



NATIONAL BOARD OF ACCREDITATION

SELF ASSESSMENT REPORT (SAR)
UNDER GRADUATE ENGINEERING PROGRAMME
TIER – II,



DR. B. C. ROY ENGINEERING COLLEGE, DURGAPUR

DEDICATED TO QUALITY EDUCATION

AFFILIATED TO MAKAUT | APPROVED BY AICTE | *NBA ACCREDITED | NAAC ACCREDITED

An Autonomous Institute



DR. B. C. ROY ENGINEERING COLLEGE, DURGAPUR

(APPROVED BY AICTE & AFFILIATED TO MAKAUT, WB)

📍 CAMPUS: JEMUA ROAD, FULJHORE, DURGAPUR-713206 (W.B.), INDIA

🌐 Website: www.bcrec.ac.in



Self-Assessment Report (SAR) Format

Undergraduate Engineering Programs

Graduate Attributes and Professional Competencies

Version 4.0 (GAPC V4.0)

(TIER-II Institution Programs)

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PART A: Institutional Information**1. Name and Address of the Institution:**

DR. B.C. ROY ENGINEERING COLLEGE,
JEMUA ROAD, FUJTHORE, DURGAPUR-713206

2. Type of the Institution: (Tick the applicable choice)

- | | |
|----------------------------------|-------------------------------------|
| Institute of National Importance | ☐ |
| Deemed to be University | ☐ |
| University | ☐ |
| Autonomous | ☐ |
| Non-Autonomous (Affiliated) | ☒ |
| Any Other (Please specify*) | ☐ |

*Provide Details: _____

Note:

- ❖ In case of Autonomous Institute/Deemed University, mention the year of grant of status by the authority. In case of autonomous institution, mention also the duration of status.
- ❖ In case of University Constituent Institution, please indicate the academic autonomy status of the Institution as defined in 12th Plan guidelines of UGC. Institute should apply for Tier 1 only when fully academically autonomous.

3. Year of Establishment of the Institution: 2000**4. Ownership Status: (Tick the applicable choice)**

- | | |
|-----------------------------|-------------------------------------|
| Central Government | ☐ |
| State Government | ☐ |
| Grant-in-Aid | ☐ |
| Self-financing Trust | ☒ |
| Any Other (Please specify*) | ☐ |

*Provide Details: _____

5. Name and Address of the Affiliating University: Maulana Abul Kalam Azad University of Technology, West Bengal

6. Other Academic Institutions Run by Trust/Society/etc., if any:

Table No. A6: List of all Institutions running under the same trust/society.

S. N.	Name of the Institution(s)	Year of Establishment	Programs of Study	Location
1	Dr. B. C. Roy College of Pharmacy & Allied Health Sciences	2005	B. Pharm, M. Pharm, D. Pharm	Bidhannagar, Durgapur-713206, Dist: Burdwan, West Bengal
2	Dr. B. C. Roy Engineering College Academy of Professional Courses	2008	BBA, BCA, BBA in Hospital Management, B. Optometry, B.Sc in Medical lab Technology, B.Sc.(Animation and Film Making), Bachelor of Science in Data Science, B.Sc.(VFX and Film Making)	Jemua Road, Fuljhore, Durgapur, PIN: 713206.
3	Dr. B. C. Roy Polytechnic	2014	Diploma in Civil, Mechanical, Electrical, , Computer Science & Technology	Bidhannagar, Durgapur-713206, Dist: Burdwan, West Bengal

7. Details of all the Programs being Offered by the Institution:

Table No. A7: Details of all the programs being offered by the Institution.

S. N.	Program Name	Year of Start	Sanctioned Intake	Increase / Decrease in Intake, if any	Year of Increase / Decrease	AICTE Approval Details	Accreditation Status*	No. of Times Program Accredited
1	Computer Science & Engineering - B.Tech.	2000	180	Increase from 60 to 90	2007	750-80-126(E)/ET/2000 Dt: 20.06.2007	YES 1st upto 30/06/2020 2nd upto 30/06/2023 3rd upto 30/06/2026	3
				Increase from 90 to 120	2009	750-80-126(E)/ET/2000 Dt: 20.08.2009		
				Increase from 120 to 180	2024	Eastern/1-43660195230/2024/EOA Dt: 18.05.2024		
2	Electrical Engineering - B.Tech.	2000	120	Increase from 60 to 120	2012	Eastern/1-691774611/2012/EOA Dt: 10.05.2012	YES upto 30/06/2025	1
3	Information Technology - B.Tech.	2000	60				YES upto 30/06/2025	1
4	Electronics & Communication Engineering - B.Tech.	2000	120	Increase from 60 to 90	2007	750-80-126(E)/ET/2000 Dt: 20.06.2007	YES 1st upto 30/06/2020 2nd upto 30/06/2023 3rd upto 30/06/2026	3
				Increase from 90 to 120	2009	750-80-126(E)/ET/2000 Dt: 20.08.2009		
5	Mechanical Engineering - B.Tech.	2003	60	Increase from 30 to 60	2004	750-80-126(E)/ET/2000 Dt: 25.06.2004	YES upto 30/06/2025	1
				Increase from 60 to 120	2012	Eastern/1-691774611/2012/EOA Dt: 10.05.2012		
				Decrease from 120 to 90	2021	Eastern/1-9322026602/2021/EOA Dt: 30.06.2021		
				Decrease from 90 to 60	2022	Eastern/1-10970309868/2022/EOA Dt: 03.07.2022		
6	Master of Business Administration	2004	90	Increase from 60 to 90	2025	Eastern/1-44642725740/2025/EOA Dt: 02.04.2025		
7	Master of Computer	2005	120	Increase from 60	2024	Eastern/1-43660195230/2024/EOA		

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	Application			to 120		Dt: 18.05.2024		
8	Electronics and Communication Engineering - M.Tech.	2007	18					
9	Electrical Engineering (Power System Engineering) - M.Tech.	2007	18					
10	Computer Science and Engineering - M.Tech.	2009	18					
11	Civil Engineering - B.Tech.	2009	60	Increase from 60 to 120	2013	Eastern/1-1357886112/2013/EOA Dt: 03.04.2013	NO	
				Decrease from 120 to 60	2019	Eastern/1-4266804454/2019/EOA / Corrigendum-1 Dt: 17.05.2019		
12	Mechanical Engineering - M.Tech.	2012	18					
13	Computer Science & Engineering (Artificial Intelligence and Machine Learning) - B.Tech.	2021	60	Increase from 30 to 60	2024	Eastern/1-43660195230/2024/EOA Dt: 18.05.2024	Not yet eligible	
14	Computer Science and Design - B.Tech.	2021	60				Not yet eligible	
15	Computer Science & Engineering (Data Science) - B.Tech.	2022	60				Not yet eligible	
16	Computer Science & Engineering (Cyber Security) - B.Tech.	2024	60				Not yet eligible	

8. Programs to be Considered for Accreditation vide this Application:

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Table No. A8.1: List of programs to be considered for accreditation.

Cluster ID	Name of the Department	Name of the Program
1.	Electronics and Communication Engineering	B. TECH (Electronics & Communication Engineering)

Table No. A8.2: Allied Department(s) to the Department of the programs considered for accreditation as above.

Cluster ID.	Name of the Department (in table no. A8.1)	Name of allied Departments/Cluster (for table no. A8.1)
1.	Electronics and Communication Engineering	NIL

9. Total Number of Faculty Members in Various Departments: Table No. A9:

No. of faculty members in various departments.

S. N.	Name of the Department	Number of faculty members in the Department (UG and PG)											
		CAY (2025-26)				CAYm1 (2024-25)				CAYm2 (2023-24)			
		No. of Professors	No. of Associate Professors	No. of Assistant Professors	Total faculty members	No. of Professors	No. of Associate Professors	No. of Assistant Professors	Total faculty members	No. of Professors	No. of Associate Professors	No. of Assistant Professors	Total faculty members
1	Computer Science and Engineering	1	5	25	31	1	4	21	26	1	4	21	26
2	Computer Science and Engineering (Artificial Intelligence and Machine Learning)	0	1	6	7	0	1	5	6	0	1	4	5
3	Computer Science and Engineering (Data Science)	0	1	10	11	0	1	10	11	0	0	5	5
4	Computer Science and Design	0	1	8	9	0	0	9	9	0	0	7	7
5	Information Technology	0	1	9	10	0	0	10	10	0	0	10	10
6	Electronics and Communication Engineering	1	6	21	28	3	4	24	31	3	4	25	32
7	Electrical Engineering	3	2	19	24	3	2	22	27	3	2	23	28
8	Civil Engineering	1	0	10	11	1	0	10	11	1	0	10	11
9	Mechanical Engineering	2	2	13	17	2	2	13	17	2	2	13	17
10	Computer Science and Engineering (Cyber Security)	0	0	4	4	0	0	4	4	0	0	0	0
11	Master of Computer Applications	0	0	7	7	0	0	7	7	0	0	7	7
12	Master of Business Administration	2	1	5	8	2	1	7	10	2	1	8	11
Total		10	20	137	167	12	15	142	169	12	14	133	159

10. Total Number of Engineering Students in Various Departments: Table No.

A.10: No. of engineering students in various departments.

S. N.	Name of the Department	Number of students in the Department (UG and PG)		
		CAY (2025-26)	CAYm1 (2024-25)	CAYm2 (2023-24)
1	Computer Science and Engineering	649	622	557
2	Computer Science and Engineering (Artificial Intelligence and Machine Learning)	183	158	98
3	Computer Science and Engineering (Data Science)	231	164	128
4	Computer Science and Design	214	241	196
5	Information Technology	220	257	269
6	Electronics and Communication Engineering	449	489	498
7	Electrical Engineering	381	460	505
8	Civil Engineering	136	164	203
9	Mechanical Engineering	181	238	297
10	Computer Science and Engineering (Cyber Security)	94	47	0
11	Master of Computer Applications	181	160	117
12	Mastersin Business Administration	127	116	118

11. Vision of the Institution:

To transform the institution into a global center of learning through synergic application of creativity, innovation and discipline.

12. Mission of the Institution:

- Create an ideal ambiance for learning and growth.
- Help students inherit value systems, be creative and agile thinkers.
- Establish discipline, value-added education, and training & placement as three core values.
- Build capabilities among students to lead from the front and also be a team player.
- Develop a symbiotic relationship between the institution, society and the community, for mutual betterment.

13. Contact Information of the Head of the Institution and NBA Coordinator:

A. Head of the Institution

- ❖ Name: Dr. Sanjay S Pawar
- ❖ Designation: Principal
- ❖ Mobile Number: 8967674754
- ❖ Email id: principal@bcrec.ac.in

B. NBA Coordinator:

- ❖ Name: Dr. Abhijit Banerjee
- ❖ Designation: Associate Professor
- ❖ Mobile Number:9475367679
- ❖ Email id:abhijit.banerjee@bcrec.ac.in

PART B: Criteria Summary

Name of the Program: B. TECH (Electronics & Communication Engineering)

Title of the Degree: Bachelor of Technology

Criteria No.	Name of the Criteria	Marks/ Weightage
Program Level Criteria		
1	Outcome-Based Curriculum	120
2	Outcome-Based Teaching Learning	120
3	Outcome-Based Assessment	120
4	Students' Performance	120
5	Faculty Information	100
6	Faculty Contributions	120
7	Facilities and Technical Support	100
8	Continuous Improvement	80
Institution Level Criteria		
9	Student Support and Governance	120
Total Marks/Weights		1,000

PART B: Program Level Criteria**Criterion 1 : Outcome-Based Curriculum****1.1. Vision, Mission and Program Educational Objectives (PEOs) (40)****1.1.1. State the Vision and Mission of the Institute and the Department (05)**

Vision of the institute	To transform the institution into a global center of learning through synergic application of creativity, innovation and discipline.
Mission of the institute	• Create an ideal ambiance for learning and growth. • Help students inherit value systems, be creative and agile thinkers. • Establish discipline, value-added education, and training & placement as three core values. • Build capabilities among students to lead from the front and also be a team player. • Develop a symbiotic relationship between the institution, society and the community, for mutual betterment.
Vision of the Department	To aspire to be a premier department imparting world class technical education in tune with industry requirements, inculcate research motivation through academic excellence.
Mission of the Department	M1: The mission of the department is to create and provide state-of-the-art infrastructure and a facilitating environment for quality education. M2: It aims to promote high standards of professional ethics, transparency, and accountability, ultimately leading to a strong foundation in Electronics and Communication Engineering and the underlying mathematics and science. M3: The department fosters an environment that combines engineering practice, encourages collaborative research, and cultivates partnerships with industries.

1.1.2. State PEOs of the Program (05)**Program Educational Objectives (PEOs):**

PEO NO.	Program Educational Objectives Statements
PEO1	Graduates of Electronics and Communication Engineering department are expected to excel in professional career by acquiring knowledge in fundamentals in the field of Electronics and Communication Engineering leading to in-depth technological knowledge.
PEO2	Graduates of ECE department are expected to have skills in Mathematics, Science, Economics, Management, allied studies and abide by the sense of responsibility, professionalism, team work and ethical values which will help to develop a symbiotic relationship between the Institution, society and community.
PEO3	Graduates of ECE department are expected to become a good citizen, conscious of society and environment with ethical attitude having quality to adapt in the fast-changing society by lifelong learning through higher studies, quality technological research and career either in Industry or entrepreneurship.

1.1.3. Process of Defining Vision, Mission and PEOs (15)

The Department of Electronics and Communication Engineering follows a structured, consultative and evidence-based process for defining, reviewing and disseminating its Vision, Mission and Program Educational Objectives (PEOs). The process is aligned with the Institutional Vision and Mission, the Outcome Based Education (OBE) framework, NBA graduate attributes, stakeholder expectations and the long-term professional progression of graduates. The Departmental Academic Council (DAC) functions as the primary academic body for initiating, reviewing, approving and documenting the process.

A. Documented Basis of the Process

Date	Document / Evidence	Relevance to NBA Process
30.07.2024	Departmental meeting notice	The notice included agenda items on CO-PO-PSO mapping, preparation of PEO-Mission matrix, stakeholder discussion on OBE, and discussion on Mission, Vision and PEOs.
31.07.2024	DAC minutes of meeting	The DAC recorded deliberations, committee nominations, stakeholder-related resolutions, review of Vision-Mission-PEO statements and action points for accreditation documentation.
02.08.2024	Vision-Mission review report	The committee reviewed the Departmental Vision and Mission for institutional alignment, OBE suitability, clarity, relevance and sustainability.
02.08.2024	PEO-Mission consistency report	The committee formalized Mission elements, correlation rubric, PEO-Mission matrix and element-wise justification for NBA traceability.
02.08.2024	Circulation and endorsement records	Approved reports were circulated to faculty members and endorsement sheets were maintained as evidence of concurrence and dissemination.

B. SWOT Analysis of the Department

Before framing or reviewing the Departmental Vision and Mission, the DAC undertakes a situational analysis of the department. The SWOT analysis supports identification of strategic academic priorities, resource gaps, professional expectations and external risks. It also ensures that the Vision and Mission statements are realistic, broad-based and aligned with institutional objectives.

Strengths	Weaknesses
S1: Experienced and qualified faculty members with academic and industry exposure.	W1: Industry-institute interaction and collaboration require further strengthening.
S2: Availability of good learning resources, including e-learning support.	W2: Limited availability of research funding.
S3: Existing industry partnerships and collaborations supporting internships and placements.	W3: Admission process is governed by Government-mandated procedures.
S4: Emphasis on practical training, laboratory exposure and hands-on learning.	
S5: Good student-faculty ratio supporting mentoring and academic interaction.	
S6: Adequate laboratory facilities for experiments, mini-projects and final-year projects.	
S7: Good placement record of graduates in reputed organizations.	

Opportunities	Threats
O1: Growing demand for ECE graduates across core, IT, communication, automation and allied sectors.	T1: Slow growth in manufacturing industries may affect employment patterns and socio-economic stability.
O2: Rising demand for emerging technology areas such as AI, IoT, VLSI, embedded systems, communication networks and blockchain-enabled systems.	T2: Absence or delay in accreditation may adversely affect academic growth and institutional positioning.
O3: Increasing scope for interdisciplinary education, projects and research.	T3: Limited motivation among students for higher learning and long-term retention in core technical domains.
O4: Growing interest and investment in research, development, product design and applied engineering.	T4: Irregular capacity-building initiatives may affect sustained academic development.
O5: Expansion of online education platforms and blended learning resources.	
O6: Scope for collaboration with national and international institutes, industries and professional bodies.	

C. Steps Followed for Framing and Reviewing Departmental Vision and Mission

Step 1: Institutional Vision and Mission as the Guiding Framework: The Vision and Mission of the Institute are considered as the backbone for departmental planning. The department ensures that its statements support the broader institutional philosophy and academic direction.

Step 2: Departmental SWOT Analysis: A structured SWOT analysis is carried out to identify internal strengths and weaknesses and external opportunities and threats.

Step 3: Stakeholder Feedback Analysis: Inputs from students, alumni, faculty members, employers, industry representatives and academic experts are analyzed to identify expectations related to technical competence, employability, research aptitude, ethics and lifelong learning.

Step 4: Identification of Key Elements: The views of stakeholders are examined to extract key academic and professional elements. These are compared with institutional objectives and NBA graduate attributes.

Step 5: Consistency Check: The proposed elements are reviewed for consistency with the Institutional Vision and Mission and for relevance to Electronics and Communication Engineering.

Step 6: Drafting of Vision and Mission Statements: Draft statements are prepared after considering SWOT outcomes, stakeholder inputs, institutional alignment and departmental priorities.

Step 7: Review and Finalization: The draft statements are discussed in the DAC and departmental faculty meeting. Suggestions are incorporated wherever appropriate and the finalized statements are forwarded to the appropriate academic body for normalization and approval.

Step 8: Publication and Dissemination: The approved Vision and Mission statements are disseminated through the departmental website, notice boards, laboratories, course files, student orientation, official documents and academic interactions.

D. Process Flowchart

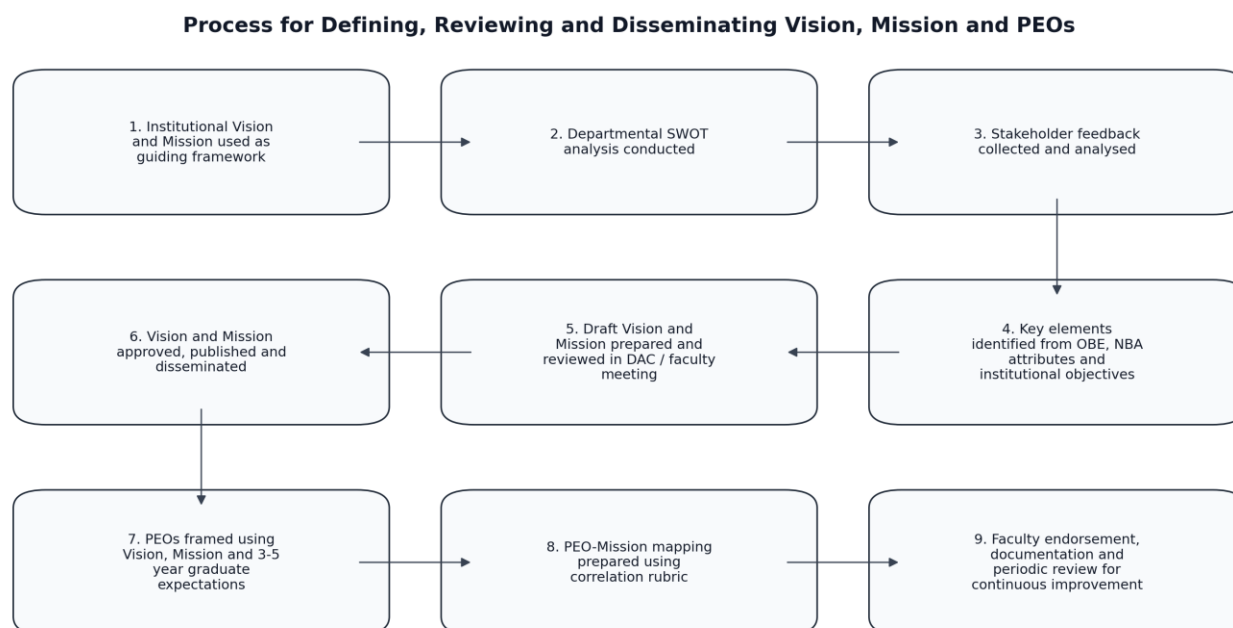


Figure 1.1: Process for Defining, Reviewing and Disseminating Vision, Mission and PEOs

E. Program Educational Objectives (PEOs)

Program Educational Objectives are broad statements describing the career and professional accomplishments that graduates are expected to achieve within three to four years after graduation. The PEOs reflect the long-term expectations of the program with respect to technical competence, higher education, ethical conduct, lifelong learning, research orientation, entrepreneurship, teamwork, leadership and contribution to society.

Developmental Domain	Coverage in PEO Framing
Cognitive	Technical knowledge, analytical ability, engineering fundamentals, design competence, problem solving and application-oriented learning.
Affective	Professional ethics, responsibility, teamwork, communication, social awareness and commitment to quality.
Behavioral	Leadership, adaptability, lifelong learning, innovation, entrepreneurship and professional conduct in real-world environments.

F. Approved Program Educational Objectives

PEO	Statement
PEO1: Core Proficiency and Technical Accomplishments	Graduates of the Electronics and Communication Engineering Department are expected to excel in their professional careers by acquiring strong knowledge in the fundamentals of Electronics and Communication Engineering, leading to in-depth technological competence and domain expertise.
PEO2: Professional Development and Professionalism	Graduates of the Electronics and Communication Engineering Department are expected to develop skills in Mathematics, Science, Economics, Management and allied studies, and abide by a sense of responsibility, professionalism, teamwork and ethical values, thereby contributing to a constructive relationship

	between the Institution, society and community.
PEO3: Learning Environment and Lifelong Growth	Graduates of the Electronics and Communication Engineering Department are expected to become responsible citizens, conscious of society and environment, with ethical attitude and adaptability to a rapidly changing technological landscape through lifelong learning, higher studies, quality technological research and careers in industry or entrepreneurship.

G. Process for Establishing the PEOs

Step 1: Reference to Vision and Mission: The Institute Vision, Institute Mission, Department Vision and Department Mission are taken as the basis for framing the PEOs.

Step 2: Stakeholder Interaction: Inputs are collected from students, alumni, faculty members, employers, industry personnel and academic administrators through formal and informal mechanisms.

Step 3: Compilation of Inputs: Course coordinators and faculty members discuss the stakeholder inputs and compile the major suggestions related to graduate accomplishments.

