recognition for human–computer interaction	https://doi.org/10.1007/s10772-024-10138-0	International Journal of Speech Technology
2	Dr. Kishor B. Bhangale	A novel two-way feature extraction technique using multiple acoustic and wavelets packets for deep learning based speech emotion recognition	https://doi.org/10.1007/s11042-024-19674-y	Multimedia Tools and Application
3	Dr. Pallavi G. Adke	Computer-Aided Diagnostic System for Detection and Classification of Different Grades of Diabetic Retinopathy using Ensemble Learning and Deep Learning Techniques	Volume 12, Issue 4, ISSN:2147-67992	International Journal of Intelligent Systems and Applications in Engineering
4	Dr. Dipali K. Shende	An Efficient fault diagnosis model using Lappet Falco optimization on deep neural network for the VSI	Volume 21 issue 3	International Journal of Power Electronics
5	Dr. Rahul G. Mapari	Public Health Monitoring Based on Food Security Measures in Sustainable Smart City Development Using Machine Learning Techniques	https://doi.org/10.1007/s41976-024-00126-y	Remote Sensing in Earth Systems Sciences
6	Mrs. Dipali N. Dhake	Implemented OBL-DE assisted Tasmanian devil optimization for selecting the optimal features using EEG signal for stress detection	https://doi.org/10.1504/IJAHUC.2024.142712 PDF Vol. 47, No. 4	International Journal of Ad Hoc and Ubiquitous Computing

7	Dr. Santosh N. Randive	Lightweight progressive recurrent network for video de-hazing in adverse weather conditions	https://doi.org/10.1007/s00371-024-03683-x	The Visual Computer
8	Dr. Rahul G. Mapari	Measurement and intermittent performance analysis of 12-switch NPC inverter driven PMSM drive in electric vehicle application	https://doi.org/10.1504/IJVNV.2024.144734	International Journal of Vehicle Noise and Vibration
9	Mrs. Arti A. Tekade	Person identification using novel local triangular binary pattern based texture descriptor	https://doi.org/10.1186/s13634-025-01213-y	EURASIP Journal on Advances in Signal Processing
10	Dr. Santosh N. Randive	Unpaired recurrent learning for real-world video de-hazing	https://doi.org/10.1016/j.patcog.2025.111698	Pattern Recognition

E&TC Faculty Publications in International Conferences

Sr. No.	Name of the Faculty	Title	Name of the Conference	Venue
1	Dr. Triveni D. Dhamale	Compact and Planar Sinuous Antenna operating in the Wide Band Frequency Range	4th Asian Conference on Innovation in Technology (ASIANCON) 2024	PCCOER
2	Dr. Triveni D. Dhamale	Human Activity Prediction Using Generative Adversarial Networks	2024 15th International Conference on Computing, Communication and Networking Technologies (ICCCNT)	IIT, Mandi
3	Mrs. Vijayalaxmi S. Kumbhar	Sustainable Agriculture Using Machine Learning and IoT	2024 15th International Conference on Computing Communication and Networking Technologies (ICCCNT)	Kamand, India
4	Dr. Pallavi G. Adke	Semantic Segmentation of Rooftop Photovoltaic Panel from Satellite and Aerial Images using Deep Learning	4t hAsian Conference on Innovation in Technology (ASIANCON) 2024	PCCOER
5	Dr. Pallavi G. Adke	Computer - Vision based Weed Killing Rover	sixth International Conference on Intelligent Communication, Control and Devices (ICICCD-2024)	Electrical Cluster, School of Engineering, UPES, Dehradun
6	Dr. Dipali K. Shende	Detection and Simulation of Pancreatic Tumors and Cancer Prediction Based on Probability Model	International Conference on Computational Intelligence and Communication Networks (ICCICN-24)	NIER Pune - India
7	Mrs. Arti A. Tekade	Sustainable Agriculture Using Machine Learning and IoT	2024 15th International Conference on Computing Communication and Networking Technologies (ICCCNT)	Kamand, India
8	Mrs. Priti J. Rajput	Mathematical Validation of 100nm n-MOSFET using Silvaco TCAD	International Conference on Computing, Communication, Control and Automation (ICCUBEA-2024)	PCCOE, Pune