Step 4: Review by Departmental Assessment Committee: The Departmental Assessment Committee examines the collected inputs, summarizes the observations, assesses relevance and prepares an assessment report.

Step 5: Review by Departmental Academic Council / DAC: The council reviews the report, stakeholder feedback and proposed PEO statements for clarity, measurability, relevance and alignment with the Mission.

Step 6: Establishment of PEOs: The PEOs are finalized based on accepted suggestions and approved review outcomes. The finalized PEOs are documented in departmental records, course files and accreditation files.

Step 7: PEO-Mission Mapping: The PEOs are mapped with the elements of the Departmental Mission through a structured matrix using defined correlation levels.

Step 8: Circulation and Endorsement: The approved PEOs and the PEO-Mission matrix are circulated among faculty members for review and endorsement. Faculty concurrence is recorded for audit evidence.

Step 9: Dissemination to Stakeholders: The approved PEOs are disseminated through notice boards, laboratories, course files, student orientation, website publication and academic interactions.

H. PEO-Mission Correlation and Review Mechanism

To ensure traceability and NBA compliance, the department maps the PEOs with Mission elements using a defined correlation rubric. The mapping demonstrates whether each Mission element has strong, moderate, low or no meaningful linkage with a particular PEO. The matrix is reviewed through DAC-level deliberation and stakeholder input so that the PEOs remain aligned with technological requirements, industry expectations, higher education trends and societal needs.

Level	Correlation	Interpretation
3	Strong correlation	The Mission element directly supports attainment of the PEO.
2	Moderate correlation	The Mission element significantly contributes to attainment of the PEO.
1	Low correlation	The Mission element provides indirect or supporting contribution to the PEO.
-	No meaningful correlation	No defensible linkage is identified between the Mission element and the PEO.

1.1.4. Dissemination of Vision, Mission and PEOs (05)

The Department of Electronics and Communication Engineering follows a structured dissemination mechanism to ensure that the Vision, Mission and Program Educational Objectives (PEOs) are known to all major stakeholders and are used as reference points for academic planning, teaching-learning activities, mentoring, laboratory orientation, stakeholder interaction and continuous improvement. Dissemination is treated as a continuing academic

process, not merely as display of statements at fixed locations.

The approved Vision, Mission and PEOs are communicated to internal and external stakeholders through formal display, official documents, orientation programmes, faculty meetings, student mentoring, laboratory interactions, website publication and stakeholder feedback activities. The objective is to create awareness, alignment and ownership among students, faculty members, alumni, employers, parents and industry representatives.

A. Need for Stakeholder Awareness

Purpose	NBA / OBE Relevance
Alignment with departmental direction	Awareness helps students, faculty members and other stakeholders understand the long-term academic purpose of the department and align their actions with the stated objectives.
Transparency and communication	Visible and repeated communication of the Vision, Mission and PEOs supports transparency in academic planning and improves stakeholder confidence in departmental processes.
Outcome-based decision making	The statements provide a reference framework for decisions related to curriculum delivery, laboratory development, project allocation, mentoring, placement preparation, higher studies and research orientation.
Continuous improvement	Stakeholder awareness and feedback help the department assess whether its academic practices remain aligned with its stated objectives and expected graduate attributes.

B. Dissemination Mechanism Adopted by the Department

The Department disseminates the approved Vision, Mission and PEOs through multiple physical, digital and academic channels. These channels are selected to ensure that stakeholders encounter the statements during academic interaction, departmental visits, laboratory work, documentation review and web-based access.

Dissemination Channel	Purpose / Stakeholder Reach
College website	Public access for students, parents, alumni, employers, visitors and external stakeholders.
Departmental web / social internet site	Department-level sharing of academic information, events and stakeholder communication.
Department office	Formal display for faculty, staff, students and visitors.
Room of the Head of the Department	Display for academic meetings, official visits, student interaction and stakeholder discussion.
Digital classroom	Awareness among students during teaching-learning activities and academic orientation.
Departmental laboratories	Reinforcement of Mission and PEOs during experiments, project work, practical training and laboratory evaluation.
Institute prospectus	Communication to prospective students, parents and admission-related stakeholders.
Notice boards	Regular physical visibility for students, faculty members, staff and visitors.
Course files and academic documents	Reference for faculty members during course planning, CO-PO-PSO alignment and attainment-related documentation.
Faculty meetings / DAC records	Formal academic review, approval, dissemination and documentation for accreditation evidence.
Student orientation and mentoring	Direct explanation of departmental objectives, professional expectations and long-term graduate outcomes.

C. Stakeholder-wise Awareness Mechanism

Stakeholder Group	Awareness Mechanism	Expected Outcome
Students	Orientation programme, class interaction, mentoring sessions, laboratory displays, course files, notice boards and departmental website.	Understanding of departmental academic direction, graduate expectations, professional conduct and career-oriented outcomes.
Faculty members	Faculty meetings, DAC meetings, course files, departmental records, OBE documentation and endorsement process.	Use of Vision, Mission and PEOs in course planning, CO-PO mapping, mentoring, academic delivery and continuous improvement.
Alumni	Alumni interaction, feedback collection, departmental website and stakeholder meetings.	Validation of graduate outcomes and alignment of PEOs with actual career progression.
Employers / Industry representatives	Employer feedback, industry interaction, internships, placement-related interaction and project discussions.	Assessment of industry relevance, employability orientation and professional readiness of graduates.
Parents	Website, prospectus, departmental visits, orientation and academic counselling.	Awareness of the department's academic purpose, student support structure and long-term educational direction.
Management / Academic administrators	DAC records, committee reports, departmental files and review meetings.	Monitoring of academic alignment, resource planning and institutional compliance.

D. Process Flow for Dissemination and Awareness

The dissemination process follows a traceable flow beginning with approval of the Vision, Mission and PEOs and continuing through publication, repeated stakeholder exposure, awareness-building activities, feedback collection and review.

Dissemination and Awareness Flow for Vision, Mission and PEOs



Figure 1.2: Dissemination of Vision, Mission and Program Educational Objectives

E. Measures for Enhancing Stakeholder Awareness

Measure	Implementation
Regular display and updating	Vision, Mission and PEOs are displayed at prominent departmental locations and updated whenever revision is approved through the prescribed process.
Orientation and induction	Students are introduced to departmental objectives during orientation, class-level interaction and mentoring activities.
Academic integration	Faculty members refer to the statements during course planning, outcome mapping, project guidance, laboratory activities and attainment review.
Feedback mechanism	Feedback from students, alumni, employers, faculty and other stakeholders is used to review awareness, relevance and alignment.
Faculty endorsement	Circulation and endorsement of approved statements provide documentary evidence of faculty awareness and concurrence.
Periodic DAC review	The DAC reviews Vision, Mission and PEO-related documentation and ensures alignment with OBE, NBA and institutional requirements.

F. Evidence Maintained for Dissemination

Evidence Type	Purpose
Website / webpage records	Screenshots or web links showing published Vision, Mission and PEOs.
Display photographs	Photographs of display in department office, HoD room, smart classroom, laboratories and notice boards.
Prospectus / academic documents	Pages where Vision, Mission and PEOs are printed or referenced.
DAC notice and minutes	Records showing discussion, approval, review and action points.
Committee reports	Reports on Vision-Mission review and PEO-Mission consistency.

Endorsement sheets	Faculty concurrence and acceptance records.
Feedback records	Student, alumni, employer and faculty feedback used for review and validation.

1.1.5. Mapping of PEOs with Mission (10)

(Generate a Mission of the Department–PEOs matrix with justification and rationale of the mapping.)

Table No.1.1.5.1: Mapping of PEOs with mission.

PEO Statements	M1	M2	M3
PEO1: Graduates of Electronics and Communication Engineering department are expected to excel in professional career by acquiring knowledge in fundamentals in the field of Electronics and Communication Engineering leading to in-depth technological knowledge.	3	3	2
PEO2: Graduates of ECE department are expected to have skills in Mathematics, Science, Economics, Management, allied studies and abide by the sense of responsibility, professionalism, team work and ethical values which will help to develop a symbiotic relationship between the Institution, society and community.	3	3	2
PEO3: Graduates of ECE department are expected to become a good citizen, conscious of society and environment with ethical attitude having quality to adapt in the fast-changing society by lifelong learning through higher studies, quality technological research and career either in Industry or entrepreneurship.	2	3	3

A. Objective of the Mapping

The objective of the PEO-Mission mapping is to establish a clear and measurable relationship between the Departmental Mission statements and the Program Educational Objectives of the undergraduate program in Electronics and Communication Engineering. The mapping provides traceability between departmental intent, graduate accomplishments expected after three to four years of graduation, and Outcome Based Education requirements under NBA accreditation.

The matrix was prepared after decomposing the Departmental Mission into distinct measurable elements, assigning correlation levels through a uniform rubric, and validating the mapping through Departmental Academic Council discussion and committee review.

B. Departmental Mission Statements

Mission	Statement
M1	To create and provide state-of-the-art infrastructure and a facilitating environment for quality education.
M2	To promote high standards of professional ethics, transparency, and accountability, ultimately leading to a strong foundation in Electronics and Communication Engineering and the underlying mathematics and science.
M3	To foster an environment that combines engineering practice, encourages collaborative research, and cultivates partnerships with industries.

C. Program Educational Objectives

PEO	Title	Statement
PEO1	Core Proficiency and Technical Accomplishments	Graduates of the Electronics and Communication Engineering Department are expected to excel in their professional careers by acquiring strong knowledge in the fundamentals of Electronics and Communication Engineering, leading to in-depth technological competence and domain expertise.

PEO2	Professional Development and Professionalism	Graduates of the Electronics and Communication Engineering Department are expected to develop skills in Mathematics, Science, Economics, Management, and allied studies, and abide by a sense of responsibility, professionalism, teamwork, and ethical values, thereby contributing to a constructive relationship between the Institution, society, and community.
PEO3	Learning Environment and Lifelong Growth	Graduates of the Electronics and Communication Engineering Department are expected to become responsible citizens, conscious of society and environment, with ethical attitude and adaptability to a rapidly changing technological landscape through lifelong learning, higher studies, quality technological research, and careers in industry or entrepreneurship.

D. Mission Elements Used for Mapping

The Mission statements were decomposed into twenty operational elements. The elements were framed to avoid overlap, retain measurability, and provide a defensible basis for PEO-Mission correlation.

Element	Mission Element	Primary Mission Source
E1	Advanced infrastructure	M1
E2	Quality education	M1
E3	Facilitating learning environment	M1
E4	Professional ethics	M2
E5	Transparency	M2
E6	Accountability	M2
E7	Strong ECE foundation	M2
E8	Mathematics and science foundation	M2
E9	Engineering practice	M3
E10	Collaborative research	M3
E11	Industry partnership and consultancy	M3
E12	High academic standards	M2
E13	Communication ability	M2
E14	Critical thinking and problem solving	M3
E15	Creativity and innovation	M3
E16	Global and multicultural perspective	M2
E17	Adaptability and flexibility	M3
E18	Leadership and management	M2
E19	Lifelong learning	M3
E20	Community and social responsibility	M2

E. Correlation Rubric

Correlation Level	Interpretation
3 - Strong	Explicit requirement for attainment of the PEO.
2 - Moderate	Significant supporting contributor to attainment of the PEO.
1 - Low	Indirect or secondary support to the PEO.
-	No meaningful linkage.

F. Mission of the Department - PEOs Matrix

The following matrix records the correlation between each Program Educational Objective and the twenty Mission Elements derived from the Departmental Mission statements.

PEO	E 1	E 2	E 3	E 4	E 5	E 6	E 7	E 8	E 9	E1 0	E1 1	E1 2	E1 3	E1 4	E1 5	E1 6	E1 7	E1 8	E1 9	E2 0
PEO 1	3	3	1	1	1	1	3	3	3	2	2	2	2	2	2	1	2	1	2	1
PEO 2	2	3	3	3	3	3	2	2	2	2	2	2	3	2	1	2	2	3	2	3
PEO 3	1	2	1	3	2	1	2	1	1	3	2	2	2	3	2	3	3	2	3	3

G. Summary of Mapping Strength

PEO	Strong (3)	Moderate (2)	Low (1)	Mapping Interpretation
PEO1	5	8	7	Strongly driven by infrastructure, quality education, ECE fundamentals, mathematics/science, and engineering practice. Moderate support is received from research, industry exposure, standards, communication, innovation, adaptability and lifelong learning.
PEO2	8	11	1	Strongly driven by quality education, facilitating environment, ethics, transparency, accountability, communication, leadership and social responsibility. The mapping confirms its orientation toward professionalism, teamwork and institutional-societal responsibility.
PEO3	7	8	5	Strongly driven by ethics, collaborative research, critical thinking, global perspective, adaptability, lifelong learning and social responsibility. The mapping confirms emphasis on higher studies, research, societal awareness and continuing growth.

H. Element-wise Justification and Rationale

Each cell of the mapping matrix was assigned after textual alignment analysis and impact evaluation on expected graduate accomplishments three to four years after graduation. The rationale is given below.

PEO1 Justification Notes

Element	Element Descriptor	Level	Justification / Rationale
E1	Advanced infrastructure	3	Advanced infrastructure directly enables laboratory exposure, modern tools and technology depth required for professional excellence in ECE.
E2	Quality education	3	Quality education and rigorous teaching form the main pathway to strong fundamentals and in-depth technological competence.
E3	Facilitating learning environment	1	A facilitating environment supports learning continuity, but it is not the principal driver of technical-career excellence.
E4	Professional ethics	1	Ethics supports professional conduct; however, PEO1 is primarily focused on technical depth and career performance.
E5	Transparency	1	Transparency improves governance quality, but its linkage with technical competence is indirect.
E6	Accountability	1	Accountability strengthens academic delivery; its effect on PEO1 is supportive rather than central.

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E7	Strong ECE foundation	3	A strong ECE foundation is explicitly embedded in PEO1 and directly determines domain readiness.
E8	Mathematics and science foundation	3	Mathematics and science fundamentals are required for analytical depth in electronics and communication engineering.
E9	Engineering practice	3	Engineering practice and hands-on problem application are required for employability and professional competence.
E10	Collaborative research	2	Collaborative research strengthens exposure to advanced topics and supports technical depth.
E11	Industry partnership and consultancy	2	Industry partnerships and consultancies provide practical relevance and domain exposure.
E12	High academic standards	2	High standards support consistent mastery and quality technical outcomes.
E13	Communication ability	2	Communication ability supports technical reporting, design reviews and professional documentation.
E14	Critical thinking and problem solving	2	Critical thinking improves engineering decision quality and technical problem solving.
E15	Creativity and innovation	2	Creativity and innovation support design originality and technical advancement.
E16	Global and multicultural perspective	1	Global perspective may support career growth, but it is not a primary condition for PEO1 attainment.
E17	Adaptability and flexibility	2	Adaptability helps graduates remain relevant with evolving ECE technologies and tools.
E18	Leadership and management	1	Leadership contributes to later career progression, while PEO1 mainly emphasizes technical competence.
E19	Lifelong learning	2	Lifelong learning helps graduates maintain technical relevance as technologies change.
E20	Community and social responsibility	1	Social responsibility is valuable but has an indirect connection with technical excellence and domain depth.

PEO2 Justification Notes

Element	Element Descriptor	Level	Justification / Rationale
E1	Advanced infrastructure	2	Infrastructure supports interdisciplinary skill-building and exposure, although PEO2 is primarily values and professional-skills oriented.
E2	Quality education	3	Quality education is essential for building skills across mathematics, science, economics, management and allied domains.
E3	Facilitating learning environment	3	A facilitating environment directly supports teamwork, collaboration and professional interaction.
E4	Professional ethics	3	Professional ethics is an explicit requirement of PEO2 and directly supports responsible professional behaviour.
E5	Transparency	3	Transparency supports stakeholder trust, responsibility and the institution-society relationship mentioned in PEO2.
E6	Accountability	3	Accountability develops ownership, responsibility and professional discipline.
E7	Strong ECE foundation	2	An ECE foundation supports professional identity, although PEO2 also covers allied studies and values.
E8	Mathematics and	2	Mathematics and science skills are explicitly included in PEO2 as

	science foundation		broad professional competencies.
E9	Engineering practice	2	Engineering practice reinforces teamwork and professional behavior in applied tasks.
E10	Collaborative research	2	Collaborative research cultivates teamwork, responsibility and disciplined work culture.
E11	Industry partnership and consultancy	2	Industry engagement promotes communication, professionalism and team-based delivery.
E12	High academic standards	2	High standards shape professional discipline and consistent performance expectations.
E13	Communication ability	3	Communication ability is essential for teamwork, stakeholder interaction and professional conduct.
E14	Critical thinking and problem solving	2	Problem-solving ability supports responsible engineering decisions in team environments.
E15	Creativity and innovation	1	Innovation supports professional growth, but it is not a primary requirement compared with ethics, teamwork and responsibility.
E16	Global and multicultural perspective	2	Global and multicultural perspective supports professional conduct in diverse work environments.
E17	Adaptability and flexibility	2	Flexibility supports effective work across teams, constraints and professional domains.
E18	Leadership and management	3	Leadership and management are directly aligned with teamwork, responsibility and professional development.
E19	Lifelong learning	2	Continuous learning supports competence across allied studies and changing professional practices.
E20	Community and social responsibility	3	Community and social responsibility directly support the institution-society-community relation stated in PEO2.

PEO3 Justification Notes

Element	Element Descriptor	Level	Justification / Rationale
E1	Advanced infrastructure	1	Infrastructure supports research and learning opportunities, but PEO3 is driven more by ethics, adaptability and lifelong growth.
E2	Quality education	2	Quality education supports higher studies, research readiness and long-term professional growth.
E3	Facilitating learning environment	1	A supportive environment aids development, but it is not the primary driver of citizenship, adaptability and lifelong learning.
E4	Professional ethics	3	Ethical attitude and responsible citizenship are explicit in PEO3; professional ethics is central.
E5	Transparency	2	Transparency supports civic-minded culture and trust-based institutional participation.
E6	Accountability	1	Accountability supports responsible behavior but is secondary to ethics, adaptability and lifelong growth.
E7	Strong ECE foundation	2	Technical foundation supports industry, entrepreneurship and higher learning pathways.
E8	Mathematics and science foundation	1	Mathematics and science support higher studies, but PEO3 focuses more on societal consciousness and adaptive growth.

E9	Engineering practice	1	Engineering practice supports career development but is secondary to lifelong learning and societal awareness.
E10	Collaborative research	3	Quality technological research is explicitly linked with PEO3 and strongly supports research aptitude.
E11	Industry partnership and consultancy	2	Industry partnerships support career growth, industry readiness and entrepreneurial exposure.
E12	High academic standards	2	High standards support higher studies, research quality and sustained professional growth.
E13	Communication ability	2	Communication supports responsible citizenship and effective professional participation.
E14	Critical thinking and problem solving	3	Critical thinking supports ethical judgement, societal awareness and adaptation to complex technological change.
E15	Creativity and innovation	2	Creativity supports entrepreneurship and research problem formulation.
E16	Global and multicultural perspective	3	Global perspective supports societal and environmental consciousness and responsible citizenship.
E17	Adaptability and flexibility	3	Adaptability is explicitly included in PEO3 and is central to changing technological contexts.
E18	Leadership and management	2	Leadership supports entrepreneurship and responsible citizen roles, but is not the primary focus of PEO3.
E19	Lifelong learning	3	Lifelong learning is explicitly stated in PEO3 and is central to its attainment.
E20	Community and social responsibility	3	Community and social responsibility strongly align with citizenship, society and environmental consciousness.

1.2. Curriculum Structure and Features (30)

1.2.1. Program Curriculum Structure (05)

(Provide details of courses in terms of teaching and learning scheme and number of credits in the Program curriculum.)

Table No.1.2.1.1: Details of various courses presented in terms of teaching and learning scheme.

Course Code	Course Titles	Teaching & Learning Scheme					
		Classroom Instruction (CI) (in hours per semester)		Lab Instruction (LI) (in hours per semester)	Term Work (TW) and Self Learning (SL) (TW+ SL) (in hours per semester)	Total no. of Hours per semester	Total Credits (C)* (Total Hours/30)
		L	T	P	SL		
BS-PH101	Physics-I (Gr-A	32	18	0	70	120	120/30=4
BS-CH101	Chemistry-I(Gr-B)	32	18	0	70	120	120/30=4

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BS-M101	Mathematics–IA	30	20	0	70	120	120/30=4
BS-M102	Mathematics–IB	30	20	0	70	120	120/30=4
ES-EE101	Basic Electrical Engineering	32	18	0	70	120	120/30=4
BS-PH191/	Physics-I Laboratory (Gr-A)	0	0	30	15	45	45/30=1.5
BS-CH191	Chemistry Laboratory(Gr-B)	0	0	30	15	45	45/30=1.5
ES-EE191	Basic Electrical Engineering Laboratory	0	0	20	10	30	30/30=1
ES-ME191	Engineering Graphics & Design(Gr-B)	10	0	48	32	90	90/30=3
ES-ME192	Workshop/Manufacturing Practices(Gr-A)	10	0	48	32	90	90/30=3
BS-PH201	Physics-I (Gr-B)/	32	18	0	70	120	120/30=4
BS-CH201	Chemistry-I (Gr-A)	32	18	0	70	120	120/30=4
BS-M201	Mathematics – I A	30	20	0	70	120	120/30=4
BS-M202	Mathematics –IIB	32	20	0	68	120	120/30=4
ES-CS201	Programming for Problem Solving	40	0	0	50	90	90/30=3
HM-HU201	English	28	0	0	32	60	60/30=2
BS-PH291	Physics-I Laboratory (Gr-B)/	0	0	30	15	45	45/30=1.5
BS-CH291	Chemistry-I Laboratory (Gr-A)	0	0	30	15	45	45/30=1.5
ES-CS291	Programming for Problem Solving	0	0	48	12	60	60/30=2
ES-ME291	Engineering Graphics & Design(Gr-A)	13	0	52	25	90	90/30=3
ES-ME292	Workshop/Manufacturing Practices(Gr-B)	12	0	44	34	90	90/30=3
HM-HU291	Language Laboratory	0	0	19	11	30	30/30=1
EC301	Electronic Devices	32	0	0	58	90	90/30=3
EC302	Digital System Design	32	0	0	58	90	90/30=3
EC303	Signals and System	32	0	0	58	90	90/30=3

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EC304	Network Theory	32	0	0	58	90	90/30=3
ES-CS301	Data Structure & Algorithms	32	0	0	58	90	90/30=3
BS-M301	Probability and Statistics	32	0	0	58	90	90/30=3
MC381	Environmental Science	32	0	0	58	90	0/30=0
EC391	Electronics Devices Lab	0	0	20	10	30	30/30=1
EC392	Digital System Design Lab	0	0	20	10	30	30/30=1
ES-CS391	Data Structure & Algorithm Lab.	0	0	20	10	30	30/30=1
EC401	Analog Communication	32	0	0	58	90	90/30=3
EC402	Analog circuits	36	0	0	54	90	90/30=3
EC403	Microprocessor & Microcontroller	32	0	0	58	90	90/30=3
ES-CS401	Design and Analysis of Algorithm	32	0	0	58	90	90/30=3
BS-M401	Numerical Methods (BS)	22	0	0	38	60	60/30=2
BS-B401	Biology for Engineers	33	0	0	57	90	90/30=3
EC491	Analog Communication Lab	0	0	18	12	30	30/30=1
EC492	Analog Electronic Circuits Lab	0	0	18	12	30	30/30=1
EC493	Microprocessor & Microcontroller Lab	0	0	18	12	30	30/30=1
BS-M491	Numerical Methods Lab (BS)	0	0	12	18	30	30/30=1
HS – HU 481	Soft Skill Development Lab	0	0	24	06	30	30/30=1
EC501	Electromagnetic Waves	32	0	0	58	90	90/30=3
EC502	Computer Architecture	32	0	0	58	90	90/30=3
EC503	Digital Communication and Stochastic	34	16	0	55	105	105/30=3.5
EC504	Digital Signal Processing	32	0	0	58	90	90/30=3
MC-HU501	Effective Technical Communication	32	0	0	58	90	90/30=3
PE-EC505A	Nano Electronics	32	0	0	58	90	90/30=3

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PE-EC505B	Speech and Audio Processing	32	0	0	58	90	90/30=3
PE-EC505C	Power Electronics	32	0	0	58	90	90/30=3
PE-EC505D	Scientific Computing	32	0	0	58	90	90/30=3
OE-EC506A	Soft Skill and Interpersonal Communication	32	0	0	58	90	90/30=3
OE-EC506B	Cyber Law & Intellectual Property Rights	32	0	0	58	90	90/30=3
OE-EC506C	Human Resource Management	32	0	0	58	90	90/30=3
EC591	Electromagnetic Wave Laboratory	0	0	20	10	30	30/30=1
EC592	Digital Communication Laboratory	0	0	20	10	30	30/30=1
EC593	Digital Signal Processing Laboratory	0	0	20	10	30	30/30=1
EC601	Control System & Instrumentation	34	0	0	56	90	90/30=3
EC602	Computer Network	32	0	0	58	90	90/30=3
PE-EC603A	Introduction to MEMS	32	0	0	58	90	90/30=3
PE-EC603B	Bio-Medical Electronics	32	0	0	58	90	90/30=3
PE-EC603C	CMOS VLSI Design	34	0	0	56	90	90/30=3
PE-EC603D	Information Theory and Coding	34	0	0	56	90	90/30=3
OE-EC604A	Electronic Measurement & Measuring Instruments	34	0	0	56	90	90/30=3
OE-EC604B	Operating System	32	0	0	58	90	90/30=3
OE-EC604C	Object Oriented Programming	32	0	0	58	90	90/30=3
HS-HU 601	Economics for Engineers	32	0	0	58	90	90/30=3
EC692	Computer Network Lab	0	0	18	12	30	30/30=1
EC691	Control and Instrumentation Laboratory	0	0	18	12	30	30/30=1
MC681	Universal Human Values	18	0	0	12	30	0

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EC681	Mini Project/ Electronic Design Workshop	0	0	40	20	60	60/30=2
HS-HU701	Principles of Management	30	0	0	30	60	60/30=2
PE-EC701A	Microwave Theory and Technique	32	0	18	40	90	90/30=3
PE-EC701B	Satellite Communication	32	0	18	40	90	90/30=3
PE-EC701C	Mobile Communication and Networks	32	0	18	40	90	90/30=3
PE-EC702A	Adaptive Signal Processing	32	0	18	40	90	90/30=3
PE-EC702B	Digital Image and Video Processing	32	0	18	40	90	90/30=3
PE-EC702C	Neural Network and Fuzzy Logic Control	32	0	18	40	90	90/30=3
PE-EC703A	Embedded System	32	0	18	40	90	90/30=3
PE-EC703B	Wireless Sensor Networks	32	0	18	40	90	90/30=3
PE-EC703C	Wavelet Transforms	32	0	18	40	90	90/30=3
OE-EC704A	Web Technology	32	0	18	40	90	90/30=3
OE-EC704B	Optimization Technique	32	0	18	40	90	90/30=3
OE-EC704C	Entrepreneurship	32	0	18	40	90	90/30=3
EC782	Project Stage I	0	0	60	60	120	120/30=4
PE-EC801A	Antennas and Propagation	32	0	0	58	90	90/30=3
PE-EC801B	Fiber Optic Communication	32	0	0	58	90	90/30=3
PE-EC801C	Error Correcting Codes	32	0	0	58	90	90/30=3
PE-EC802A	Mixed Signal Design	32	0	0	58	90	90/30=3
PE-EC802B	Industrial Automation and Control	34	0	0	56	90	90/30=3
PE-EC802C	VLSI Design Automation	34	0	0	56	90	90/30=3
OE-EC803A	Internet of Things (IoT)	32	0	0	58	90	90/30=3

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OE-EC803B	Big Data Analysis	32	0	0	58	90	90/30=3
OE-EC803C	Cyber Security	32	0	0	58	90	90/30=3
OE-EC804A	Artificial Intelligence	32	0	0	58	90	90/30=3
OE-EC804B	Microwave Integrated Circuits	34	0	0	56	90	90/30=3
OE-EC804C	Organizational Behavior	32	0	0	58	90	90/30=3
EC881	Project Stage – II	0	0	170	55	225	225/30=7.5
EC882	Grand Viva	0	0	0	45	45	45/30=1.5

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Course Code	Course Titles	Teaching & Learning Scheme					
		Classroom Instruction (CI) (in hours per semester)		Lab Instruction (LI) (in hours per semester)	Term Work (TW) and Self Learning (SL) (TW+ SL) (in hours per semester)	Total no. of Hours per semester	Total Credits (C)* (Total Hours/30)
		L	T	P	SL		
BSC-M101	Mathematics	45	0	0	45	90	90/30=3
BSC-PH101	Physics	45	0	0	45	90	90/30=3
ESC-EE101	Basic Electrical Engineering	40	0	0	50	90	90/30=3
ESC-ME101	Engineering Mechanics	42	0	0	48	90	90/30=3
ENG-101	English Language and Technical Communication	36	0	0	54	90	90/30=3
BSC-PH191	Physics Laboratory	0	0	10	20	30	30/30=1
ESC-EE191	Basic Electrical Engineering Laboratory	0	0	10	20	30	30/30=1
ENG-191	Language Laboratory	0	0	20	10	30	30/30=1
ESC-ME192	Workshop Practices	0	0	44	16	60	60/30=2

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M202	Mathematics-II	45	0	0	45	90	90/30=3
CH201	Chemistry	42	0	0	47	90	90/30=3
EC-201	Basic Electronics Engineering	36	0	0	54	90	90/30=3
CS-201	Introduction to Computer Hardware and Software	38	0	0	52	90	90/30=3
CS-202	Programming for Problem Solving	44	0	0	46	90	90/30=3
CH291	Chemistry Laboratory	0	0	10	20	30	30/30=1
EC-291	Basic Electronics Engineering Laboratory	0	0	13	17	30	30/30=1
ME-291	Engineering Graphics	0	0	40	20	60	60/30=2
CS-291	Introduction to Computer Hardware and Software Laboratory	0	0	44	18	60	60/30=2
CS-292	Programming for Problem Solving Laboratory	0	0	44	18	60	60/30=2
EC-301	Semiconductor devices	36	0	0	54	90	90/30=3
EC-302	Digital electronics	36	0	0	54	90	90/30=3
EC-303	Signals and systems	38	0	0	52	90	90/30=3
EC-304	Network analysis and synthesis	36	0	0	54	90	90/30=3
EC-305	Data structure & algorithm	40	0	0	50	90	90/30=3
EC-306	Probability and statistics	42	0	0	48	90	90/30=3

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EC-391	Semiconductor devices lab	0	0	14	16	30	30/30=1
EC-392	Digital electronics lab	0	0	16	14	30	30/30=1
EC-395	Data structure & algorithm lab	0	0	16	14	30	30/30=1
EC-393	Signal and system lab	0	0	16	14	30	30/30=1
EC-394	Soft skill development lab	0	0	14	16	30	30/30=1
EC-401	Analog Electronic circuits	36	0	0	54	90	90/30=3
EC-402	Analog Communication	36	0	0	54	90	90/30=3
EC-403	Electromagnetic Waves and Transmission Lines	36	0	0	54	90	90/30=3
EC-404	Digital System Design	40	0	0	50	90	90/30=3
EC-405	Numerical Methods	36	0	0	54	90	90/30=3
EC-406	Biology for Engineers	36	0	0	54	90	90/30=3
EC-491	Analog Electronic circuits lab	0	0	20	10	30	30/30=1
EC-492	Analog communication lab	0	0	20	10	30	30/30=1
EC-493	Electromagnetic waves and transmission line lab	0	0	13	17	30	30/30=1
EC-494	Digital system design lab	0	0	14	16	30	30/30=1
EC-495	Python programming and numerical methods lab	0	0	20	10	30	30/30=1
EC-481	Internship-I	0	0	20	10	30	30/30=1

*This is as per the new National Credit Framework, which accounts for 30 hrs. of learning as equivalent to 1 credit. Those universities which are still following the LTP will transform them into no. of hours and fill in the above table.

Legend:

- **CI:** Classroom Instruction (Includes different instructional/implementation strategies
- i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem based learning etc. to deliver theoretical concepts)
- **LI:** Laboratory Instruction (Includes experiments/practical performances /problem- based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)
- **TW:** Term work (includes assignments, seminars, micro projects, industrial visits, any other student activities etc.)
- **SL:** Self Learning, MOOCs, spoken tutorials, online educational resources etc.(If Provided in curriculum structure.)

1.2.2. Components of Program Curriculum (05)

(Provide details of the program curriculum components approved by the university in the last year graduate (LYG) batch as a sample program curriculum.)

Table No.1.2.2.1: Program curriculum grouping based on curriculum components.

Curriculum Component	Curriculum Content (% of total number of credits of the program)	Total number of contact hours	Total number of credits
Basic Sciences	17.3%	420	28
Basic Engineering	10.5%	255	17
Humanities and Social Sciences	5.6%	135	9
Program Core/Major/ Minor	35.3%	855	57
Program Electives	13.0%	315	21
Open Electives/Multi-Disciplinary	9.3%	225	15
Project(s)	8.4%	405	13.5
Internships/Seminars	0.6%	30	1
Any other (Please specify)- A. Ability enhancement	Non-credit		0
B. Skill Enhancement	Included in curriculum	60	1
C. Value Added Courses / Environmental Science / Universal Human Values etc.	Non-credit	60	0
Total:	100%	~2700	161.5

Notes on calculation and NBA alignment:

- The percentage share is computed as: $\text{component credits} / 161.5 \times 100$. The displayed percentages are rounded to one decimal place.
- The total of 161.5 credits refers to credit-bearing program requirements in the LYG curriculum sample. Non-credit audit courses are reported separately because they contribute to learning exposure but not to the credit denominator.
- The reported contact-hour total is approximately 2700 hours after including mandatory audit/value-oriented learning hours as prescribed in the curriculum.
- Skill enhancement activities are shown as embedded curricular activities and are not added again as a separate credit head where such credit has already been absorbed in laboratories, term work or professional-skill courses.

Rationale for curriculum balance

The curriculum distribution indicates a balanced structure with a strong ECE program core supported by adequate foundations in basic sciences, basic engineering and humanities. Program core and program elective components jointly contribute 78 credits, enabling progressive learning from semiconductor devices, circuits, signals, communication, DSP, control and networking to advanced specialization areas. Open electives and multi-disciplinary courses provide cross-domain exposure in computing, management, cyber law, IoT, AI and allied areas. Project work, design workshop, internships and seminar-type components support outcome-based experiential learning, problem formulation, design validation, documentation and presentation skills.

Component-wise credit verification

Credit-bearing Head	Credits	Percentage
Basic Sciences	28	17.3%
Basic Engineering	17	10.5%
Humanities and Social Sciences	9	5.6%
Program Core / Major / Minor	57	35.3%
Program Electives	21	13.0%
Open Electives / Multi-Disciplinary	15	9.3%
Project(s)	13.5	8.4%
Internships / Seminars	1	0.6%
Total credit-bearing load	161.5	100%

Source: Table No. 1.2.1.1 teaching-learning scheme; LYG data reconciled with 30 hours/credit.

Finalized Table with Basis

Curriculum Component	Curriculum Content / Course Grouping Basis	Curriculum Content (% of total credits)	Total Contact Hours	Total Credits
Basic Sciences	Physics, Chemistry, Mathematics, Probability and Statistics and associated science laboratories as applicable to the LYG curriculum.	17.3%	420	28
Basic Engineering	Basic Electrical Engineering, Engineering Graphics and Design, Workshop/Manufacturing Practices, Programming foundations and other engineering-foundation courses.	10.5%	255	17
Humanities and Social Sciences	English, Language Laboratory, Soft Skill Development, Economics for Engineers, Principles of Management and communication-oriented courses.	5.6%	135	9

Program Core / Major / Minor	Core Electronics and Communication Engineering courses, including electronic devices, analog/digital circuits, signals and systems, network theory, microprocessor/microcontroller, communication, DSP, control, computer network and associated core laboratories.	35.3%	855	57
Program Electives	Departmental professional electives covering microwave engineering, satellite communication, mobile communication, adaptive signal processing, image/video processing, embedded systems, WSN, VLSI, MEMS, biomedical electronics and related ECE specialization areas.	13.0%	315	21
Open Electives / Multi-Disciplinary	Open elective basket covering soft skills, cyber law and IPR, HRM, measurement instrumentation, operating system, OOP, web technology, optimization, entrepreneurship, IoT, big data, cyber security, AI, MIC and organizational behavior.	9.3%	225	15
Project(s)	Mini Project / Electronic Design Workshop, Project Stage-I, Project Stage-II and Grand Viva, representing design, implementation, validation and presentation-based learning.	8.4%	405	13.5
Internships / Seminars	Internship / seminar-type curricular activity recorded in the university-approved scheme.	0.6%	30	1
Any other: A. Ability Enhancement	Non-credit / audit type component, wherever prescribed by the affiliating university.	Non-credit	0	0
Any other: B. Skill Enhancement	Skill-oriented activity included within the curriculum structure; counted under the relevant curricular head and therefore not added separately to avoid double counting.	Included in curriculum	60	Embedded
Any other: C. Value Added Courses / Environmental Science / Universal Human Values etc.	Environmental Science, Universal Human Values and value-oriented audit courses prescribed by the university as mandatory learning components.	Non-credit	60	0
Total	Credit-bearing components plus mandatory audit/value-based learning components	100%	~2700	161.5

1.2.3. State the Process Used to Identify Extent of Compliance of the University Curriculum for Attaining the Program Outcomes and Program Specific Outcomes as mentioned in Annexure II. Also Mention the Identified Curricular Gaps, if any (10)

(Describe the process that periodically documents and demonstrates how the program curriculum is evolved, or provide the process of gap analysis, whichever is applicable, considering the Program Outcomes (POs) as

mentioned in Annexure-II.)

A. Context and Scope of Analysis

The curriculum prescribed by Maulana Abul Kalam Azad University of Technology, West Bengal for the B.Tech. programme in Electronics and Communication Engineering was examined to determine the extent to which the university curriculum supports the attainment of NBA-defined Program Outcomes (POs) and department-level Program Specific Outcomes (PSOs). The Last Year Graduate (LYG) batch curriculum was considered as the sample curriculum for this analysis. The course scheme considered in Sections 1.2.1 and 1.2.2 covers Basic Sciences, Engineering Sciences, Humanities and Social Sciences, Program Core, Program Electives, Open Electives, project work, internship, laboratories, term work and self-learning components.

The purpose of the process is to document whether the curriculum provides adequate direct and indirect learning opportunities for each PO and PSO, and to identify residual curricular gaps requiring department-level enrichment through content beyond syllabus, value-added courses, industrial training, seminars, projects, workshops, and laboratory augmentation and professional-skill interventions.

B. Process Adopted for Curriculum Compliance and Gap Analysis

Step	Process Activity	Method Adopted	Primary Evidence / Output
1	Collection and verification of curriculum	The university curriculum, course structure, credit distribution, syllabus, laboratory scheme, project components and elective baskets were collected and verified against the approved scheme.	Approved syllabus, course scheme, credit table and semester-wise structure.
2	Grouping of courses into curriculum components	Courses were classified into Basic Sciences, Engineering Sciences, Humanities and Social Sciences, Program Core, Program Electives, Open Electives, Projects, Internships/Seminars and other non-credit or enrichment components.	Component-wise curriculum grouping and credit distribution as recorded in Section 1.2.2.
3	Course Outcome formulation	Course Outcomes were framed for each course using course objectives, syllabus modules, laboratory tasks, expected competencies and Bloom's cognitive levels.	CO statements for theory, laboratory, project, seminar and internship courses.
4	CO-PO and CO-PSO mapping	Each CO was mapped with relevant POs and PSOs using a three-level correlation scale: 3 for strong, 2 for moderate and 1 for weak correlation.	CO-PO and CO-PSO mapping matrix at course level.
5	Course-level PO/PSO contribution analysis	The course contribution to each PO/PSO was reviewed using mapped COs, course credits, lecture/laboratory/project hours and assessment coverage.	Course articulation matrix and curriculum coverage profile.
6	Program-level aggregation	The course-wise evidence was aggregated at program level to identify the POs and PSOs strongly addressed by the curriculum and those receiving limited direct coverage.	PO/PSO curriculum compliance summary.
7	Review by faculty and stakeholders	The preliminary mapping and gaps were reviewed through departmental academic review meetings, feedback from students, alumni, employers and industry interactions.	Minutes of meetings, feedback analysis and suggested corrective actions.
8	Gap identification and action planning	Residual areas with limited explicit curriculum coverage were listed as curricular gaps and assigned suitable department-level bridge	Gap analysis table and action plan for bridge activities.

measures.

C. Mapping Scale and Interpretation Criteria

Correlation Level	Meaning	Interpretation for Curriculum Compliance
3 - Strong	The course directly develops the concerned PO/PSO through explicit syllabus content, laboratory work, design work, project activity or formal assessment.	High contribution to the PO/PSO.
2 - Moderate	The course provides partial support to the concerned PO/PSO through selected modules, problem-solving tasks, experiments, assignments or professional activities.	Moderate contribution to the PO/PSO.
1 - Weak	The course has limited or indirect relevance to the concerned PO/PSO.	Supporting contribution to the PO/PSO.
0 - No direct correlation	The course does not directly address the concerned PO/PSO.	No direct curricular contribution.

For program-level interpretation, the department considers the combined evidence from credits, contact hours, laboratory exposure, project work, elective coverage, professional activities and assessment components. High compliance indicates repeated and direct curriculum support; Moderate compliance indicates adequate but improvable support; Low compliance indicates limited direct coverage requiring planned bridge activity.

D. Curriculum Compliance with NBA Program Outcomes

PO	NBA Program Outcome	Extent of Compliance	Supporting Curriculum Components / Representative Courses	Remarks on Direct Curriculum Support
PO1	Engineering Knowledge	High	Mathematics, Physics, Chemistry, Basic Electrical Engineering, Electronic Devices, Network Theory, Signals and Systems, DSP, Communication Systems, Electromagnetic Waves.	Strong mathematical, scientific and ECE-core foundation is available across multiple semesters.
PO2	Problem Analysis	High	Network Theory, Analog/Digital Communication, Control Systems, Numerical Methods, Probability and Statistics, DSP, Data Structures and Algorithms.	Analytical problem-solving is repeatedly addressed through theory papers, tutorials, numerical work and laboratory validation.
PO3	Design/Development of Solutions	Moderate to High	Electronic Design Workshop, Mini Project, Project Stage-I, Project Stage-II, Embedded Systems, VLSI, IoT, Communication electives and hardware laboratories.	Design activity exists through laboratory, mini-project and final-year project components; scope can be expanded through multidisciplinary design problems.
PO4	Conduct Investigations of Complex Problems	Moderate	Electronics Devices Lab, Digital System Design Lab, Analog Communication Lab, DSP Lab, Control and Instrumentation Lab, project work.	Experimental investigation is available through laboratories and projects; formal research methodology and structured experimentation

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				can be strengthened.
PO5	Modern Tool Usage	Moderate	Programming, Data Structures, DSP Lab, Communication Labs, Embedded Systems, VLSI-related electives, simulation-based assignments and project work.	Tool exposure exists, but advanced EDA, RF simulation, FPGA, SDR and industry-standard tool usage require greater explicit coverage.
PO6	Engineer and Society	Moderate	Environmental Science, Universal Human Values, Economics for Engineers, Principles of Management, Humanities and Social Sciences components.	Societal relevance is addressed through HSS and mandatory courses; ECE-specific societal case studies can be integrated more visibly.
PO7	Environment and Sustainability	Moderate	Environmental Science, Universal Human Values, Economics for Engineers, project work and selected open-elective contexts.	Sustainability is present but needs stronger integration with electronics manufacturing, e-waste, low-power systems and green communication.
PO8	Ethics	Moderate	Universal Human Values, Effective Technical Communication, Professional Communication, seminar/project evaluation and institutional practices.	Professional ethics is covered through HSS and value-based courses; engineering-ethics case studies may be expanded.
PO9	Individual and Team Work	High	Laboratory courses, group assignments, mini-projects, electronic design workshop, industrial training, Project Stage-I and Project Stage-II.	Team-based laboratory and project tasks provide repeated evidence of individual and collaborative performance.
PO10	Communication	Moderate to High	English, Language Laboratory, Effective Technical Communication, seminars, viva-voce, project reports and presentations.	Written and oral communication is addressed through language courses, seminars and project presentation requirements.
PO11	Project Management and Finance	Moderate	Principles of Management, Economics for Engineers, mini-projects, final-year projects, entrepreneurship elective and project planning exercises.	Project management is partially addressed through courses and project work; budgeting, risk analysis and engineering finance need stronger project-level documentation.
PO12	Life-long Learning	High	Open electives, professional electives, self-learning components, MOOCs/spoken tutorials, emerging technology electives and project-based learning.	The curriculum supports independent learning through electives, self-learning hours and student-driven project activities.