9	Mrs. Priti J. Rajput	Design of Spin-FET Electrical Model for Basic Gates	VLSISATA, Bangalore	Amrita College of Engg. Bangalore, India
10	Mrs. Maithili S. Andhare	Sustainable Agriculture Using Machine Learning and IoT	2024 15th International Conference on Computing Communication and Networking Technologies (ICCCNT)	Kamand, India
11	Dr. Kishor B. Bhangale	Machine Learning Based Heart Disease Prediction Using ECG Image	2024 5th International Conference for Emerging Technology (INCET)	Belgaum, India
12	Mrs. Dipali N. Dhake	Comprehensive Analysis of Solar-Powered Electric Carts	2024 IEEE 3rd International Conference on Electrical Power and Energy Systems (ICEPES)	Bhopal, India
13	Mrs. Arti A. Tekade	Comprehensive Analysis of Hand Radiographic based Person Authentication	7th IEEE International Conference PUNECON 2024 held during 13th - 15th December 2024, jointly organized by the Defence Institute of Advanced Technology (DIAT) and IEEE Pune Section	DIAT Pune, Maharashtra, India.
14	Dr. Kishor B. Bhangale	Smart IoT Based Real Time Crop Monitoring and Spectrum Management for Hydroponic System	2024 4th Asian Conference on Innovation in Technology (ASIANCON), Pimpri Chinchwad, India, 2024, pp. 1-6, doi: 10.1109/ASIANCON62057.2024.10838172.	Pune, India
15	Dr. Vijaya A. Yaduvanshi	Noble Local Texture Descriptor for Oral Cancer Detection	Informatics & Smart Engineering Systems(INSES2024)	NIT Silchar, Assam

E&TC Faculty Books and Book Chapter

Sr. No.	Name of the Faculty	Title	ISBN	Name of the Publisher
1	Kishor B. Bhangale	Neural Stress Mapping with Machine Learning from EEG Data	Intelligent Computing and Big Data Analytics. ICICBDA 2024.	Communications in Computer and Information Science, vol. 2234. Springer, Cham.

E&TC Faculty Copyrights

Sr. No.	Name of Faculty	Title	Copyright Number	Status of the Copyright
1	Dr. Dipali K. Shende	Detection and simulation of pancreatic tumor growth based on prediction model	L-156628/2024	Registered
2	Dr. Triveni D. Dhamale	Autohealth : Predictive Maintenance of EVs using Deep Learning	28516/2024-CO/L	Filed
3	Dr. Triveni D. Dhamale	Adaptive sensory headlight system	30983/2024-CO/L	Filed
4	Dr. Kiran M. Napte	Renal Predict: A predictive model for kidney cancer growth	30585/2024/CO-SW	Filed