List of 11 POs from 2025-2026 Academic Session

PO	NBA Outcome	Program	Extent of Compliance	Supporting Curriculum Components / Representative Courses	Remarks on Direct Curriculum Support
PO1	Engineering Knowledge		High	Mathematics, Physics, Chemistry, Basic Electrical Engineering, Electronic Devices, Network Theory, Signals and Systems, DSP, Communication Systems, Electromagnetic Waves.	Strong mathematical, scientific and ECE-core foundation is available across multiple semesters.
PO2	Problem Analysis		High	Network Theory, Analog/Digital Communication, Control Systems, Numerical Methods, Probability and Statistics, DSP, Data Structures and Algorithms.	Analytical problem-solving is repeatedly addressed through theory papers, tutorials, numerical work and laboratory validation.
PO3	Design/Development of Solutions		Moderate to High	Electronic Design Workshop, Mini Project, Project Stage-I, Project Stage-II, Embedded Systems, VLSI, IoT, Communication electives and hardware laboratories.	Design activity exists through laboratory, mini-project and final-year project components; scope can be expanded through multidisciplinary design problems.
PO4	Conduct Investigations of Complex Problems		Moderate	Electronics Devices Lab, Digital System Design Lab, Analog Communication Lab, DSP Lab, Control and Instrumentation Lab, project work.	Experimental investigation is available through laboratories and projects; formal research methodology and structured experimentation can be strengthened.
PO5	Engineering Tool Usage	Tool	Moderate	Programming, Data Structures, DSP Lab, Communication Labs, Embedded Systems, VLSI-related electives, simulation-based assignments and project work.	Tool exposure exists, but advanced EDA, RF simulation, FPGA, SDR and industry-standard tool usage require greater explicit coverage.
PO6	The Engineer and The World		Moderate	Environmental Science, Universal Human Values, Economics for Engineers, Principles of Management, Humanities and Social Sciences components.	Societal relevance is addressed through HSS and mandatory courses; ECE-specific societal case studies can be integrated more visibly.
PO7	Ethics		Moderate	Universal Human Values, Effective Technical Communication, Professional Communication, seminar/project evaluation and institutional practices.	Professional ethics is covered through HSS and value-based courses; engineering-ethics case studies may be expanded.
PO8	Individual and Collaborative Work	Team	High	Laboratory courses, group assignments, mini-projects, electronic design workshop,	Team-based laboratory and project tasks provide repeated evidence of

			industrial training, Project Stage-I and Project Stage-II.	individual and collaborative performance.
PO9	Communication	Moderate to High	English, Language Laboratory, Effective Technical Communication, seminars, viva-voce, project reports and presentations.	Written and oral communication is addressed through language courses, seminars and project presentation requirements.
PO10	Project Management and Finance	Moderate	Principles of Management, Economics for Engineers, mini-projects, final-year projects, entrepreneurship elective and project planning exercises.	Project management is partially addressed through courses and project work; budgeting, risk analysis and engineering finance need stronger project-level documentation.
PO11	Life-long Learning	High	Open electives, professional electives, self-learning components, MOOCs/spoken tutorials, emerging technology electives and project-based learning.	The curriculum supports independent learning through electives, self-learning hours and student-driven project activities.

E. Curriculum Compliance with Program Specific Outcomes

PSO	Program Outcome Area	Specific	Extent of Compliance	Supporting Curriculum Components	Observation
PSO-1	Application of ECE fundamentals for components and systems involving signal/image processing, communication, networking, embedded systems, VLSI and control systems.		High	Electronic Devices, Network Theory, Signals and Systems, Analog/Digital Communication, DSP, Control Systems, Microprocessor and Microcontroller, Embedded Systems, VLSI electives, Communication Labs, DSP Lab and projects.	Core ECE theory and laboratory components provide strong direct support to this PSO.
PSO-2	Selection and application of advanced engineering hardware and software tools for complex ECE problems.		Moderate	Programming, Data Structures, Microprocessor and Microcontroller Lab, DSP Lab, Embedded Systems, VLSI-related electives, IoT, project work and simulation-based activities.	Tool usage exists, but explicit training in advanced RF, antenna, EDA, FPGA, SDR and professional simulation platforms needs bridge activity.
PSO-3	Social/environmental awareness, ethical responsibility, entrepreneurship		Moderate	Environmental Science, Universal Human Values, Economics for Engineers, Principles of Management,	The curriculum provides supporting coverage; entrepreneurship,

	orientation, global citizenship and continuous technological updation.		Effective Communication, Technical Cyber Law/IPR, Entrepreneurship elective, open electives, project work and self-learning components.	sustainability-in-core and formal technology-watch activities require planned enrichment.
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F. Identified Curricular Gaps

S. No.	Identified Curricular Gap	Related PO/PSO	Observation from Curriculum Review	Required Enrichment / Bridge Area
1	Limited explicit industry-oriented software/tool training	PO5, PSO2	Advanced tools such as HFSS, CST, MATLAB advanced toolboxes, Cadence, FPGA toolchains and SDR platforms are not deeply specified as mandatory curriculum components.	Value-added certification, laboratory demonstrations and project-based tool usage.
2	Insufficient interdisciplinary project exposure	PO3, PO9, PO11, PSO3	Project work exists, but structured multidisciplinary collaboration across departments is limited in the university syllabus.	Multidisciplinary capstone tasks, hackathons and interdepartmental project review.
3	Limited depth in selected emerging ECE technologies	PO5, PO12, PSO2	AI/ML for ECE, IoT applications, cyber-physical systems, edge intelligence and modern communication platforms require deeper applied exposure.	Add-on modules, expert lectures and elective-aligned mini projects.
4	Limited entrepreneurship and innovation practice within core curriculum	PO11, PO12	Entrepreneurship appears mainly as an elective or supporting activity rather than a mandatory design-commercialization pathway.	Innovation contests, IPR sessions, start-up awareness and prototype-to-product orientation.
5	Limited explicit integration of sustainability and green engineering in ECE core courses	PO6, PO7	Sustainability is covered through Environmental Science and value-oriented courses, but is not deeply linked with ECE core topics.	E-waste, low-power design, green communication and sustainable electronics assignments.
6	Low credit weight for internship/industrial exposure	PO9, PO10, PO11, PSO3	Internship/seminar exposure carries limited credit weight in comparison with the total program credits.	Industry training, plant visits, industrial problem statements and internship-based reports.
7	Limited formal research methodology and technical publication practice	PO4, PO10, PO12	Experimental work and project work exist, but formal research methodology, literature review and publication ethics are not separate curriculum elements.	Research methodology workshops, literature review assignments and technical-writing sessions.
8	Need for stronger hands-on hardware prototyping ecosystem	PO3, PO5, PSO3	Laboratories are present, but advanced PCB design, FPGA, SDR, embedded prototyping and maker-space usage require	Maker-space activities, PCB workshops, embedded prototyping and final-year project integration.

more continuous exposure.

G. Measures Proposed / Adopted to Bridge the Curricular Gaps

Gap Area	Proposed / Adopted Department-Level Measure	Expected Support PO/PSO Attainment to	Evidence Maintained
Modern tools and simulation	Conduct short-term value-added training on MATLAB/Simulink, Python for ECE, PCB design, FPGA, SDR, RF simulation and VLSI/EDA tools.	PO5, PO3, PSO2, PSO3	Training schedule, attendance, assignments, tool-output screenshots and assessment records.
Industry and field exposure	Organize industry visits, expert talks, internship-linked assignments and industry-problem-based projects.	PO6, PO9, PO10, PO11, PSO3	MoU records, visit reports, expert-session reports and project review documents.
Research orientation	Introduce sessions on literature review, problem formulation, experiment design, data analysis, plagiarism awareness and technical paper writing.	PO4, PO10, PO12	Workshop reports, literature-review sheets, project synopsis and publication/presentation evidence.
Innovation and entrepreneurship	Promote idea competitions, prototype demonstrations, IPR awareness, start-up orientation and innovation-cell activities.	PO3, PO11, PO12	Event notices, participation records, prototype photographs, evaluation sheets and mentoring records.
Sustainability integration	Include assignments and seminar topics on e-waste, green electronics, low-power embedded systems, sustainable communication and energy-aware design.	PO6, PO7	Assignment samples, seminar records and CO-linked assessment rubrics.
Multidisciplinary design	Encourage cross-domain project teams involving electronics, computing, mechanical design, biomedical and industrial automation problem contexts.	PO3, PO9, PO11, PSO3	Project proposals, team composition, review rubrics and final project reports.

H. Periodicity, Responsibility and Documentation

Activity	Frequency	Responsible Body / Faculty Role	Records Maintained
Review of curriculum structure and course scheme	At the beginning of academic cycle / whenever university syllabus changes	Departmental Academic Committee, Program Coordinator, HoD and course coordinators	Approved syllabus, course scheme and component distribution.
CO formulation and revision	Every semester before course delivery	Course Coordinator and Module Coordinator	Course file, CO statements and lecture plan.
CO-PO/PSO mapping verification	Every semester	Course Coordinator, PO/PSO Coordinator and departmental review committee	Course articulation matrix and mapping justification.
PO/PSO attainment and compliance review	After completion of assessment cycle	Departmental Academic Committee and NBA Coordinator	Attainment sheets, review minutes and corrective

			action records.
Gap identification and bridge planning	Annually / at the end of program review cycle	HoD, Program Coordinator, faculty members and stakeholder representatives where applicable	Gap analysis report, action plan and closure evidence.

1.2.4. State the Delivery Details of the Content beyond the Syllabus for the Attainment of Program Outcomes and Program Specific Outcomes (10)

(Provide details of the value-added courses, workshops, seminars, hands-on experiences, etc., organized to address the gaps identified in 1.2.2 in the following format.).

Table No.1.2.4.1: Details of events organized to cover content beyond the syllabus

S. N.	PO/PSO as gap Identified	Name of the event	Date of event	Resource person, organization	Relevance to POs, PSOs
CAYm1					
1	PO5, PSO2 - Limited exposure to industry-standard EM simulation tools for antenna and RF design.	Hands-on Workshop on CST Microwave Studio and HFSS for Antenna Design	15-05-2025	Dr. Tapas Mondal and Dr. Sourav Moitra. Dept. of ECE, BCREC	Strengthened PO5 through modern tool usage and PSO2 through antenna modelling and RF design simulation.
2	PO5, PSO2 - Need for advanced MATLAB-based analysis of DSP systems beyond routine laboratory work.	Hands-on Workshop on MATLAB Advanced Toolboxes for DSP Applications	05-05-2025	Mr. Nilkamal Bhunia, Dept. of ECE, BCREC	Supported PO5 through DSP toolbox usage and PSO2 through software-based signal analysis.
3	PO5, PSO2 - Lack of hands-on exposure to FPGA implementation using Verilog.	Hands-on Workshop on Xilinx Vivado Design Suite and FPGA Development	18-04-2024 to 19-04-2024	Prof. Pradipta Sarkar Dept. of ECE, BCREC	Addressed PO5 through FPGA tool usage and PSO2 through hardware-oriented digital design.
4	PO4, PO5, PSO2 - Need for simulation-based verification of electronic devices and circuits.	Hands-on Workshop on LTspice/ eSIM and Proteus for Electronic Device Characterization	08-08-2024	Dr. Anup Kumar Das and Dr. Abhijit Banerjee, Dept. of ECE, BCREC	Supported PO4 and PO5 through design, analysis and EDA-based characterization.

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5	PO4, PO11 and PSO1 - Need for practical understanding of I2C/SPI protocols and sensor-bus integration.	Technical Seminar on Interfacing Industrial I2C and SPI Sensors with Microcontrollers	14-5-2025	Dr. Abhijit Banerjee. Dept. of ECE	Supported embedded system design, interface investigation and application-specific ECE implementation.
6	PO4, PSO1 and PSO2 - Lack of exposure to Verilog HDL and FPGA prototyping in classical digital-system curriculum.	Content Beyond Syllabus Session on Verilog HDL and FPGA Prototyping.	12-09-2024	Internal Expert-Dr. Alope Saha and Dr. Tribeni Prasad Banerjee, and Prof P Sarkar Dept. of ECE	Supported digital-system design fundamentals and FPGA-oriented implementation.
CAYm2					
1	PO4, PO5, PSO1, PSO2 - Limited practical exposure to MATLAB-based signal visualization, reconstruction.	MATLAB Workshop for Signal Analysis and Filter Design	09-08-2024	Prof. Moutusi Mondal, Prof. Debipriya Dutta, Mr. Shantanu Roy, Dept. of ECE	Supported MATLAB tool usage, signal analysis and software-based engineering problem solving.
2	PO6, PO11, PSO1, PSO2 - Need for exposure to biomedical signals and healthcare monitoring.	Informative Session on ECG, EEG and EMG Signal Analysis	06-09-2024	Prof. Moutusi Mondal, Dept. of ECE	Strengthened biomedical signal interpretation and socially relevant healthcare applications.
3	PO4, PO5, PO8, PSO1, PSO2 - Limited application-level exposure to RF signals and satellite communication.	GNSS data measurement using Android device	08-1-2024	Dr. Somnath mahato Project Scientist-III Meteorological Training Institute (MTI) Indian Meteorological Department (IMD) Pashan,	Supported Advance communication-system analysis and signal modelling.
4	PO4,PO5, PO11 and PSO2 - Limited exposure to System-on-Chip design and higher-level digital integration.	Special Lecture on System-on-Chip Design	15-04-2024	Amrita Pandey SOC Design Engineer, INTEL	Exposed students to modern integrated-system design trends and semiconductor design

					concepts.
5	PO4,PO5, PSO2 - Need for tool-based modelling of Analog and Digital Communication systems.	Hands-on Workshop on MATLAB/Simulink and Python for Analog and Digital Communication	17-03-2024	Dr. Abhijit Banerjee and Dr. Anirban Chattopadhyay, Dept. of ECE, BCREC	Supported simulation of AM/FM and OFDM/MIMO systems and software-based communication-system analysis.
6	PO5, PSO2 - Lack of practical exposure to CMOS circuit optimization using EDA tools.	Session on CMOS Logic Circuit Optimization using EDA Tools	17-04-2024	Dr. Aloke Saha Dept. of ECE, BCREC	Reinforced EDA-based CMOS design and VLSI concept application.
7	PO5, PSO2 - Need for RF and antenna simulation tool exposure reflected in EM wave and antenna-course gaps.	Special Lecture and Demonstration on HFSS-Based Microstrip Patch Antenna Simulation	19-01-2024	Dr. Tapas Mondal, Dept. of ECE, BCREC,	Supported modern EM simulation usage and RF/antenna design understanding.
8	PO6, PO11, PSO1, PSO2 - Need for application-level exposure to biomedical signal processing.	Technical Talk on Biomedical Signal Processing and Healthcare Monitoring	16-02-2024	Ms. Moutusi Mondal, Dept. of ECE, BCREC	Connected signal-processing knowledge with healthcare applications and social relevance.
9	PO4, PO5, PSO2 - Need for DSP implementation and Adaptive filter-design exposure beyond analytical treatment.	Hands-on Session on adaptive FIR Filter Design and Spectral Analysis using MATLAB	19-03-2024	Mr. Nilkamal Bhunia and Dr. Mrinmoy Chakraborty, Dept. of ECE, BCREC	Supported signal investigation, DSP implementation and modern engineering tool usage.
10	PO4, PO5, PO11, PSO1, PSO2 - VLSI and CMOS design gaps indicate limited exposure to EDA-based design flow.	Seminar on VLSI Design Flow and CMOS Layout Concepts using EDA Tools	17-04-2024	Mr. Rakesh kr Singh. Design Engineer and Dr. Dipankar Pal, BITs Pilani.	Supported CMOS/VLSI system knowledge, design orientation and EDA-tool.
11	PO5, PSO2- The current syllabus covers diode and BJT theory manually but lacks industry-standard	Hands-on Workshop: Electronic Circuit	13-05-2024	Dr. Aloke Saha, Surajit Batabyal, & Subhadra Deb Roy, Dept Of	PO5: Develops skills and techniques to handle state-of-the-art

	electronic design automation (EDA) and simulation tool training	Simulation & Verification using LTspice		ECE.	engineering tools. PSO2: Selects and applies software tools to solve electronics problems.
CAYm3					
1	PO4, PO5, PSO2 - Recurring gap in practical signal visualization and simulation noted across Signals and Systems records.	Extra lab Session on MATLAB/Python for Basic Signal Simulation and System Response	18-08-2023	Dr. Abhijit Banerjee and Dr. Anirban Chattopadhyay, Dept. of ECE, BCREC	Supported PO4 and PO5 through signal modelling and PSO2 through computational tool usage.
2	PO4, PO5, PSO2 - Need for SPICE-based circuit verification as reflected in analog and device-course gap themes.	Hands-on Session on LTspice-Based Diode, BJT and Amplifier Characterization	15-09-2023	Dr. Tribeni Prasad Banerjee, Dept. of ECE, BCREC.	Supported design, investigation and modern EDA tool usage for circuit-level learning.
3	PO4, PO5, PSO1, PSO2 - Repeated need for FPGA/HDL exposure beyond classical digital logic delivery.	Technical Session on Introduction to Verilog HDL and FPGA Design Flow	13-10-2023	Prof. Pradipta Sarkar and Dr. Tribeni Prasad Banerjee, Dept. of ECE, BCREC.	Strengthened digital design knowledge and programmable-logic implementation exposure.
4	PO4, PO5, PSO1, PSO2 - Need for microcontroller-based application design beyond routine peripheral interfacing.	Hands-on Workshop on Arduino/ESP32-Based Sensor Interfacing for IoT Applications	17-11-2023	Prof. Samujjwal Ray and Prof. Moley Mukherjee, Dept. of ECE, BCREC.	Supported embedded-system design, sensor interfacing and IoT-oriented practical exposure.

1.3. PO, PSO and their Mapping with Courses (15)

1.3.1. POs and PSOs (05)

(Program Specific Outcomes (PSOs) are defined by the program, with up to 3 PSOs specified.)

List of POs (Old)

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.

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 teamwork: 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 the 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 & 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: Lifelong 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 in Computer Science and Engineering.

List of POs from 2025-2026 session.

PO1: Engineering Knowledge: Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, review research literature and analyze complex engineering problems

reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)

PO3: Design/Development of Solutions: Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)

PO4: Conduct Investigations of Complex Problems: Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).

PO5: Engineering Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)

PO6: The Engineer and The World: Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).

PO7: Ethics: Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)

PO8: Individual and Collaborative Team work: Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.

PO9: Communication: Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences

PO10: Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.

PO11: Life-Long Learning: Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

List of PSOs (up to 3)

(Provide details of the PSOs for the program currently seeking accreditation.)

PSO-1: Apply the fundamental concepts of electronics and communication engineering to design a variety of components and systems for applications including signal processing, image processing, communication, networking, embedded systems, VLSI and control system.

PSO-2: Select and apply cutting-edge engineering hardware and software tools to solve complex Electronics and Communication Engineering problems.

PSO-3: Acquaintance of social and environmental awareness with ethical responsibilities to have a successful career in real-world applications or to become a successful Entrepreneur and a worthy global citizen by keeping abreast of the technological changes.

1.3.2. Mapping between the Courses and POs/PSOs (10)

(Mention the courses relevant to the POs/PSOs.)

Table No.1.3.2: Mapping between courses with POs/PSOs.

PO Number	PSO Number	List of Courses
PO1, PO2	PSO1	Physics-I- BS-PH101/201 BS-PH101/201
PO1, PO2	PSO1	Chemistry-I- BS-CH101/201
PO1, PO2	PSO1	Mathematics- BSM101/M102/M201/M202
PO1, PO2	PSO1	Basic Electrical Engineering- ES-EE101
PO4, PO5	PSO2	Physics Laboratory- BS-PH191/291
PO4, PO5	PSO2	Chemistry Laboratory- BS-CH191/291
PO4, PO5	PSO2	Basic Electrical Engineering Laboratory- ES-EE191
PO3, PO5	PSO1	Engineering Graphics & Design- ES-ME191/291
PO3, PO8	PSO3	Workshop/Manufacturing Practices- ES-ME192/292
PO1, PO2, PO5	PSO2	Programming for Problem Solving- ES-CS201
PO4, PO5	PSO2	Programming for Problem Solving Lab- ES-CS291
PO9	PSO3	English- HM-HU201
PO9	PSO3	Language Laboratory- HM-HU291
PO1, PO2	PSO1	Electronic Devices- EC301
PO1, PO2, PO3	PSO1, PSO2	Digital System Design- EC302
PO1, PO2	PSO1	Signals and Systems- EC303
PO1, PO2	PSO1	Network Theory- EC304
PO1, PO2, PO5	PSO2	Data Structure & Algorithms- ES-CS301
PO1, PO2, PO4	PSO1	Probability & Statistics- BS-M301
PO6	PSO3	Environmental Science- MC381
PO4, PO5	PSO2	Electronic Devices Lab- EC391
PO3, PO4, PO5	PSO1, PSO2	Digital System Design Lab- EC392
PO4, PO5	PSO2	Data Structure & Algorithm Lab- ES-CS391
PO1, PO2	PSO1	Analog Communication- EC401
PO1, PO2, PO3	PSO1	Analog Circuits- EC402
PO1, PO3, PO5	PSO1, PSO2	Microprocessor & Microcontroller- EC403
PO2, PO5	PSO2	Design & Analysis of Algorithms- ES-CS401
PO1, PO2, PO5	PSO2	Numerical Methods- BS-M401
PO4, PO5	PSO2	Numerical Methods Lab- BS-M491
PO6	PSO3	Biology for Engineers- BS-B401
PO4, PO5	PSO2	Analog Communication Lab- EC491
PO3, PO4, PO5	PSO1, PSO2	Analog Electronic Circuits Lab- EC492
PO3, PO4, PO5	PSO1, PSO2	Microprocessor & Microcontroller Lab- EC493
PO8, PO9	PSO3	Soft Skill Development Lab- HS-HU481
PO1, PO2	PSO1	Electromagnetic Waves- EC501

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PO1, PO2, PO5	PSO2	Computer Architecture- EC502
PO1, PO2, PO3	PSO1	Digital Communication & Stochastic- EC503
PO1, PO2, PO3	PSO1	Digital Signal Processing- EC504
PO9	PSO3	Effective Technical Communication- MC-HU501
PO1, PO2	PSO1	Nano Electronics- PE-EC505A
PO1, PO2, PO3	PSO1	Speech & Audio Processing- PE-EC505B
PO1, PO2,	PSO1, PSO3	Power Electronics- PE-EC505C
PO2, PO5	PSO2	Scientific Computing- PE-EC505D
PO8, PO9	PSO3	Soft Skill & Interpersonal Communication- OE-EC506A
PO6, PO7	PSO3	Cyber Law & IPR- OE-EC506B
PO8, PO10	PSO3	Human Resource Management- OE-EC506C
PO4, PO5	PSO2	Electromagnetic Wave Lab- EC591
PO3, PO4, PO5	PSO1, PSO2	Digital Communication Lab- EC592
PO3, PO4, PO5	PSO1, PSO2	DSP Laboratory- EC593
PO1, PO2, PO3	PSO1	Control System & Instrumentation- EC601
PO1, PO2, PO5	PSO1, PSO2	Computer Network- EC602
PO1, PO2, PO3	PSO1	Introduction to MEMS- PE-EC603A
PO1, PO6	PSO1, PSO3	Bio-Medical Electronics- PE-EC603B
PO1, PO3, PO5	PSO1, PSO2	CMOS VLSI Design- PE-EC603C
PO1, PO2	PSO1	Information Theory & Coding- PE-EC603D
PO1, PO4, PO5	PSO1, PSO2	Electronic Measurement & Instruments- OE-EC604A
PO1, PO2, PO5	PSO2	Operating System- OE-EC604B
PO2, PO5	PSO2	Object Oriented Programming- OE-EC604C
PO6, PO10	PSO3	Economics for Engineers- HS-HU601
PO4, PO5	PSO2	Control & Instrumentation Lab- EC691
PO4, PO5	PSO2	Computer Network Lab- EC692
PO6, PO7	PSO3	Universal Human Values- MC681
PO3, PO4, PO5, PO8, PO9	PSO1, PSO2, PSO3	Mini Project/Electronic Design Workshop- EC681
PO8, PO10	PSO3	Principles of Management- HS-HU701
PO1, PO2, PO3	PSO1	Microwave Theory & Technique- PE-EC701A
PO1, PO2, PO3	PSO1	Satellite Communication- PE-EC701B
PO1, PO2, PO3	PSO1	Mobile Communication & Networks- PE-EC701C
PO1, PO2, PO3	PSO1	Adaptive Signal Processing- PE-EC702A
PO1, PO2, PO3	PSO1	Digital Image & Video Processing- PE-EC702B
PO2, PO3, PO5	PSO1, PSO2	Neural Network & Fuzzy Logic Control- PE-EC702C
PO3, PO5	PSO1, PSO2	Embedded System- PE-EC703A
PO2, PO3, PO5	PSO1, PSO2	Wireless Sensor Networks- PE-EC703B
PO1, PO2	PSO1	Wavelet Transforms- PE-EC703C
PO2, PO5	PSO2	Web Technology- OE-EC704A

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PO2, PO5	PSO2	Optimization Technique- OE-EC704B
PO8, PO10, PO11	PSO3	Entrepreneurship- OE-EC704C
PO3, PO4, PO5, PO8, PO9, PO10, PO11	PSO1, PSO2, PSO3	Project Stage-I- EC782
PO1, PO2, PO3	PSO1	Antennas & Propagation- PE-EC801A
PO1, PO2, PO3	PSO1	Fiber Optic Communication- PE-EC801B
PO1, PO2	PSO1	Error Correcting Codes- PE-EC801C
PO1, PO3, PO5	PSO1, PSO2	Mixed Signal Design- PE-EC802A
PO1, PO3	PSO1, PSO3	Industrial Automation & Control- PE-EC802B
PO3, PO5	PSO1, PSO2	VLSI Design Automation- PE-EC802C
PO2, PO3, PO5	PSO1, PSO2	Internet of Things (IoT)- OE-EC803A
PO2, PO5, PO11	PSO2	Big Data Analysis- OE-EC803B
PO5, PO7	PSO2, PSO3	Cyber Security- OE-EC803C
PO2, PO5, PO11	PSO2	Artificial Intelligence- OE-EC804A
PO1, PO3	PSO1	Microwave Integrated Circuits- OE-EC804B
PO8, PO10	PSO3	Organizational Behaviour- OE-EC804C
PO3, PO4, PO5, PO8, PO9, PO10, PO11	PSO1, PSO2, PSO3	Project Stage-II- EC881
PO8, PO9, PO11	PSO3	Grand Viva- EC882

For Autonomous (2025-2026)

Courses satisfy with POs

PO number	List of Courses
PO1	Physics-I- BS-PH101/201 BS-PH101/201, Chemistry-I- BS-CH101/201, Mathematics- BSM101/M102/M201/M202, Basic Electrical Engineering- ES-EE101, Programming for Problem Solving- ES-CS201, Electronic Devices- EC301, Digital System Design- EC302, Signals and Systems- EC303, Network Theory- EC304, Data Structure & Algorithms- ES-CS301, Probability & Statistics- BS-M301, Analog Communication- EC401, Analog Circuits- EC402, Microprocessor & Microcontroller- EC403, Numerical Methods- BS-M401, Electromagnetic Waves- EC501, Computer Architecture- EC502, Digital Communication & Stochastic- EC503, Digital Signal Processing- EC504, Nano Electronics- PE-EC505A, Speech & Audio Processing- PE-EC505B, Power Electronics- PE-EC505C, Control System & Instrumentation- EC601, Computer Network- EC602, Introduction to MEMS- PE-EC603A, Bio-Medical Electronics- PE-EC603B, CMOS VLSI Design- PE-EC603C, Information Theory & Coding- PE-EC603D, Electronic Measurement & Instruments- OE-EC604A, Operating System- OE-EC604B, Microwave Theory & Technique- PE-EC701A, Satellite Communication- PE-EC701B, Mobile Communication & Networks- PE-EC701C, Adaptive Signal Processing- PE-EC702A, Digital Image & Video Processing- PE-EC702B, Wavelet Transforms- PE-EC703C, Antennas & Propagation- PE-EC801A, Fiber Optic Communication- PE-EC801B, Error Correcting Codes- PE-EC801C, Mixed Signal Design- PE-EC802A, Industrial Automation & Control- PE-EC802B, Microwave Integrated Circuits- OE-EC804B,
PO2	Physics-I- BS-PH101/201 BS-PH101/201, Chemistry-I- BS-CH101/201, Mathematics- BSM101/M102/M201/M202, Basic Electrical Engineering- ES-EE101, Programming for Problem Solving- ES-CS201, Electronic Devices- EC301, Digital System Design- EC302,

	Signals and Systems- EC303, Network Theory- EC304, Data Structure & Algorithms- ES-CS301, Probability & Statistics- BS-M301, Analog Communication- EC401, Analog Circuits- EC402, Design & Analysis of Algorithms- ES-CS401, Numerical Methods- BS-M401, Electromagnetic Waves- EC501, Computer Architecture- EC502, Digital Communication & Stochastic- EC503, Digital Signal Processing- EC504, Nano Electronics- PE-EC505A, Speech & Audio Processing- PE-EC505B, Power Electronics- PE-EC505C, Scientific Computing- PE-EC505D, Control System & Instrumentation- EC601, Computer Network- EC602, Introduction to MEMS- PE-EC603A, Information Theory & Coding- PE-EC603D, Operating System- OE-EC604B, Object Oriented Programming- OE-EC604C, Microwave Theory & Technique- PE-EC701A, Satellite Communication- PE-EC701B, Mobile Communication & Networks- PE-EC701C, Adaptive Signal Processing- PE-EC702A, Digital Image & Video Processing- PE-EC702B, Neural Network & Fuzzy Logic Control- PE-EC702C, Wireless Sensor Networks- PE-EC703B, Wavelet Transforms- PE-EC703C, Web Technology- OE-EC704A, Optimization Technique- OE-EC704B, Antennas & Propagation- PE-EC801A, Fiber Optic Communication- PE-EC801B, Error Correcting Codes- PE-EC801C, Internet of Things (IoT)- OE-EC803A, Big Data Analysis- OE-EC803B, Artificial Intelligence- OE-EC804A,
PO3	Engineering Graphics & Design- ES-ME191/291, Workshop/Manufacturing Practices- ES-ME192/292, Digital System Design- EC302, Digital System Design Lab- EC392, Analog Circuits- EC402, Microprocessor & Microcontroller- EC403, Analog Electronic Circuits Lab- EC492, Microprocessor & Microcontroller Lab- EC493, Digital Communication & Stochastic- EC503, Digital Signal Processing- EC504, Speech & Audio Processing- PE-EC505B, Digital Communication Lab- EC592, DSP Laboratory- EC593, Control System & Instrumentation- EC601, Introduction to MEMS- PE-EC603A, CMOS VLSI Design- PE-EC603C, Mini Project/Electronic Design Workshop- EC681, Microwave Theory & Technique- PE-EC701A, Satellite Communication- PE-EC701B, Mobile Communication & Networks- PE-EC701C, Adaptive Signal Processing- PE-EC702A, Digital Image & Video Processing- PE-EC702B, Neural Network & Fuzzy Logic Control- PE-EC702C, Embedded System- PE-EC703A, Wireless Sensor Networks- PE-EC703B, Project Stage-I- EC782, Antennas & Propagation- PE-EC801A, Fiber Optic Communication- PE-EC801B, Mixed Signal Design- PE-EC802A, Industrial Automation & Control- PE-EC802B, VLSI Design Automation- PE-EC802C, Internet of Things (IoT)- OE-EC803A, Microwave Integrated Circuits- OE-EC804B, Project Stage-II- EC881,
PO4	Physics Laboratory- BS-PH191/291, Chemistry Laboratory- BS-CH191/291, Basic Electrical Engineering Laboratory- ES-EE191, Programming for Problem Solving Lab- ES-CS291, Probability & Statistics- BS-M301, Electronic Devices Lab- EC391, Digital System Design Lab- EC392, Data Structure & Algorithm Lab- ES-CS391, Numerical Methods Lab- BS-M491, Analog Communication Lab- EC491, Analog Electronic Circuits Lab- EC492, Microprocessor & Microcontroller Lab- EC493, Electromagnetic Wave Lab- EC591, Digital Communication Lab- EC592, DSP Laboratory- EC593, Electronic Measurement & Instruments- OE-EC604A, Control & Instrumentation Lab- EC691, Computer Network Lab- EC692, Mini Project/Electronic Design Workshop- EC681, Project Stage-I- EC782, Project Stage-II- EC881,
PO5	Physics Laboratory- BS-PH191/291, Chemistry Laboratory- BS-CH191/291, Basic Electrical Engineering Laboratory- ES-EE191, Engineering Graphics & Design- ES-ME191/291, Programming for Problem Solving- ES-CS201, Programming for Problem Solving Lab- ES-CS291, Data Structure & Algorithms- ES-CS301, Electronic Devices Lab- EC391, Digital System Design Lab- EC392, Data Structure & Algorithm Lab- ES-CS391, Microprocessor & Microcontroller- EC403, Design & Analysis of Algorithms- ES-CS401, Numerical Methods- BS-M401, Numerical Methods Lab- BS-M491, Analog Communication Lab- EC491, Analog Electronic Circuits Lab- EC492, Microprocessor & Microcontroller Lab- EC493, Computer Architecture- EC502, Scientific Computing- PE-EC505D, Electromagnetic Wave Lab- EC591, Digital Communication Lab- EC592, DSP Laboratory-

	EC593, Computer Network- EC602, CMOS VLSI Design- PE-EC603C, Electronic Measurement & Instruments- OE-EC604A, Operating System- OE-EC604B, Object Oriented Programming- OE-EC604C, Control & Instrumentation Lab- EC691, Computer Network Lab- EC692, Mini Project/Electronic Design Workshop- EC681, Neural Network & Fuzzy Logic Control- PE-EC702C, Embedded System- PE-EC703A, Wireless Sensor Networks- PE-EC703B, Web Technology- OE-EC704A, Optimization Technique- OE-EC704B, Project Stage-I- EC782, Mixed Signal Design- PE-EC802A, VLSI Design Automation- PE-EC802C, Internet of Things (IoT)- OE-EC803A, Big Data Analysis- OE-EC803B, Cyber Security- OE-EC803C, Artificial Intelligence- OE-EC804A, Project Stage-II- EC881,
PO6	Environmental Science- MC381, Biology for Engineers- BS-B401, Cyber Law & IPR- OE-EC506B, Bio-Medical Electronics- PE-EC603B, Economics for Engineers- HS-HU601, Universal Human Values- MC681,
PO7	Cyber Law & IPR- OE-EC506B, Universal Human Values- MC681, Cyber Security- OE-EC803C,
PO8	Workshop/Manufacturing Practices- ES-ME192/292, Soft Skill Development Lab- HS-HU481, Soft Skill & Interpersonal Communication- OE-EC506A, Human Resource Management- OE-EC506C, Mini Project/Electronic Design Workshop- EC681, Principles of Management- HS-HU701, Entrepreneurship- OE-EC704C, Project Stage-I- EC782, Organizational Behaviour- OE-EC804C, Project Stage-II- EC881, Grand Viva- EC882,
PO9	English- HM-HU201, Language Laboratory- HM-HU291, Soft Skill Development Lab- HS-HU481, Effective Technical Communication- MC-HU501, Soft Skill & Interpersonal Communication- OE-EC506A, Mini Project/Electronic Design Workshop- EC681, Project Stage-I- EC782, Project Stage-II- EC881, Grand Viva- EC882
PO10	Human Resource Management- OE-EC506C, Economics for Engineers- HS-HU601, Principles of Management- HS-HU701, Entrepreneurship- OE-EC704C, Project Stage-I- EC782, Organizational Behaviour- OE-EC804C, Project Stage-II- EC881,
PO11	Entrepreneurship- OE-EC704C, Project Stage-I- EC782, Big Data Analysis- OE-EC803B, Artificial Intelligence- OE-EC804A, Grand Viva- EC882,

1.4. Course Outcomes and Course Articulation Matrix (25)

1.4.1. Course Outcome (Semester Wise) (15)

(Provide course outcomes (COs) for two core courses per semester from 1-8 semesters as a sample. The maximum number of outcomes for a course is expected to be around 6. COs should reflect on the measurable outcomes towards attaining POs and PSOs).

Table No. 1.4.1.1: Course outcomes.

Semester No:1st	
Course Title: Mathematics-I	Course Code: BSC-M101
Course Outcome No.	Course Outcome Statement
BSC-M101.1	Identify and recall fundamental tools of algebra, differential calculus and integral calculus required for engineering problem solving.
BSC-M101.2	Explain the concepts of functions of single and several variables and relate them to applied science and engineering problems.
BSC-M101.3	Apply partial derivatives and related calculus techniques to determine extrema of functions of several variables in practical engineering situations.

BSC-M101.4	Analyze engineering problems using appropriate mathematical tools from calculus and linear algebra.
BSC-M101.5	Evaluate the suitability of mathematical methods for solving multidisciplinary engineering problems.
BSC-M101.6	Develop logical and analytical reasoning for modelling and solving problems relevant to academics, research and industry.

Semester No:1st	
Course Title: Physics-I	Course Code: BS-PH101
Course Outcome No.	Course Outcome Statement
BS-PH101.1	Apply principles of classical mechanics, conservation laws, oscillatory motion and rigid body dynamics to analyze physical and engineering systems.
BS-PH101.2	Explain interference, diffraction, polarization and laser action for optical engineering applications.
BS-PH101.3	Analyze electromagnetic phenomena and evaluate dielectric and magnetic material properties using Maxwell equations and related concepts.
BS-PH101.4	Apply fundamental concepts of quantum mechanics to interpret matter waves, uncertainty principle and microscopic physical systems.
BS-PH101.5	Solve problems involving quantum mechanical models such as particle in a box, harmonic oscillator and hydrogen atom.
BS-PH101.6	Interpret statistical mechanics concepts and distinguish Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac distributions for physical systems.

Semester No:2nd	
Course Title: Mathematics-II	Course Code: BSC-M202
Course Outcome No.	Course Outcome Statement
BSC-M202.1	Recognize standard methods for solving ordinary differential equations used in engineering analysis.
BSC-M202.2	Explain the principles of complex variables and their applications in applied science and engineering problems.
BSC-M202.3	Apply partial differentiation and multivariable calculus to determine extrema and solve engineering problems.
BSC-M202.4	Analyze complex functions and complex integrals using appropriate theoretical properties and theorems.
BSC-M202.5	Evaluate Laplace transforms and inverse Laplace transforms to solve differential and integral equations relevant to networks and control systems.
BSC-M202.6	Develop logical and analytical skills for mathematical modelling in academic, research and industrial contexts.

Semester No:2nd	
Course Title:	Course Code: ESC-EC-201

Basic Electronics	
Course Outcome No.	Course Outcome Statement
ESC-EC-201.1	Explain the characteristics and operating principles of P-N junction diodes and their engineering applications.
ESC-EC-201.2	Analyze the characteristics and biasing of Bipolar Junction Transistors for electronic circuit applications.
ESC-EC-201.3	Identify MOSFET characteristics and apply MOSFET operation principles to digital circuit design.
ESC-EC-201.4	Apply diode, BJT and MOSFET concepts to design and analyze basic electronic circuits.
ESC-EC-201.5	Implement operational amplifier circuits for mathematical and signal-conditioning operations.
ESC-EC-201.6	Design and analyze combinational and sequential digital logic circuits using standard logic gates and devices.

Semester No:3rd	
Course Title: Digital Design System	Course Code: EC302
Course Outcome No.	Course Outcome Statement
EC302.1	Explain number systems, codes and Boolean algebra concepts used in digital circuit design.
EC302.2	Design and analyze combinational logic circuits using Boolean minimization and Karnaugh-map techniques.
EC302.3	Design and analyze sequential logic circuits using flip-flops, counters, registers and state diagrams.
EC302.4	Explain semiconductor memories, finite state machines and programmable logic devices for digital system implementation.
EC302.5	Compare logic families and data conversion techniques including sample-and-hold, A/D conversion and D/A conversion.
EC302.6	Apply HDL-based design flow for implementing digital circuits on FPGA or other reconfigurable hardware platforms.

Semester No:3rd	
Course Title: Signals and Systems	Course Code: EC303
Course Outcome No.	Course Outcome Statement
EC303.1	Represent continuous-time and discrete-time signals and systems using mathematical models and graphical descriptions.
EC303.2	Apply Fourier series and Fourier transform techniques for continuous-time signal analysis.
EC303.3	Analyze continuous-time LTI systems using Fourier transform and Laplace transform methods.
EC303.4	Apply Fourier transform concepts for discrete-time signal representation and analysis.
EC303.5	Apply sampling theorem and reconstruction principles to determine sampling requirements for band-limited signals.

EC303.6	Analyze discrete-time LTI systems using Z-transform and DTFT methods.
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Semester No:4th	
Course Title: Analog Communication	Course Code: EC401
Course Outcome No.	Course Outcome Statement
EC401.1	Explain the fundamental architecture, parameters and performance requirements of analog communication systems.
EC401.2	Analyze modulation and demodulation techniques for AM, FM and PM communication systems.
EC401.3	Design and evaluate analog communication system blocks for specified signal transmission requirements.
EC401.4	Explain multiplexing techniques including Time Division Multiplexing and Frequency Division Multiplexing.
EC401.5	Analyze the effect of noise on analog communication systems and receiver performance.
EC401.6	Evaluate signal-to-noise ratio performance of analog modulation systems under given channel conditions.

Semester No:4th	
Course Title: Analog Electronic Circuits	Course Code: EC402
Course Outcome No.	Course Outcome Statement
EC402.1	Explain the applications of diodes, transistors and MOSFETs in analog electronic circuits.
EC402.2	Derive and analyze small-signal models and frequency response of amplifier circuits.
EC402.3	Analyze sinusoidal and non-sinusoidal oscillator circuits for specified design conditions.
EC402.4	Apply operational amplifier principles to design linear and non-linear op-amp based circuits.
EC402.5	Analyze regulated power supply and waveform-shaping circuits used in analog systems.
EC402.6	Design and simulate analog circuit models using appropriate circuit-simulation software tools.

Semester No:5th	
Course Title: Electromagnetic Waves	Course Code: EC501
Course Outcome No.	Course Outcome Statement
EC501.1	Explain high-frequency transmission line characteristics and wave propagation parameters.
EC501.2	Apply impedance transformation techniques using transmission lines and Smith chart concepts.
EC501.3	Use transmission line sections for realizing circuit elements in radio-frequency applications.
EC501.4	Analyze uniform plane wave propagation, reflection and transmission at dielectric and conducting interfaces.

EC501.5	Analyze modal wave propagation in metallic waveguides and determine associated field parameters.
EC501.6	Explain radiation principles and evaluate basic antenna characteristics for communication applications.

Semester No:5th	
Course Title: Digital Communication and Stochastic Processes	Course Code: EC503
Course Outcome No.	Course Outcome Statement
EC503.1	Explain random variables and stochastic processes used in communication system analysis.
EC503.2	Analyze signal-space representation using orthogonal basis functions, orthonormality and vector-space concepts.
EC503.3	Apply sampling, quantization, encoding and channel-capacity concepts to digital information transmission.
EC503.4	Analyze baseband digital transmission techniques such as PAM, PCM, DPCM, DM and ADM and evaluate their performance.
EC503.5	Analyze digital modulation schemes including ASK, PSK, FSK, QPSK, MSK and OFDM.
EC503.6	Evaluate digital modulation performance under noisy conditions using error probability and power spectral density.

Semester No:6th	
Course Title: Control System	Course Code: EC602
Course Outcome No.	Course Outcome Statement
EC504.1	Explain the basic concepts, components and mathematical models of feedback control systems.
EC504.2	Determine time-domain response and stability of control systems using standard analytical techniques.
EC504.3	Analyze frequency response and apply classical control design techniques for continuous-time systems.
EC504.4	Apply control system concepts to practical engineering systems and instrumentation applications.
EC504.5	Apply state-variable techniques for analysis of linear time-invariant control systems.
EC504.6	Use CRO, wave analyzer and spectrum analyzer measurements to interpret control and instrumentation system behavior.

Semester No:6th	
Course Title: CMOS VLSI Design	Course Code: PE-EC603
Course Outcome	Course Outcome Statement

No.	
PE-EC603.1	Explain full-custom ASIC and reconfigurable VLSI design flows.
PE-EC603.2	Apply MOSFET electrical characteristics to VLSI circuit and system design.
PE-EC603.3	Compare major IC fabrication steps and select suitable process considerations for CMOS design.
PE-EC603.4	Evaluate CMOS logic characteristics including transfer behavior, power-delay product and noise margin.
PE-EC603.5	Design and analyze static and dynamic CMOS combinational and sequential logic circuits.
PE-EC603.6	Design CMOS logic circuits using appropriate EDA tools and verify their functional behavior.