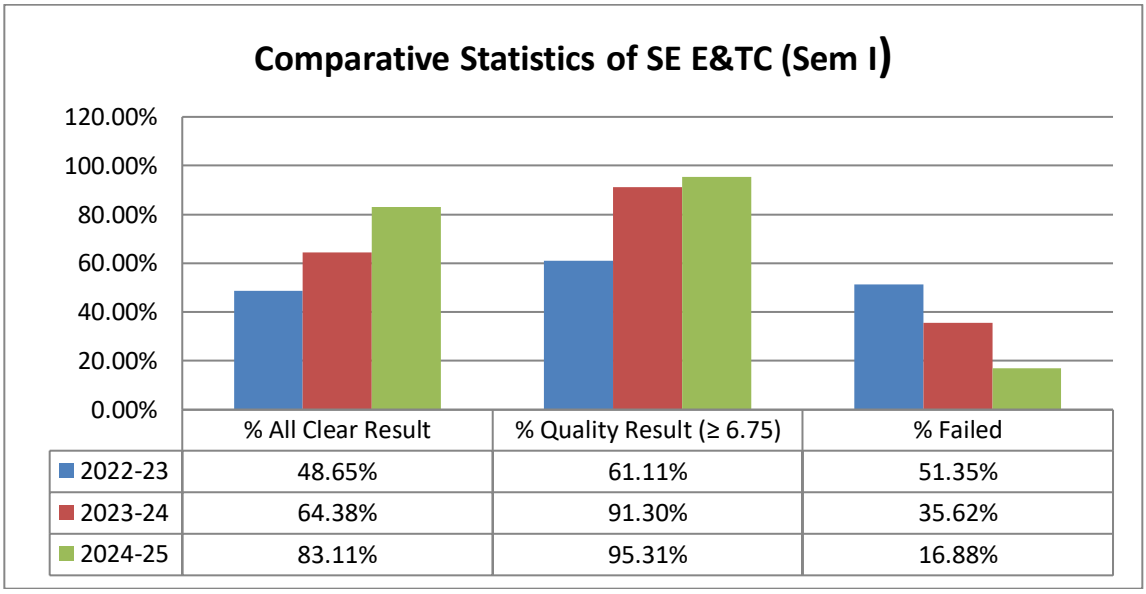
E&TC Faculty Patent/ Design Patent

Sr. No.	Name of the Faculty	Title	Patent Number	Status of the Patent
1	Mrs. Maithili S. Andhare	AI Based Physiotherapy Bed	6391563	UK Design Patent Granted
2	Mrs. Vijayalaxmi S. Kumbhar	SERVING PLATE WITH GLASS HOLDER	381400-001	Granted
3	Dr. Dipali K. Shende	Wearable device to monitor health of Neuro-Patients	6399147	UK Design Patent Granted
4	Dr. Dipali K. Shende	Enhanced Wireless Connectivity Input Device for Visually Impaired Persons	202421080466	Filed in India
5	Mrs. Arti A. Tekade	Serving Tray with slots and flat sheet	424268-001	Granted
6	Dr. Kishor B. Bhangale	Foot Rest for Scooty	434982-001	Filed in India
7	Dr. Kishor B. Bhangale	Unmanned Ground Vehicle Structure for Pipeline inspection	435631-001	Filed
8	Dr. Kishor B. Bhangale	Multimonitor System For Laptop	435640-001	Filed
9	Dr. Kishor B. Bhangale	FlexiGlide DuoHook	435663-001	Filed
10	Dr. Kishor B. Bhangale	FlexiTwin Handle	435664-001	Filed
11	Dr. Kishor B. Bhangale	Multitasking Pen	435692-001	Filed
12	Dr. Kishor B. Bhangale	Load Cell Holder	435704-001	Filed

Result Analysis

Overall Result Summary: SE E&TC SEM - I

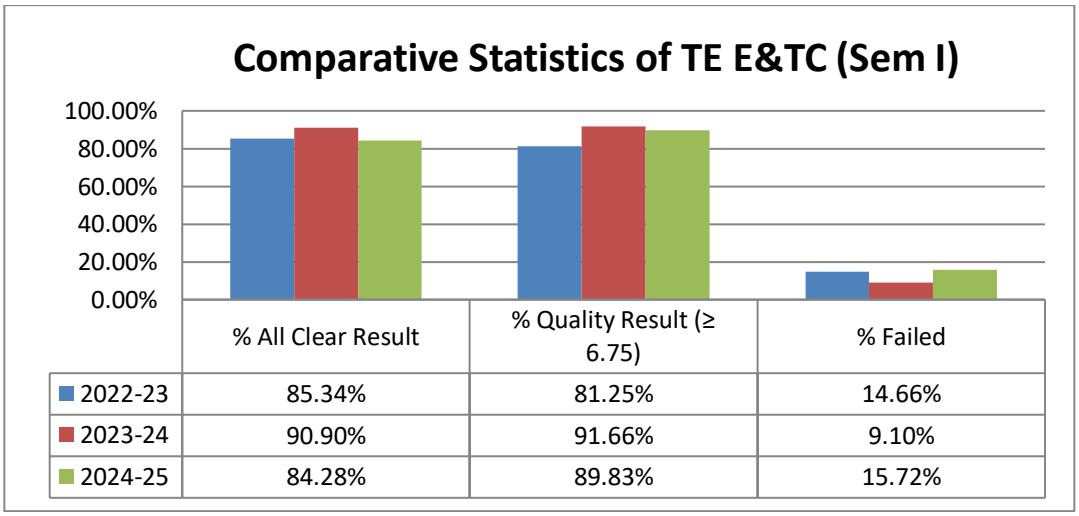
Academic Year	2024-25 (CAY)	2023-24 (CAY-1)	2022-23 (CAY-2)
% All Clear Result	83.11%	64.38%	48.65%
% Quality Result (≥ 6.75)	95.31%	91.30%	61.11%
% Failed	16.88%	35.62%	51.35%