Semester No:7th	
Course Title: Mobile Communication and Networks	Course Code: PE-EC701C
Course Outcome No.	Course Outcome Statement
PE-EC701C.1	Explain cellular concepts including frequency reuse, cell splitting, channel assignment and handoff mechanisms.
PE-EC701C.2	Analyze radio propagation mechanisms and their effect on wireless channel modelling.
PE-EC701C.3	Model fading channels using statistical methods and interpret delay spread, coherence bandwidth and Doppler effects.
PE-EC701C.4	Compare multiple access techniques and digital modulation schemes used in wireless communication systems.
PE-EC701C.5	Design and evaluate diversity reception and equalization techniques for wireless channels.
PE-EC701C.6	Relate MIMO concepts and performance metrics such as BER, SNR and outage to practical cellular standards.

Semester No:7th	
Course Title: Embedded System	Course Code: PE-EC703A
Course Outcome No.	Course Outcome Statement
PE-EC703A.1	Explain embedded system architecture, hardware components and design constraints.
PE-EC703A.2	Develop embedded software using Embedded C and RTOS-based task management concepts.
PE-EC703A.3	Analyze interrupt mechanisms and peripheral interfacing requirements in embedded hardware.
PE-EC703A.4	Apply communication protocols for embedded system applications and device interfacing.
PE-EC703A.5	Design basic real-time embedded interfacing applications for practical engineering use.

Semester No:8th	
Course Title: Internet of Things	Course Code: OE-EC803A
Course Outcome	Course Outcome Statement

No.	
OE-EC803A.1	Explain IoT application areas, system architecture and enabling technologies.
OE-EC803A.2	Analyze the role of mobile computing, cloud services and sensors in Internet-connected systems.
OE-EC803A.3	Identify IoT building blocks, protocols and characteristics for connected device implementation.
OE-EC803A.4	Design basic IoT solutions using sensor nodes, communication interfaces and cloud/data services.
OE-EC803A.5	Evaluate IoT system requirements with respect to scalability, security, power and real-world deployment constraints.

Semester No:8th		
Course Fiber Communication	Title: Optic	Course Code: PE-EC801B
Course No.	Outcome	Course Outcome Statement
PE-EC801B.1		Explain the principles of fiber-optic communication systems, components and bandwidth advantages.
PE-EC801B.2		Analyze optical fiber properties and optical components used in fiber communication links.
PE-EC801B.3		Explain the operation of LEDs, laser sources and photodetectors used in optical transmission systems.
PE-EC801B.4		Analyze the performance of optical communication systems using link budget and impairment considerations.
PE-EC801B.5		Design basic optical networks and interpret non-linear effects in optical fibers.

1.4.2. Course Articulation Matrix (10)

(Provide course articulation matrices for two core courses per semester from 1-8 semesters which have been provided in the section 1.4.1. Select courses to demonstrate the mapping/correlation with POs and PSOs.)

Table No.1.4.2.1: Course articulation matrix.

Mapping scale: 3 = Strong correlation, 2 = Moderate correlation, 1 = Low correlation, - = No direct measurable correlation. The matrices use the current PO structure PO1 to PO11 and PSO1 to PSO3. PO1 to PO3 and PSO1 to PSO2 are filled across all COs as these outcomes are foundational to engineering knowledge, problem analysis, solution development and ECE-specific professional capability. PO6 to PO11 and PSO3 are mapped only where the CO has a defensible societal, environmental, ethical, communication, management, lifelong-learning, deployment or professional-readiness component.

Course Name: Mathematics-I

Course Code: BSC-M101

Course Outcomes (COs) code	Program Outcomes (POs)											Program Specific outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
BSC-M101.1	3	2	1	-	-	-	-	-	-	-	1	2	1	-
BSC-M101.2	3	2	1	-	-	-	-	-	-	-	-	2	1	1

Course Outcomes (COs) code	Program Outcomes (POs)											Program Specific outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
BSC-M101.3	3	3	2	1	-	-	-	-	-	-	-	2	1	1
BSC-M101.4	3	3	2	2	-	-	-	-	-	-	-	1	1	1
BSC-M101.5	2	2	2	1	-	-	-	-	-	-	1	1	1	1
BSC-M101.6	2	3	2	2	1	-	-	-	-	-	1	1	1	1

Rationale of mapping: All COs use mathematics as the first engineering language; therefore, PO1, PO2 and a low-to-moderate PO3 are retained across all rows. PSO-1 and PSO-2 are mapped because calculus, linear algebra, modelling and transforms support ECE analysis and software-assisted problem solving. PSO-3 is kept low or blank, as only logical reasoning and multidisciplinary use have indirect professional relevance.

Course Name: Physics-I

Course Code: BS-PH101

Course Outcomes (COs) code	Program Outcomes (POs)											Program Specific outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
BS-PH101.1	3	2	1	1	-	-	-	-	-	-	-	2	1	1
BS-PH101.2	3	2	1	-	-	-	-	-	-	-	-	2	1	1
BS-PH101.3	3	3	1	2	-	-	-	-	-	-	-	3	1	1
BS-PH101.4	3	2	1	-	-	-	-	-	-	-	-	1	1	-
BS-PH101.5	3	3	1	1	-	-	-	-	-	-	-	1	1	-
BS-PH101.6	2	2	1	1	-	-	-	-	-	-	-	1	1	-

Rationale of mapping: Physics-I contributes natural-science depth required for engineering knowledge and problem analysis. Low PO3 is assigned because physical principles support later system/component design. PSO-1 is stronger for optics, electromagnetics and material behavior; PSO-2 is retained at low level for analytical and measurement-oriented interpretation. PSO-3 is used only where practical technology context is visible.

Course Name: Mathematics-II

Course Code: BSC-M202

Course Outcomes (COs) code	Program Outcomes (POs)											Program Specific outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
BSC-M202.1	3	2	1	-	-	-	-	-	-	-	-	1	1	-
BSC-M202.2	3	2	1	-	-	-	-	-	-	-	-	1	1	-
BSC-M202.3	3	3	2	1	-	-	-	-	-	-	-	1	1	1
BSC-M202.4	3	3	1	2	-	-	-	-	-	-	-	1	1	-
BSC-M202.5	3	3	2	2	-	-	-	-	-	-	-	2	1	1
BSC-M202.6	2	3	2	2	1	-	-	-	-	-	1	1	1	1

Rationale of mapping: The mappings focus on differential equations, complex variables, transforms and mathematical modelling. PO1 and PO2 are strong for all COs; PO3 is low to moderate because the methods support engineering solution formulation. PSO-1 and PSO-2 are filled since the content supports networks, control, signal processing and computational analysis. PSO-3 is assigned only where modelling has broader academic or industrial use.

Course Name: Basic Electronics

Course Code: ESC-EC-201

Course Outcomes (COs) code	Program Outcomes (POs)											Program outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
ESC-EC-201.1	3	1	1	-	-	-	-	-	-	-	-	3	1	1
ESC-EC-201.2	3	3	1	1	-	-	-	-	-	-	-	3	1	1
ESC-EC-201.3	3	2	2	-	-	-	-	-	-	-	-	3	1	1
ESC-EC-201.4	3	3	3	1	-	-	-	-	-	-	-	3	2	1
ESC-EC-201.5	3	2	3	-	1	-	-	-	-	-	-	3	2	1
ESC-EC-201.6	3	2	3	-	1	-	-	-	-	-	-	3	2	1

Rationale of mapping: Device operation, circuit analysis and logic design directly support PO1, PO2 and PO3. PSO-1 is strong because the course is central to ECE hardware foundations. PSO-2 is moderate for circuit implementation and logic realization. PSO-3 is low but valid where practical circuits and digital systems support real-world professional readiness.

Course Name: Digital System Design

Course Code: EC302

Course Outcomes (COs) code	Program Outcomes (POs)											Program outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
EC302.1	3	1	1	-	-	-	-	-	-	-	-	2	1	1
EC302.2	3	3	3	-	-	-	-	-	-	-	-	3	2	1
EC302.3	3	3	3	-	-	-	-	-	-	-	-	3	2	1
EC302.4	2	2	2	-	2	-	-	-	-	-	-	3	2	1
EC302.5	2	2	1	1	1	-	-	-	-	-	-	3	2	1
EC302.6	2	2	3	-	3	-	-	-	-	-	1	3	3	2

Rationale of mapping: The course moves from Boolean foundations to HDL and FPGA implementation, so PO1, PO2 and PO3 are present in every CO. PSO-1 is strong for digital hardware design; PSO-2 increases where HDL, programmable logic and conversion tools appear. PSO-3 is low to moderate because reconfigurable hardware and implementation flow support technological adaptability.

Course Name: Signals and Systems

Course Code: EC303

Course Outcomes (COs)	Program Outcomes (POs)											Program outcomes (PSOs)	Specific
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code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
EC303.1	3	2	1	-	-	-	-	-	-	-	-	3	1	1
EC303.2	3	3	1	1	-	-	-	-	-	-	-	3	1	1
EC303.3	3	3	1	2	-	-	-	-	-	-	-	3	1	1
EC303.4	3	2	1	1	-	-	-	-	-	-	-	3	1	1
EC303.5	3	3	2	1	-	-	-	-	-	-	-	3	1	1
EC303.6	3	3	1	2	-	-	-	-	-	-	-	3	1	1

Rationale of mapping: Signal representation, transform-domain methods, sampling and LTI-system analysis map strongly to ECE fundamentals. PO3 is filled at low or moderate level because these COs form the mathematical base for communication and signal-processing system design. PSO-1 is strong throughout; PSO-2 is low because analytical software/tools are normally used for verification. PSO-3 is low due to relevance to technology adaptation.

Course Name: Analog Communication

Course Code: EC401

Course Outcomes (COs) code	Program Outcomes (POs)											Program Specific outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
EC401.1	3	1	1	-	-	-	-	-	-	-	-	3	1	1
EC401.2	3	3	1	2	-	-	-	-	-	-	-	3	1	1
EC401.3	3	2	3	1	1	-	-	-	-	-	-	3	2	1
EC401.4	2	1	1	-	-	-	-	-	-	-	-	3	1	1
EC401.5	3	3	1	2	-	-	-	-	-	-	-	3	1	1
EC401.6	3	3	1	2	-	-	-	-	-	-	-	3	1	1

Rationale of mapping: Analog modulation, demodulation, multiplexing, noise and receiver performance justify strong PO1, PO2 and PSO-1. PO3 is filled throughout because even conceptual and analytical COs support communication-system solution development. PSO-2 is low to moderate where system blocks and performance evaluation require tools or instrumentation. PSO-3 is low due to practical communication-system relevance.

Course Name: Analog Electronic Circuits

Course Code: EC402

Course Outcomes (COs) code	Program Outcomes (POs)											Program Specific outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
EC402.1	3	1	1	-	-	-	-	-	-	-	-	3	1	1
EC402.2	3	3	1	2	-	-	-	-	-	-	-	3	1	1
EC402.3	3	3	2	1	-	-	-	-	-	-	-	3	1	1
EC402.4	3	2	3	-	1	-	-	-	-	-	-	3	2	1
EC402.5	3	3	2	-	-	-	-	-	-	-	-	3	1	1
EC402.6	2	2	3	-	3	-	-	-	-	-	1	3	3	2

Rationale of mapping: The course is mapped strongly to electronic circuit knowledge, analysis and design. PO3 is

filled for every CO because analog circuit understanding feeds directly into component and subsystem design. PSO-1 is strong; PSO-2 rises for op-amp application and simulation. PSO-3 is low to moderate where practical circuits, power supplies and simulation practice connect to real engineering use.

Course Name: Electromagnetic Waves

Course Code: EC501

Course Outcomes (COs) code	Program Outcomes (POs)											Program outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
EC501.1	3	2	1	-	-	-	-	-	-	-	-	3	1	1
EC501.2	3	3	1	-	1	-	-	-	-	-	-	3	2	1
EC501.3	3	2	2	-	-	-	-	-	-	-	-	3	1	1
EC501.4	3	3	1	2	-	-	-	-	-	-	-	3	1	1
EC501.5	3	3	1	2	-	-	-	-	-	-	-	3	1	1
EC501.6	3	2	1	1	-	-	-	-	-	-	-	3	1	1

Rationale of mapping: Transmission lines, Smith chart, wave propagation, waveguides and antenna fundamentals justify strong PO1, PO2 and PSO-1. PO3 is filled at low/moderate level because these concepts support RF circuit and antenna solution development. PSO-2 is low to moderate where Smith-chart and RF design aids are involved. PSO-3 is low through relevance to communication infrastructure.

Course Name: Digital Communication and Stochastic Processes

Course Code: EC503

Course Outcomes (COs) code	Program Outcomes (POs)											Program outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
EC503.1	3	2	1	1	-	-	-	-	-	-	-	3	1	1
EC503.2	3	3	1	1	-	-	-	-	-	-	-	3	1	1
EC503.3	3	2	2	-	-	-	-	-	-	-	-	3	2	1
EC503.4	3	3	1	2	-	-	-	-	-	-	-	3	1	1
EC503.5	3	3	1	2	-	-	-	-	-	-	-	3	1	1
EC503.6	3	3	1	3	-	-	-	-	-	-	-	3	1	1

Rationale of mapping: The course is central to digital communication analysis. PO1 and PO2 are strong for stochastic processes, signal space, modulation and error performance; PO3 is retained because the COs support communication-system development. PSO-1 is strong throughout and PSO-2 is higher where encoding, capacity and performance evaluation require computational tools. PSO-3 is low due to professional relevance of reliable digital communication.

Course Name: Control System

Course Code: EC504

Course Outcomes (COs)	Program Outcomes (POs)	Program outcomes (PSOs)	Specific
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code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
EC504.1	3	2	1	-	-	-	-	-	-	-	-	2	1	1
EC504.2	3	3	1	2	-	-	-	-	-	-	-	2	1	1
EC504.3	3	3	2	2	-	-	-	-	-	-	-	2	2	1
EC504.4	3	2	2	-	1	-	-	-	-	-	-	2	2	2
EC504.5	3	3	1	2	-	-	-	-	-	-	-	2	1	1
EC504.6	2	2	1	3	3	-	-	-	-	-	-	2	3	1

Rationale of mapping: Control modelling, stability, frequency response and state-variable analysis justify PO1, PO2 and PO4. PO3 is filled because control analysis directly supports engineering system design. PSO-1 and PSO-2 are mapped through control, instrumentation and measurement tools. PSO-3 is stronger for practical instrumentation/application COs and low for theoretical COs.

Course Name: CMOS VLSI Design

Course Code: PE-EC603

Course Outcomes (COs) code	Program Outcomes (POs)											Program Specific outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
PE-EC603.1	2	1	1	-	1	-	-	-	-	-	-	3	2	1
PE-EC603.2	3	2	2	-	-	-	-	-	-	-	-	3	1	1
PE-EC603.3	3	2	1	-	-	1	-	-	-	-	-	3	1	2
PE-EC603.4	3	3	1	2	-	-	-	-	-	-	-	3	1	1
PE-EC603.5	3	3	3	-	2	-	-	-	-	-	-	3	2	1
PE-EC603.6	2	2	3	-	3	-	-	-	-	-	1	3	3	2

Rationale of mapping: VLSI design flow, MOS characteristics, fabrication considerations and EDA verification justify PO1, PO2 and PO3 for all COs. PSO-1 is strong for semiconductor and CMOS logic design; PSO-2 is strong where EDA, verification and process choices are visible. PSO-3 is moderate for fabrication/process awareness and EDA-based professional practice.

Course Name: Mobile Communication and Networks
EC701C

Course Code: PE-

Course Outcomes (COs) code	Program Outcomes (POs)											Program Specific outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
PE-EC701C.1	3	2	1	-	-	-	-	-	-	-	-	3	1	1
PE-EC701C.2	3	3	1	2	-	-	-	-	-	-	-	3	1	1
PE-EC701C.3	3	3	1	3	1	-	-	-	-	-	-	3	2	1
PE-EC701C.4	3	2	1	-	-	-	-	-	-	-	-	3	1	1
PE-EC701C.5	3	3	3	2	1	-	-	-	-	-	-	3	2	1
PE-EC701C.6	3	3	1	2	-	-	-	-	-	-	1	3	2	2

Rationale of mapping: Wireless propagation, channel modelling, multiple access, diversity, equalization and MIMO standards justify strong technical mapping. PO3 is filled because the COs support wireless solution design and performance evaluation. PSO-1 is strong; PSO-2 is low/moderate where channel modelling and performance metrics require tools. PSO-3 is low to moderate where cellular standards and technology adaptation are explicit.

Course Name: Embedded System

Course Code: PE-EC703A

Course Outcomes (COs) code	Program Outcomes (POs)											Program Specific outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
PE-EC703A.1	3	1	1	-	-	-	-	-	-	-	-	3	2	1
PE-EC703A.2	3	2	2	-	2	-	-	-	-	-	-	3	3	1
PE-EC703A.3	3	3	1	1	-	-	-	-	-	-	-	3	2	1
PE-EC703A.4	3	2	2	-	1	-	-	-	-	-	-	3	2	1
PE-EC703A.5	3	2	3	1	2	-	-	-	-	1	1	3	2	2

Rationale of mapping: Embedded System maps directly to hardware/software integration. PO1, PO2 and PO3 are present throughout because every CO supports architecture, interfacing, protocol use or application design. PSO-1 and PSO-2 are strong due to embedded hardware, RTOS, protocols and development tools. PSO-3 is low to moderate for practical deployment and adaptability to embedded technologies.

Course Name: Internet of Things

Course Code: OE-EC803A

Course Outcomes (COs) code	Program Outcomes (POs)											Program Specific outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
OE-EC803A.1	3	1	1	-	-	-	-	-	-	-	-	2	2	1
OE-EC803A.2	3	2	1	1	2	-	-	-	-	-	-	2	2	1
OE-EC803A.3	3	2	1	-	1	-	-	-	-	-	-	3	2	1
OE-EC803A.4	3	2	3	-	3	-	-	-	-	1	1	3	3	2
OE-EC803A.5	2	3	2	1	1	2	2	-	-	1	2	2	2	3

Rationale of mapping: IoT includes architecture, sensors, protocols, cloud services and deployment constraints; therefore, PO1, PO2 and PO3 are filled across all COs. PSO-1 and PSO-2 are high for sensor-node, protocol, cloud and tool-based solution development. PSO-3 is intentionally stronger for scalability, security, power and real-world deployment constraints.

Course Name: Fiber Optic Communication
EC801B

Course Code: PE-

Course Outcomes (COs) code	Program Outcomes (POs)											Program Specific outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3

Course Outcomes (COs) code	Program Outcomes (POs)											Program Specific outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PSO-1	PSO-2	PSO-3
PE-EC801B.1	3	1	1	-	-	-	-	-	-	-	-	3	1	1
PE-EC801B.2	3	3	1	1	-	-	-	-	-	-	-	3	1	1
PE-EC801B.3	3	2	1	-	-	-	-	-	-	-	-	3	1	1
PE-EC801B.4	3	3	1	3	1	-	-	-	-	-	-	3	2	1
PE-EC801B.5	3	2	3	1	1	-	-	-	-	-	-	3	2	2

Rationale of mapping: Optical sources, detectors, fiber properties, link budget and network design justify strong PO1, PO2 and PSO-1. PO3 is filled because the content supports optical communication link and network solution development. PSO-2 is low/moderate for link-budget and design tools. PSO-3 is low to moderate where optical network deployment and high-bandwidth infrastructure relevance are evident.

1.5. Program Articulation Matrix (10)

Table No.1.5.1: Program articulation matrix

Course Code	Course Name	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PSO -1	PSO -2	PSO -3
BSC-M101	Mathematics I	3	3	2	1	1	-	-	-	-	-	1	1	1	1
BSC-PH101	Physics	3	2	1	1	-	-	-	-	-	-	-	2	1	1
ESC-EE101	Basic Electrical Engineering	3	2	-	-	-	-	-	-	-	-	-	2	1	1
ESC-ME101	Engineering Mechanics	2	2	-	-	-	-	-	-	-	-	-	-	-	-
HS-MC101	English Language And Technical Communication	-	-	-	-	-	-	-	1	3	3	-	-	-	1
BSC-M201	Mathematics II	3	3	2	1	1	-	-	-	-	-	1	1	1	1
BSC-CH201	Chemistry	3	2	-	1	-	-	-	-	-	-	-	-	-	-
PC-EC201	Basic Electronics Engineering	3	2	2	1	1	-	-	-	-	-	-	3	2	1
ESC-CS202	Introduction To Computer Hardware And Software	3	3	2	-	3	-	-	-	-	-	2	2	3	1
ESC-EC201	Programming For Problem	3	2	2	1	1	-	-	-	-	-	-	3	2	1

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	Solving														
EC-301	Semiconductor Devices	3	2	2	-	-	-	-	-	-	-	-	3	1	1
EC-302	Digital Electronics	3	2	2	1	1	-	-	-	-	-	1	3	2	1
EC-303	Signals And Systems	3	3	1	1	-	-	-	-	-	-	-	3	1	1
EC-304	Network Analysis And Synthesis	3	3	2	-	2	-	-	-	-	-	-	3	1	1
EC-305	Data Structure & Algorithm	2	3	2	-	3	-	-	-	-	-	-	2	3	1
EC-306	Probability And Statistics	3	3	-	3	-	-	-	-	-	-	-	-	-	-
EC-401	Analog Electronic Circuits	3	2	1	1	1	-	-	-	-	-	-	3	1	1
EC-402	Analog Communication	3	2	2	1	1	-	-	-	-	-	1	3	2	1
EC-403	Electromagnetic Waves And Transmission Lines	3	3	1	1	1	-	-	-	-	-	-	3	1	1
EC-404	Digital System Design	3	2	2	1	1	-	-	-	-	-	1	3	2	1
EC-405	Numerical Methods	2	2	-	-	-	-	-	-	-	-	-	-	-	-
EC-406	Biology For Engineers	2	2	-	-	-	2	-	-	-	-	-	-	-	2
EC-501	Digital Signal Processing	3	3	2	2	3	-	-	-	-	-	-	3	3	1
EC-502	Digital Communication	3	3	1	2	-	-	-	-	-	-	-	3	1	1
EC-503	Microprocessors & Microcontrollers	3	3	3	3	3	-	-	-	-	-	-	3	3	1
EC-504	Cmos Vlsi Design	3	2	2	1	1	1	-	-	-	-	1	3	2	1
EC-505	Object Oriented Programming	2	2	-	-	3	-	-	-	-	-	-	2	3	1
EC-506	Computer Organization & Architecture	3	3	2	-	3	-	-	-	-	-	2	2	3	1

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EC-601	Communication Networks	3	3	3	2	2	-	-	-	3	-	-	3	1	1
EC-602	Control System	3	3	1	2	1	-	-	-	-	-	-	2	2	1
EC-604 to EC-607	Program Elective I	2	2	-	-	-	-	-	-	-	-	-	-	-	-
EC-608 to EC-610	Open Elective I	2	2	-	-	-	-	-	-	-	-	-	-	-	-
EC-611	Economics For Engineers	-	-	-	-	-	2	-	-	-	3	3	-	-	2
EC-603	Database Management System	-	-	2	-	3	-	1	3	-	3	3	2	3	2
EC-701	Wireless Communication	3	3	1	2	1	-	-	-	-	-	1	3	2	1
EC-702 to EC-705	Program Elective Ii	2	2	-	-	-	-	-	-	-	-	-	-	-	-
EC-706 to EC-709	Program Elective Iii	2	2	-	-	-	-	-	-	-	-	-	-	-	-
EC-710 to EC-714	Open Elective Ii	2	2	-	-	-	-	-	-	-	-	-	-	-	-
EC-715	Principles Of Management	-	-	-	-	-	-	1	3	-	3	3	-	-	2
EC-791	Wireless Communication Lab	3	3	3	3	3	-	-	-	3	-	2	3	3	2
EC-781	Industrial Training	2	2	-	3	-	2	1	3	3	3	3	2	3	2
EC-782	Project Ii	2	2	3	3	3	-	-	3	3	3	3	2	3	3
EC-881	Project Iii	2	2	3	3	3	-	-	3	3	3	3	2	3	3
EC-882	Grand Viva	-	-	-	-	-	-	-	2	3	2	3	1	1	3
BS-PH101/BS-CH101	Physics-I(Gr-A)/ Chemistry-I(Gr-B)	3	2	-	1	-	-	-	-	-	-	-	2	1	1
BS-M101/BS-M102	Mathematics-IA*/ Mathematics-IB*	3	3	-	1	-	-	-	-	-	-	-	2	1	1
ES-EE101	Basic Electrical Engineering	3	2	-	-	-	-	-	-	-	-	-	2	1	1
BS-	Physics-I(Gr-	3	2	-	1	-	-	-	-	-	-	-	2	1	1

NATIONAL BOARD OF ACCREDITATION

PH201/ BS- CH201	B)/ Chemistry- I(Gr-A)														
BS-M201/ BS-M202	Mathematics- IIA#/ Mathematics- IIB#	3	3	-	1	-	-	-	-	-	-	-	2	1	1
ES- CS201	Programming for Problem Solving	2	2	-	-	3	-	-	-	-	-	-	2	3	1
HM- HU201	English	-	-	-	-	-	-	-	1	3	3	-	-	-	1
EC-301	Electronic Devices	2	2	-	-	-	-	-	-	-	-	-	-	-	-
EC-302	Digital System Design	3	2	2	1	1	-	-	-	-	-	1	3	2	1
EC-304	Network Theory	3	3	2	-	2	-	-	-	-	-	-	3	1	1
ES-CS- 301	Data Structure & Algorithm (ES)	2	3	2	-	3	-	-	-	-	-	-	2	3	1
BS-M301	Probability & Statistics(BS)	3	3	-	3	-	-	-	-	-	-	-	-	-	-
MC- 381(Non credit course)	Environmental Science	-	-	-	-	-	3	2	-	-	-	1	-	-	3
EC-401	Analog Communicatio n	3	2	1	1	1	-	-	-	-	-	-	3	1	1
EC-402	Analog Electronic Circuits	3	2	2	1	1	-	-	-	-	-	1	3	2	1
EC-403	Microprocessor &Microcontrolle rs	3	3	1	1	1	-	-	-	-	-	-	3	1	1
ES-CS- 401	Design and Analysis of Algorithm(ES)	2	3	3	-	3	-	-	-	-	-	-	2	3	1
BS-M401	Numerical Methods(BS)	2	2	-	-	-	-	-	-	-	-	-	-	-	-
BS-B401	Biology for Engineers	2	2	-	-	-	2	-	-	-	-	-	-	-	2
EC501	Electromagneti c Waves	3	3	1	1	1	-	-	-	-	-	-	3	1	1
EC502	Computer Architecture	3	3	2	-	3	-	-	-	-	-	2	2	3	1

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EC503	Digital Communication & Stochastic Process	3	3	1	2	-	-	-	-	-	-	-	3	1	1
EC504	Digital Signal Processing	3	3	1	2	1	-	-	-	-	-	-	2	2	1
PE-EC505	Program Elective I	2	2	-	-	-	-	-	-	-	-	-	-	-	-
OE-EC506 A/B/C/D	Open Elective I	2	2	-	-	-	-	-	-	-	-	-	-	-	-
EC601	Control System & Instrumentation	3	3	3	3	2	-	-	-	-	-	-	3	3	1
EC602	Computer Network	3	3	2	-	3	-	-	-	-	-	2	3	3	1
PE-EC603	Program Elective II	3	2	2	1	1	1	-	-	-	-	1	3	2	1
OE-EC604	Open Elective II	2	2	-	-	-	-	-	-	-	-	-	-	-	-
HS-HU601	Economics for Engineers	-	-	-	-	-	2	-	1	-	3	3	-	-	2
PE-EC701	Program Elective -3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
PE-EC702	Program Elective -4	2	2	-	-	-	-	-	-	-	-	-	-	-	-
PE-EC703	Program Elective -5	2	2	-	-	-	-	-	-	-	-	-	-	-	-
OE-EC704	Open Elective -3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
HS-HU701	Principles of Management	-	-	-	-	-	1	-	3	1	3	3	-	-	2
EC781	Industrial Training	2	2	2	2	2	2	1	3	3	3	3	2	2	3
EC782	Project Stage - I	2	2	3	3	3	1	1	3	3	3	3	3	3	3
PE-EC801	Program Elective - 6	2	2	-	-	-	-	-	-	-	-	-	-	-	-
PE-EC802	Program Elective - 7	2	2	-	-	-	-	-	-	-	-	-	-	-	-
OE-EC803	Open Elective - 4	2	2	-	-	-	-	-	-	-	-	-	-	-	-
OE-EC804	Open Elective - 5	2	2	-	-	-	-	-	-	-	-	-	-	-	-
EC881	Project Stage - II	2	2	3	3	3	1	1	3	3	3	3	3	3	3

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EC882	Grand Viva	-	-	-	-	-	-	-	2	3	2	3	1	1	3
BS-PH101	Physics-I	3	2	1	1	-	-	-	-	-	-	-	2	1	1
BS-CH101	Chemistry-I	3	2	-	1	-	-	-	-	-	-	-	-	-	-
BS-PH201	Physics-I	3	2	-	1	-	-	-	-	-	-	-	2	1	1
BS-CH201	Chemistry-I	3	2	-	1	-	-	-	-	-	-	-	-	-	-
BS-M101	Mathematics-IA	3	3	2	1	1	-	-	-	-	-	1	1	1	1
BS-M102	Mathematics-IB	3	3	2	1	1	-	-	-	-	-	1	1	1	1
BS-M201	Mathematics-IIA	3	3	2	1	1	-	-	-	-	-	1	1	1	1
BS-M202	Mathematics-IIB	3	3	2	1	1	-	-	-	-	-	1	1	1	1
PE-EC505A	Nano Electronics	3	3	3	-	2	-	-	-	-	-	-	3	1	1
PE-EC505B	Speech and Audio Processing	3	3	2	2	3	-	-	-	-	-	-	3	1	1
PE-EC505C	Power Electronics	3	3	3	-	2	-	-	-	-	-	-	3	1	1
PE-EC505D	Scientific Computing	2	2	-	-	-	-	-	-	-	-	-	-	-	-
OE-EC506A	Soft Skill and Interpersonal Communication	3	3	3	2	2	-	-	3	3	-	-	3	1	1
OE-EC506B	Cyber Law and IPR	-	-	-	-	-	2	3	-	-	-	-	-	-	2
OE-EC506C	Human Resource Management	-	-	-	-	-	-	1	3	-	3	3	-	-	2
OE-EC506D	Universal Human Values	-	-	-	-	-	2	3	-	-	-	-	-	-	3
PE-EC603A	Introduction to MEMS	3	2	3	-	-	-	-	-	-	-	-	3	1	1
PE-EC603B	Bio-Medical Electronics	3	3	3	-	2	-	-	-	-	-	-	3	1	1
PE-EC603C	CMOS VLSI Design	3	2	2	1	1	1	-	-	-	-	1	3	2	1
PE-EC603D	Information Theory and Coding	2	3	-	-	-	-	-	-	-	-	-	-	-	-

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OE-EC604A	Electronic Measurement and Instruments	2	2	-	3	2	-	-	-	-	-	-	-	-	-
OE-EC604B	Operating System	2	2	-	-	-	-	-	-	-	-	-	-	-	-
OE-EC604C	Object Oriented Programming	2	2	-	-	3	-	-	-	-	-	-	2	3	1
PE-EC701A	Microwave Theory and Technique	3	2	3	-	-	-	-	-	-	-	-	3	1	1
PE-EC701B	Satellite Communication	3	3	3	2	2	-	-	-	3	-	-	3	1	1
PE-EC701C	Mobile Communication and Networks	3	3	1	2	1	-	-	-	-	-	1	3	2	1
PE-EC702A	Adaptive Signal Processing	3	3	2	2	3	-	-	-	-	-	-	3	1	1
PE-EC702B	Digital Image and Video Processing	3	3	2	2	3	-	-	-	-	-	-	3	3	1
PE-EC702C	Neural Network and Fuzzy Logic Control	3	3	3	3	3	-	-	-	-	-	-	3	3	1
PE-EC703A	Embedded System	3	2	2	1	1	-	-	-	-	1	1	3	2	1
PE-EC703B	Wireless Sensor Networks	3	3	3	-	2	-	-	-	-	-	2	3	3	2
PE-EC703C	Wavelet Transforms	2	2	-	-	-	-	-	-	-	-	-	-	-	-
OE-EC704A	Web Technology	2	2	-	-	3	-	-	-	-	-	2	-	3	-
OE-EC704B	Optimization Technique	2	3	-	-	-	-	-	-	-	-	-	-	3	-
OE-EC704C	Entrepreneurship	2	2	-	-	-	-	-	3	-	3	3	-	-	3
PE-EC801A	Antennas and Propagation	3	2	3	-	-	-	-	-	-	-	-	3	1	1
PE-EC801B	Fiber Optic Communication	3	2	1	1	1	-	-	-	-	-	-	3	1	1
PE-	Error Correcting	2	2	-	-	-	-	-	-	-	-	-	-	-	-

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EC801C	Codes														
PE-EC802A	Mixed Signal Design	3	3	3	2	-	-	-	-	-	-	-	3	1	1
PE-EC802B	Industrial Automation and Control	3	3	3	3	2	-	-	-	-	-	-	3	3	1
PE-EC802C	VLSI Design Automation	3	3	3	-	3	-	-	-	-	-	2	3	3	1
OE-EC803A	Internet of Things (IoT)	3	2	2	1	1	1	1	-	-	1	1	2	2	2
OE-EC803B	Big Data Analysis	2	3	-	-	3	-	-	-	-	-	3	-	3	2
OE-EC803C	Cyber Security	2	2	-	-	-	-	3	-	-	-	2	-	-	2
OE-EC804A	Artificial Intelligence	2	2	-	-	3	-	-	-	-	-	3	-	3	2
OE-EC804B	Microwave Integrated Circuits	3	3	3	-	-	-	-	-	-	-	-	3	1	1
OE-EC804C	Organizational Behavior	2	2	-	-	-	-	-	3	-	3	-	-	-	-
BS-PH191/291	Physics Laboratory	3	2	-	3	3	-	-	-	-	-	-	2	3	1
BS-CH191/291	Chemistry Laboratory	3	2	-	3	3	-	-	-	-	-	-	-	3	-
ES-EE191	Basic Electrical Engineering Laboratory	3	2	-	3	3	-	-	-	-	-	-	2	3	1
ES-CS291	Programming for Problem Solving Lab	2	2	-	3	3	-	-	-	-	-	-	2	3	1
EC391	Electronic Devices Lab	2	2	-	3	3	-	-	-	-	-	-	-	3	-
EC392	Digital System Design Lab	3	2	3	3	3	-	-	-	-	-	-	3	3	1
ES-CS391	Data Structure and Algorithm Lab	2	3	2	3	3	-	-	-	-	-	-	2	3	1
BS-M491	Numerical Methods Lab	2	2	-	3	3	-	-	-	-	-	-	-	3	-
EC491	Analog Communication Lab	3	3	3	3	3	-	-	-	3	-	-	3	3	1
EC492	Analog Electronic	3	3	3	3	3	-	-	-	-	-	-	3	3	1

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	Circuits Lab														
EC493	Microprocessor and Microcontroller Lab	3	3	3	3	3	-	-	-	-	-	-	3	3	1
EC591	Electromagnetic Wave Lab	3	3	2	3	3	-	-	-	-	-	-	3	3	1
EC592	Digital Communication Lab	3	3	3	3	3	-	-	-	3	-	-	3	3	1
EC593	DSP Laboratory	2	2	-	3	3	-	-	-	-	-	-	-	3	-
EC691	Control and Instrumentation Lab	3	3	3	3	3	-	-	-	-	-	-	3	3	1
EC692	Computer Network Lab	3	3	2	3	3	-	-	-	-	-	2	3	3	1
EC681	Mini Project/Electronic Design Workshop	2	2	3	3	3	-	-	3	3	3	3	2	3	3
HS-HU481	Soft Skill Development Lab	2	2	-	3	3	-	-	3	3	-	-	-	3	-
HM-HU291	Language Laboratory	2	2	-	3	3	-	-	-	3	-	-	-	3	-
MC-HU501	Effective Technical Communication	3	3	3	2	2	-	-	-	3	3	-	3	1	1
MC681	Universal Human Values	-	-	-	-	-	2	3	2	1	1	2	-	-	3

Basis of calculation: Each entry is the arithmetic mean of the corresponding CO-to-PO/PSO correlation values from the course articulation matrices. A dash in a CO-level matrix is treated as zero during averaging, and a zero average is shown as “-” in the program matrix. This avoids artificial inflation while preserving visible correlation strength where course outcomes genuinely address a PO or PSO.

Mapping rationale: The program-level matrix shows strong coverage of PO1, PO2 and PO3 because all selected core and professional courses build engineering knowledge, analytical ability and solution-development capability. PSO-1 remains consistently strong since the selected courses span electronics, communication, signal processing, VLSI, embedded systems, control, IoT and optical communication. PSO-2 is also consistently mapped because most courses use analytical methods, design procedures, simulation tools, instrumentation or hardware/software platforms. PO6 to PO11 and PSO-3 are intentionally lower and selectively mapped, since they are linked only to real-world deployment, safety, sustainability, ethics, communication, project context, instrumentation practice, technology adaptation or professional readiness.

Criterion 2: Outcome Based Teaching Learning (120)

2.1. Describe Processes Followed to Ensure Quality of Teaching & Learning (20)

(Processes may include adherence to academic calendar and instruction methods using pedagogical initiatives such as real-world examples, collaborative learning, quality of laboratory experience with regard to conducting experiments, recording observations, analysis of data etc. encouraging fast learners, assisting slow learners etc. The implementation details and impact analysis need to be documented.)

The Department of Electronics and Communication Engineering of Dr. B. C. Roy Engineering College, Durgapur follows a structured teaching-learning process aligned with the academic calendar, curriculum and examination framework of Maulana Abul Kalam Azad University of Technology, West Bengal. The department uses outcome-based education practices, regular academic monitoring, laboratory-based learning, internal assessment, mentoring, feedback analysis, and learner-specific support to maintain the quality of academic delivery.

The processes described below are framed in a manner that can be supported through standard departmental records such as academic calendars, lesson plans, course files, attendance records, laboratory manuals, internal assessment records, mentoring records, feedback reports, minutes of departmental meetings, project records and course attainment sheets.

A. Process Framework for Teaching-Learning Quality

Process Area	Implementation in the Department	Typical Evidence / Records	Expected Impact
Academic calendar and course planning	University and institute academic calendar is followed. Faculty members prepare lecture plans, laboratory plans and assessment schedules before or at the beginning of the semester.	Academic calendar, lesson plan, course file, timetable, syllabus coverage report	Timely completion of syllabus and structured semester delivery
Course delivery and pedagogy	Classroom teaching is supported by board work, presentations, ICT tools, simulations, problem-solving sessions and application-oriented examples.	Lecture notes, PPTs, LMS/online resources, simulation files, tutorial sheets	Improved conceptual understanding and better student engagement
Laboratory learning	Laboratory sessions are conducted as per timetable using manuals, pre-lab briefing, experiment execution, observation recording, result analysis and viva-voce.	Lab manual, attendance, lab records, viva marks, equipment registers	Improved practical competency and connection between theory and experimentation
Continuous assessment	Assignments, class tests, tutorials, laboratory performance, viva, seminar and project reviews are used for periodic evaluation.	Question papers, evaluated scripts, marksheets, rubrics, CO mapping sheets	Early identification of weak areas and improved academic monitoring
Slow learner support	Students requiring support are identified from attendance, class participation and internal	Internal marks analysis, remedial class records, mentor remarks	Better academic confidence and reduction in repeated performance gaps

	assessment performance and are guided through remedial or doubt-clearing sessions.		
Fast learner encouragement	Students with higher academic performance or technical inclination are encouraged for advanced assignments, mini-projects, NPTEL/MOOCs, seminars, internships and competitions.	NPTEL certificates, project reports, seminar records, participation certificates	Improved higher-order learning, self-learning and technical exposure
Mentoring and counselling	Faculty mentors monitor attendance, academic progress and general student issues through scheduled or need-based interactions.	Mentor-mentee records, counselling notes, attendance follow-up records	Improved discipline, attendance awareness and teacher-student interaction
Feedback and improvement	Student feedback and academic review inputs are examined in departmental meetings and corrective measures are initiated where required.	Feedback analysis, action-taken report, DAC/departmental meeting minutes	Continuous improvement of course delivery and academic support
OBE implementation	COs are defined for courses, mapped with POs/PSOs, and assessed through direct and indirect assessment components.	CO-PO mapping, assessment plan, attainment sheet, course-end report	Evidence-based monitoring of learning outcomes

B. Adherence to Academic Calendar and Course Planning

The department follows the academic calendar notified by the university and institute. The semester plan includes commencement of classes, theory and laboratory schedules, internal assessments, assignment submissions, project or seminar reviews and end-semester examination-related activities. Departmental timetables are prepared before the start of regular classes and are circulated to faculty members and students.

- Faculty members prepare lesson plans with course outcomes, lecture sequence, tutorial or problem-solving components and laboratory schedule, wherever applicable.
- Syllabus coverage is monitored periodically by the Head of Department through course files, attendance records and course completion status.
- Academic deviations, if any, are managed through extra classes, tutorial sessions or laboratory adjustment slots subject to student availability and timetable feasibility.

Impact: The process supports planned academic delivery, reduces end-semester syllabus pressure and gives students a predictable structure for preparation.

C. Instruction Methods and Pedagogical Practices

The department uses a balanced mix of conventional teaching and ICT-supported delivery. Chalk-and-board teaching is used for mathematical derivations, circuit analysis, signal-flow explanation and problem-solving. Presentations, animations, video clips, online resources and simulation tools are used when they improve visualization or reduce abstraction.

- Real-world examples are used in subjects such as Analog Communication, Digital Communication, Embedded Systems, IoT, VLSI, Control Systems, Electromagnetic Waves and Fiber Optic Communication.

- Simulation-based teaching is used wherever appropriate through tools such as MATLAB/Scilab, Multisim, Proteus or other available platforms.
- Tutorials and class exercises are used to reinforce analytical subjects such as Mathematics, Signals and Systems, Control System, Communication Engineering and Electronics circuits.
- NPTEL/MOOC resources are recommended as supplementary material, especially for interested and advanced learners.

Impact: These methods improve visualization of abstract ECE concepts and support students in connecting mathematical treatment with engineering applications.

D. Real-World and Application-Oriented Learning

Faculty members make efforts to connect course contents with familiar engineering applications such as mobile communication, optical communication, embedded control, IoT-based sensing, digital logic systems, VLSI circuits, industrial instrumentation and signal processing. Application-oriented discussion is kept course-relevant and is used to strengthen problem analysis and design thinking.

Mini-projects, design-based assignments or seminar topics are used in selected courses where the syllabus permits such activities.

Students are encouraged to relate laboratory observations with practical system behaviour, component limitations and measurement errors.

Project and seminar reviews are used to assess planning, execution, technical explanation and presentation ability.

Impact: Students gain better exposure to practical engineering contexts and develop stronger problem formulation and design-oriented thinking.

E. Collaborative and Active Learning

The department encourages peer interaction through laboratory teams, group assignments, seminar discussions, technical events and project work. Such activities are planned within regular academic constraints and are used to improve participation, communication and teamwork.

- Laboratory experiments are generally conducted in batches or groups depending on equipment availability and laboratory norms.
- Peer discussion is encouraged during tutorials, problem-solving sessions and project work.
- Students are guided to participate in departmental technical activities, workshops, hackathons, project exhibitions and paper/poster presentations, as applicable.

Impact: Collaborative practices support teamwork, peer learning, communication skill development and confidence in technical explanation.

F. Quality of Laboratory Experience

Laboratory education is treated as a core component of engineering learning. The department conducts laboratory classes as per timetable and maintains laboratory manuals, equipment records and student laboratory records. The emphasis is on correct circuit or system setup, observation, measurement, data interpretation and technical reporting.

- Laboratory manuals specify experiment objectives, apparatus or software requirements, circuit diagrams or algorithms, procedure, observation format and expected results.
- Pre-lab discussion is used to explain the objective, precautions, relevant theory and expected observations.
- Students record observations and analyse results in laboratory records, followed by faculty verification.
- Viva-voce and performance assessment are used to verify conceptual understanding and practical competence.
- Simulation and hardware verification are combined in selected laboratories wherever feasible.

Impact: The process improves hands-on exposure, measurement discipline, troubleshooting ability and understanding of the limitations of practical systems.

G. Continuous Internal Assessment and Academic Monitoring

Continuous internal assessment is conducted through class tests, assignments, tutorials, laboratory performance, viva-voce, seminars and project reviews. Assessment components are aligned with course outcomes wherever applicable. After internal assessments, faculty members identify common weak areas and guide students through discussion, revision or remedial measures.

- CO-wise mapping of assessment questions is maintained in course files for relevant courses.
- Internal marks and attendance are reviewed to identify students needing academic support.
- Performance-related observations are discussed in departmental academic meetings when corrective action is required.

Impact: Continuous monitoring enables early academic intervention and supports steady preparation before university examinations.

H. Support for Slow Learners

Slow learners are identified primarily through class participation, attendance, internal assessment results, laboratory performance and mentor feedback. The department avoids labelling students publicly and provides support through faculty interaction and additional academic guidance.