Result Analysis

Overall Result Summary: TE E&TC SEM - I

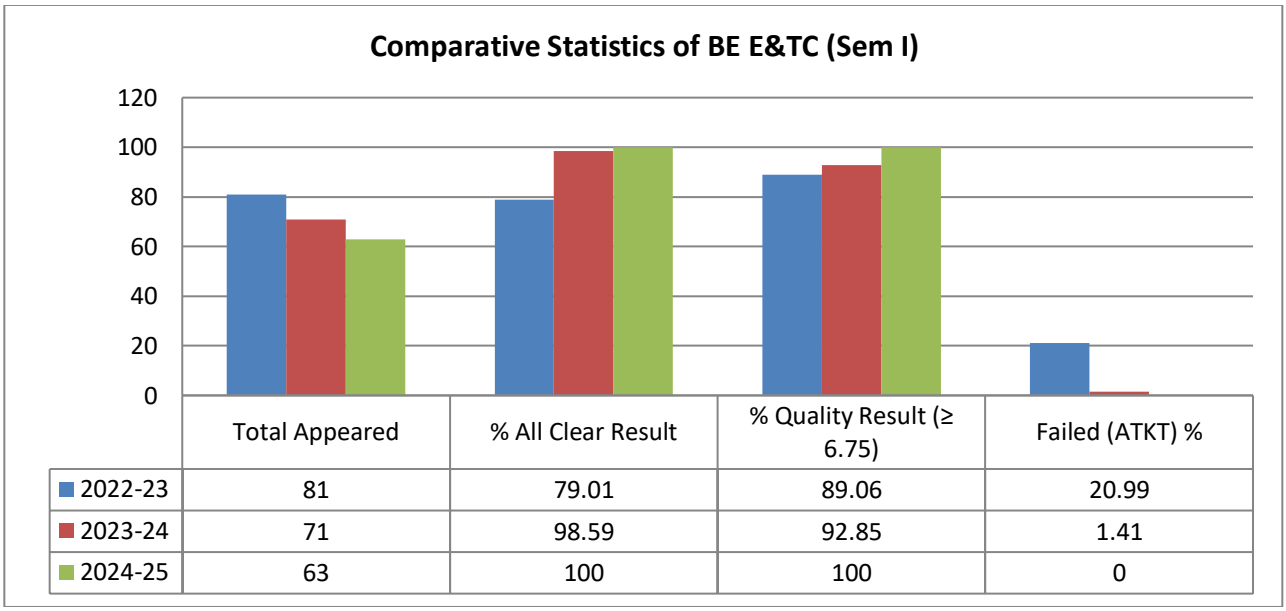
Academic Year	2024-25 (CAY)	2023-24 (CAY-1)	2022-23 (CAY-2)
% All Clear Result	84.28%	90.90%	85.34%
% Quality Result (≥ 6.75)	89.83%	91.66%	81.25%
% Failed	15.72%	9.1%	14.66%



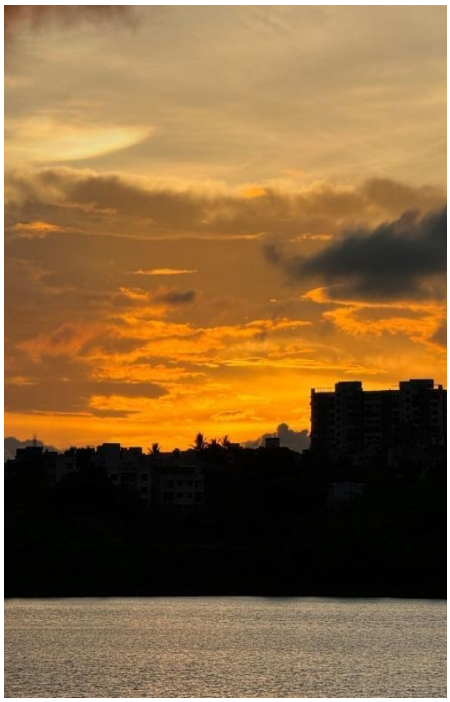
Result Analysis

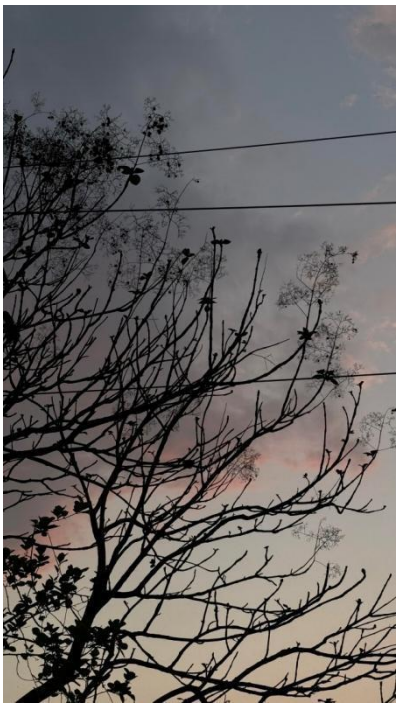
Overall Result Summary: BE E&TC SEM - I

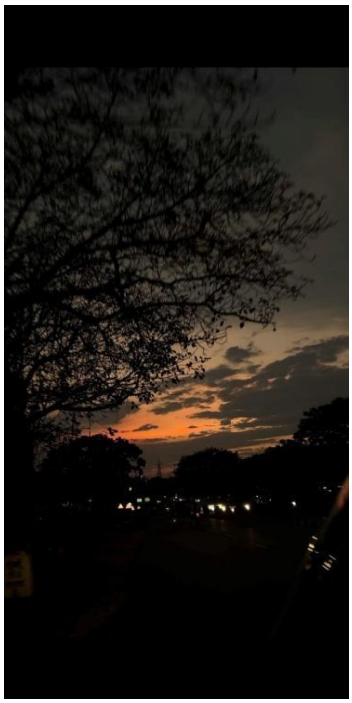
Academic Year	2024-25 (CAY)	2023-24 (CAY-1)	2022-23 (CAY-2)
% All Clear Result	100%	98.59%	79.01%
% Quality Result (≥ 6.75)	100%	92.85%	89.06%
% Failed	0	1.4%	20.99%



Student Corner
Photography







SE ENTC
Parth Pawar

Student Corner

Sketch

SE ENTC

Viraj Dubal

Testimonial

Rucha Joshi
BE E&TC

My four years in Pimpri Chinchwad College of Engineering & Research's E&TC department have been filled with lessons that go beyond academics. The journey has helped me grow into a more confident and curious individual. Whether it was through supportive mentors, technical challenges, or peer collaboration, every moment contributed to my personal and professional evolution. I'll always carry forward the values, skills and learning built during my time here. Additionally I'll always be grateful to the department for all the encouragement that it gave me to explore in various fields

Testimonial

Shreeram
BE E&TC

Attending college has been an enriching and transformative experience. The academic environment fostered critical thinking and intellectual growth. Faculty members demonstrated exceptional dedication and expertise. Beyond the classroom, I engaged in meaningful extracurricular activities. The diverse campus community broadened my perspective on the world. I am grateful for the opportunities that prepared me for professional success. This institution has truly laid a strong foundation for my future.

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

Institute Vision & 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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