- Remedial or doubt-clearing sessions are arranged based on need and feasibility.
- Simplified tutorial problems, previous question discussion and focused revision are used for difficult topics.
- Mentors track academic and attendance-related concerns and communicate with students for improvement.
- Additional laboratory practice or demonstration is provided where students require practical reinforcement.

Impact: These measures help students improve confidence, reduce hesitation in asking questions and strengthen fundamentals required for passing and progression.

I. Encouragement for Fast Learners

Fast learners are encouraged to move beyond minimum syllabus requirements through self-learning, advanced problem-solving, mini-projects, certification courses, technical competitions, internships and seminar activities. The department provides guidance rather than making inflated claims of uniform advanced outcomes for all students.

- Faculty members recommend NPTEL/MOOC courses and advanced references for students with interest in specific domains.
- Students are guided for project competitions, hackathons, prototype development and technical paper or poster presentations, depending on opportunity and readiness.
- Advanced assignments or open-ended problems are given in selected courses to improve higher-order thinking.

Impact: These activities improve self-learning, confidence, technical exposure and readiness for higher studies, internships and placement interviews.

J. Mentoring System and Student Support

The department follows a faculty mentoring arrangement in which students are assigned to mentors for academic and general guidance. Mentoring discussions include attendance, internal performance, examination preparation, laboratory discipline, career awareness and student concerns within institutional limits.

- Mentor-mentee interaction is conducted periodically and on a need basis.
- Mentors maintain basic records of academic follow-up and student concerns.
- Students with attendance or performance issues are advised and, where necessary, referred to higher academic authorities as per institutional procedure.

Impact: Mentoring improves student monitoring, strengthens teacher-student interaction and provides a channel for early identification of academic concerns.

K. Feedback and Continuous Improvement

The department uses student feedback, course-end review, internal academic review and inputs from faculty members to improve teaching-learning practices. Feedback is discussed in departmental forums such as

departmental academic meetings or Departmental Academic Council meetings as applicable.

- Course feedback is analysed to identify issues related to content delivery, pace, clarity, laboratory support and academic resources.
- Corrective actions may include revision of teaching pace, additional tutorials, improved laboratory explanation, extra doubt-clearing sessions or updating of course material.
- Action taken is recorded through minutes, course files or feedback action reports where applicable.

Impact: Feedback-based academic review provides a realistic mechanism for incremental improvement in teaching quality and student support.

L. OBE Implementation and Attainment Monitoring

Outcome-Based Education practices are implemented through course outcomes, CO-PO/PSO mapping, assessment planning and attainment analysis. Faculty members prepare course files containing COs, lecture plan, assessment plan, question mapping and course attainment records as applicable.

- Direct assessment is carried out using internal assessment, laboratory performance and university examination performance.
- Indirect assessment may include student feedback or course-exit feedback, depending on departmental practice.
- Course attainment results are used for identifying areas requiring improvement in future course delivery.

Impact: OBE implementation provides measurable academic monitoring and supports attainment analysis of POs and PSOs.

M. Implementation and Impact Analysis Summary

Area	Implementation Indicator	Impact Indicator	Evidence Maintained
Academic planning	Lesson plans and timetable prepared before/early in semester	Regular classes and timely syllabus coverage	Academic calendar, timetable, lesson plan, syllabus completion record
Teaching methodology	Use of board work, ICT, simulations and examples	Improved clarity in analytical and application-oriented topics	Lecture materials, simulation screenshots/files, tutorial sheets
Laboratory practice	Experiments conducted with manuals, records and viva	Improved practical understanding and troubleshooting ability	Lab manual, lab records, viva marks, equipment logbook
Internal assessment	Class tests, assignments, lab assessment and reviews	Early identification of weak areas	Question papers, marksheet, CO mapping, evaluated scripts
Slow learner support	Remedial/doubt-clearing and mentoring follow-up	Improved participation and preparation	Remedial records, mentor records, attendance/performance analysis
Fast learner support	Advanced assignments, NPTEL, projects and competitions	Self-learning, better project exposure and interview readiness	Certificates, project records, participation documents
Feedback system	Collection, analysis and action taken	Incremental improvement in course delivery	Feedback forms, analysis sheets, action-taken reports
OBE monitoring	CO mapping and attainment calculation	PO/PSO attainment support	Course file, attainment sheets, departmental review records

2.2. Quality of Student Capstone Project (25)

(Quality of the capstone/major project is measured in terms of consideration to factors including, but not limited to, environment, sustainability, safety, ethics, cost, type (application, product, research, review etc.) and standards. Processes related to project identification, allotment, continuous monitoring, evaluation including demonstration of working prototypes and enhancing the relevance of projects. Mention implementation details including details of POs and PSOs addressed through the projects with justification.)

The Department of Electronics and Communication Engineering follows a structured and transparent process for final-year project identification, guide allotment, progress monitoring and evaluation. The process is designed to maintain domain relevance, fair distribution of faculty supervision, equal opportunity for students, and measurable linkage with Program Outcomes (POs) and Program Specific Outcomes (PSOs). Project evidence is maintained through proposals, guide-allotment records, review sheets, project progress forms, reports, demonstrations, viva records, publication/competition records and PO/PSO mapping sheets.

A. Quality of Capstone Projects

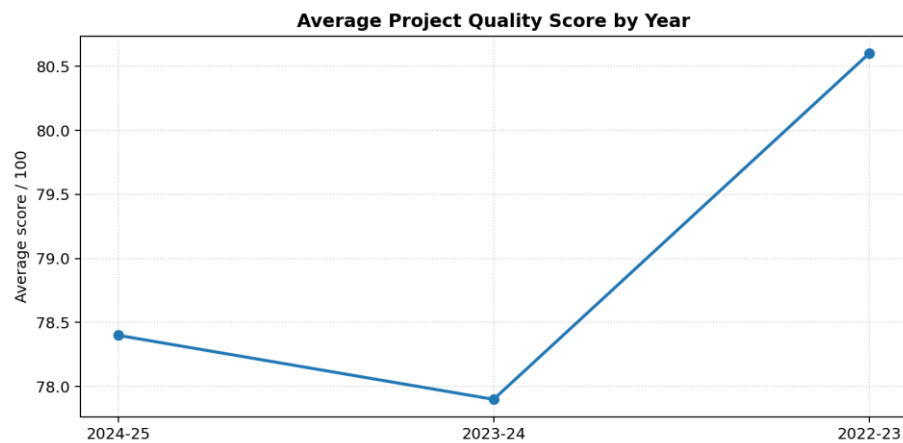
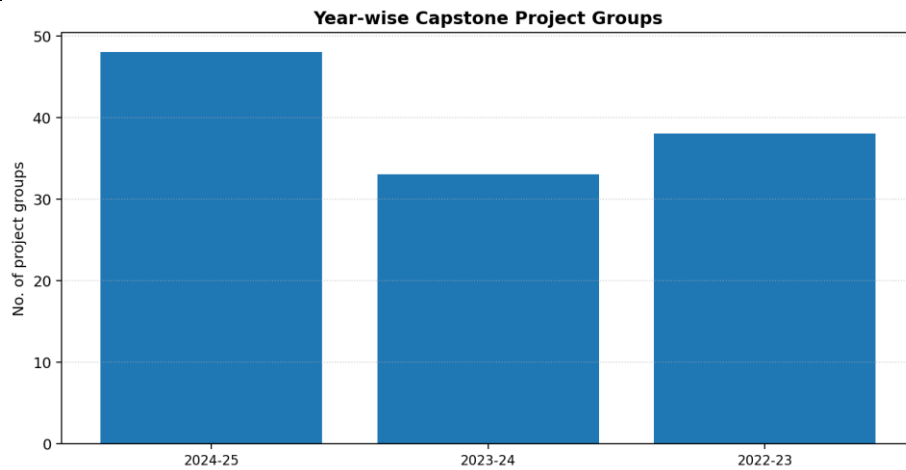
Quality Factors Considered for Student Projects

S.N.	Quality Factor	Implementation in Project Evaluation	Mapped PO/PSO
1	Environment and sustainability	Preference is given to projects that minimize energy use, reduce waste, avoid avoidable hazardous materials and promote sustainable engineering choices.	PO6, PO7, PSO3
2	Safety	Hardware, electrical, RF, embedded, robotics and laboratory projects are checked for safe operating voltage/current levels, mechanical safety, thermal risks and user safety.	PO6, PO8, PSO3
3	Ethics	Projects involving data, surveillance, biomedical signals, voting, automation or social systems are reviewed for responsible use, privacy, fairness and misuse risk.	PO8, PO6, PSO3
4	Cost and feasibility	Teams prepare a bill of material, use available laboratory resources where possible and justify cost against project scope and expected outcome.	PO11, PO3
5	Type of project	Projects are categorized as application, product, research, review, simulation, hardware prototype or software/algorithm development so that assessment criteria remain suitable to the project type.	PO3, PO4, PO5
6	Standards and good practice	Where applicable, students are encouraged to refer to datasheets, communication standards, safety norms, documentation conventions, coding standards and testing procedures.	PO5, PO11, PSO2
7	Prototype implementation	Projects are expected to produce a working prototype, validated simulation, algorithmic model, design file or demonstrable experimental result.	PO3, PO4, PO5, PSO1, PSO2
8	Communication and documentation	Reports, presentations, viva voce, posters, demonstrations and design records are evaluated for technical clarity and traceability.	PO10, PO12

Quality Analysis of Last 3 year projects

Batch Ref.	Academic Year	Projects	Average Quality Score	Excellent	Very Good	Good
CAYm1	2024-25	48	78.4	1	35	12
CAYm2	2023-24	33	77.9	1	24	8

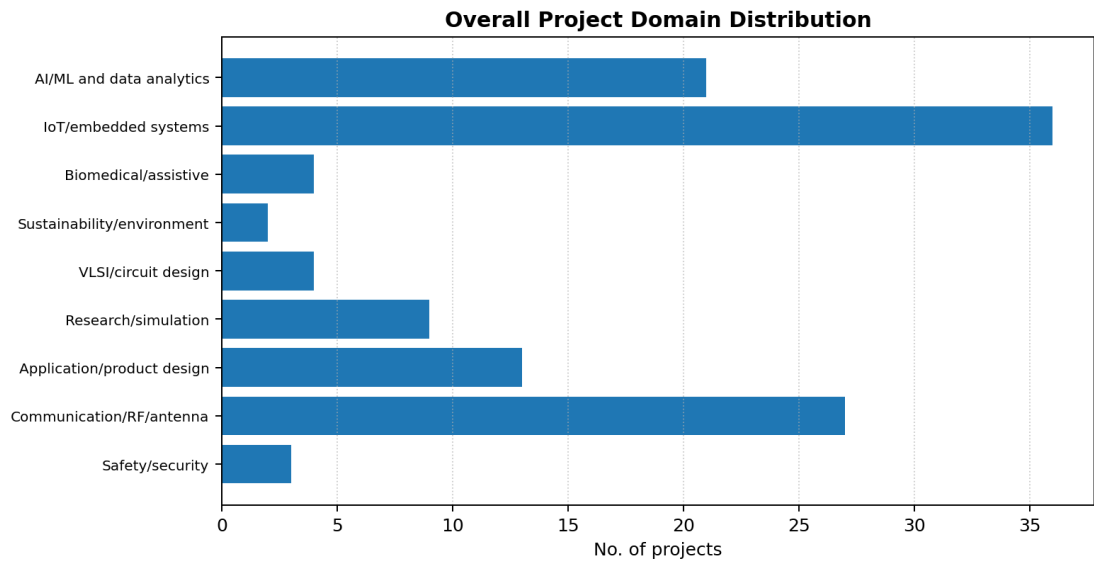
CAYm3	2022-23	38	80.6	1	34	3
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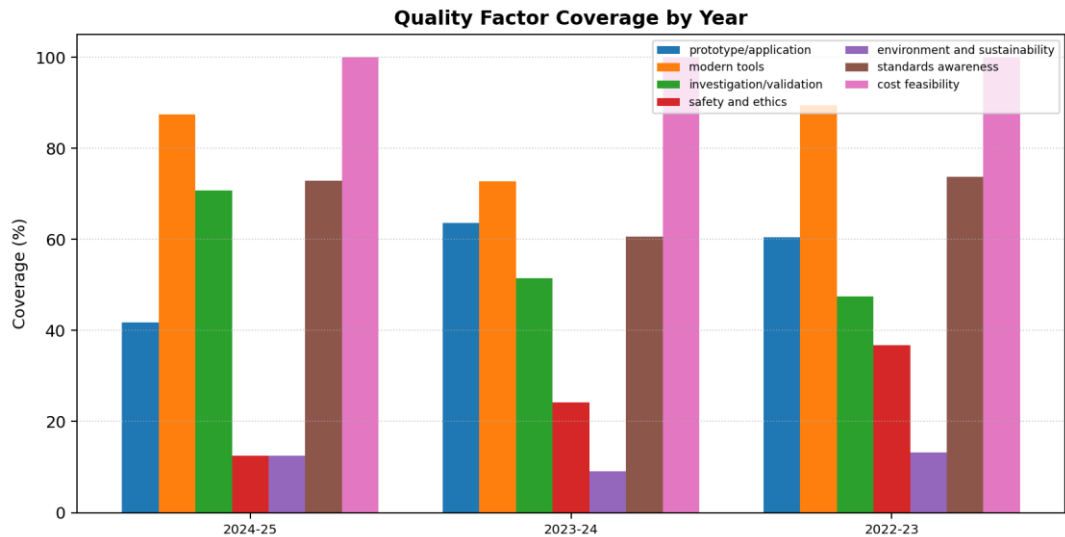
Observations from Project Quality Indicators

- The records cover 119 project groups across three completed batches. The project volume is highest in 2024-25 with 48 groups, followed by 2022-23 with 38 groups and 2023-24 with 33 groups.
- The overall average inferred quality score is 79.0/100. The scoring trend is stable, indicating consistent supervision, monitoring and final evaluation practices across batches.
- A large share of projects falls under AI/ML, IoT/embedded systems, communication/RF design and VLSI/circuit design. This spread supports PSO1 and PSO2 because the projects use ECE concepts, modern hardware/software tools and domain-specific design methods.
- Projects related to safety, healthcare assistance, environmental monitoring, waste management, fire/gas/flood detection and smart monitoring provide evidence for PO6, PO7 and PSO3. These projects strengthen the societal, sustainability and ethical dimension of the capstone process.
- Common areas for improvement are explicit reference to standards, systematic cost comparison, quantified sustainability indicators, and more uniform documentation of prototype test results. These can be strengthened through a common project quality checklist.

Domain Distribution and Quality Category Analysis



Coverage of Quality Factors



Quality Factor	Projects Covered	Coverage	Inference
Prototype/Application	64	53.8%	Moderate
Modern Tools	100	84.0%	Strong
Investigation/Validation	69	58.0%	Moderate
Safety And Ethics	28	23.5%	Needs strengthening
Environment And Sustainability	14	11.8%	Needs strengthening
Standards Awareness	83	69.7%	Strong
Cost Feasibility	119	100.0%	Strong

Strengths, Gaps and Corrective Measures

Item	Analysis / Action
Strength: technical diversity	Projects cover AI/ML, IoT, embedded systems, RF/antenna, VLSI, biomedical, safety and environmental applications, supporting discipline breadth.
Strength: modern tool usage	Simulation tools, programming environments, embedded platforms, data-driven models and EDA/RF design workflows are reflected in project themes.
Strength: societal relevance	Several projects address health, assistive technology, environmental monitoring, safety, security and public utility.
Gap: standards documentation	Projects should explicitly record applicable standards, design constraints, test assumptions and limitations in reports.
Gap: cost and sustainability quantification	Bill of materials, cost comparison, energy consumption, lifecycle and sustainability indicators should be included wherever applicable.
Corrective measure 1	Introduce a one-page Project Quality Compliance Sheet covering safety, ethics, sustainability, cost, standards, testing and tool limitations.
Corrective measure 2	Mandate minimum demonstration evidence: prototype/simulation screenshot, testing table, result comparison and supervisor review sign-off.
Corrective measure 3	Use a common project evaluation rubric aligned with PO1-PO11 and PSO1-PSO3 for proposal, mid-term review and final review.

B. Project Allotment processes

Project Identification and Topic Screening

- Project topics are collected from students, faculty members, laboratory needs, industry interactions, local societal requirements, recent ECE technology trends and research problems.
- Each topic is screened for relevance to the ECE programme, feasibility within available time and resources, component/software requirement, risk, cost, safety, ethical acceptability and expected contribution to POs/PSOs.
- Projects may include hardware prototypes, simulation-based studies, embedded and IoT systems, signal-processing applications, communication models, VLSI or circuit design tasks, control/instrumentation systems, data-driven applications and interdisciplinary applications relevant to ECE.
- Topics having scope for publication, patentable idea development, external competition participation, industry linkage or social utility are encouraged, provided they remain feasible for undergraduate execution.

Student Release and Guide Allotment Process

The department follows a phased and transparent mechanism for project group formation and guide allotment. Student names are released in three phases based on CGPA. A list of faculty members with their relevant fields/domains is circulated to the students. Students approach faculty members for permission to work under their supervision, considering domain interest, proposed topic and faculty availability.

- Each project group may consist of up to three students.
- Each faculty member may supervise a maximum of three project groups, subject to departmental workload balancing.
- To maintain diversity and equal opportunity, each project group preferably includes one student from each CGPA-based release phase.
- Faculty members select students from the approaching candidates based on domain suitability, student interest, feasibility of the proposed topic and group balance.
- The final allotment is approved and recorded by the department after checking group size, supervisor load, domain fit and fairness of distribution.

Project Identification, Allotment, Monitoring and Evaluation Process

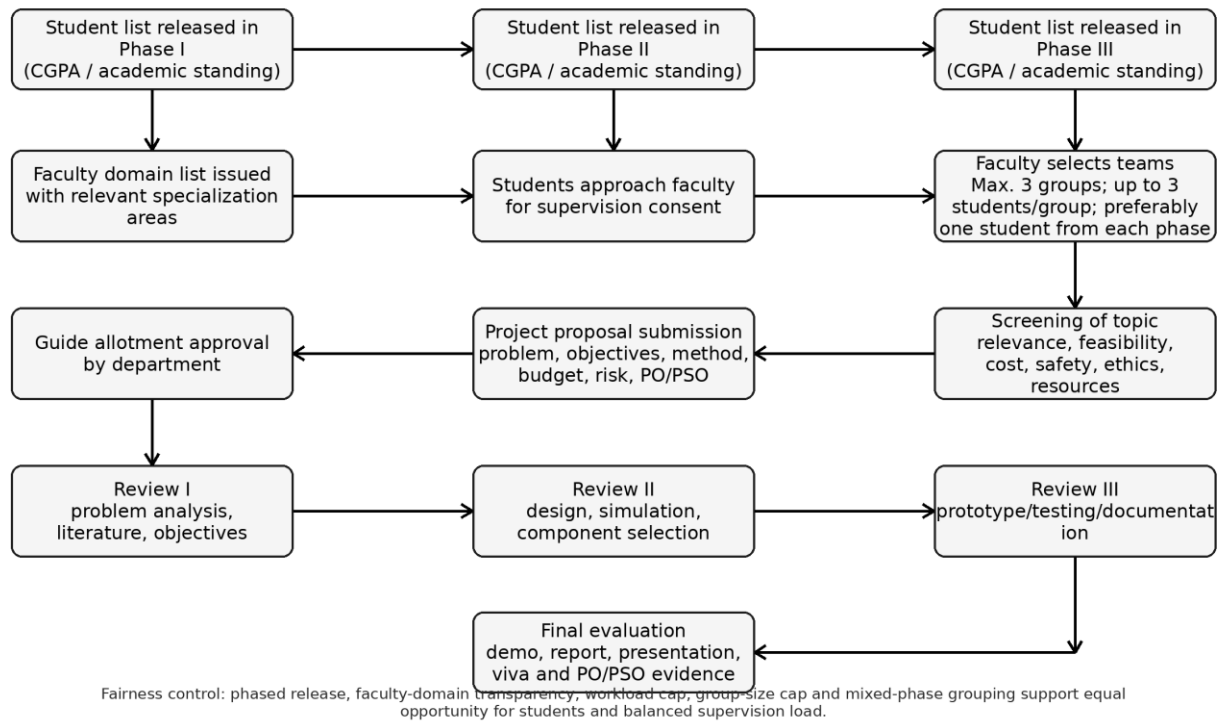


Fig. 2.2.2: Process involved in project identification, allotment, monitoring and evaluation.

Step	Activity	Responsibility	Evidence Maintained
1	Preparation of tentative project/domain areas and faculty expertise list.	Department / Faculty members	Faculty-domain list, notice/circulation
2	Release of student names in three phases based on CGPA.	Department	Phase-wise student release list
3	Students approach faculty members for supervision consent.	Students / Faculty members	Student request, faculty consent record
4	Formation of project groups with up to three students, preferably one from each phase.	Faculty / Department	Group formation sheet
5	Faculty load verification with maximum three groups per supervisor.	HoD / Project coordinator	Guide-load statement
6	Final approval and publication of guide allotment.	Department	Approved project allotment list

Project Proposal and Initial Approval

After guide allotment, each team prepares a project proposal containing the problem statement, objectives, scope, methodology, expected deliverables, project type, budget, risk/safety considerations, ethical considerations and preliminary PO/PSO mapping. The supervisor verifies technical feasibility and confirms the proposal before departmental review.

Proposal Component	Purpose	Evidence
Problem statement and objectives	Defines the engineering problem and expected outcome.	Approved project proposal
Literature / datasheet / standards study	Supports technical background and method selection.	Reference list, datasheets, notes
Methodology and work plan	Shows design approach, tools,	Methodology chart, Gantt chart

	hardware/software and schedule.	
Budget and resource requirement	Records expected components, software, instruments and cost.	BOM, cost sheet
Risk, safety and ethics note	Checks safe execution, responsible use and data/privacy issues if any.	Checklist / guide remarks
PO/PSO mapping	Links project work with graduate attributes and programme-specific outcomes.	PO/PSO mapping sheet

C. Continuous Monitoring and Review Mechanism

Continuous assessment is carried out through scheduled project reviews and supervisor-level monitoring. A Project Progress Form is filled for each review or milestone, confirmed and signed by the project supervisor, and circulated to the mentor for student-level follow-up wherever required. The progress form records work completed, pending work, attendance/participation, technical issues, corrective instructions and the next milestone.

Stage	Monitoring Focus	Evidence Maintained	PO/PSO Link
Project identification and proposal	Problem relevance, feasibility, project type, guide approval, expected deliverables, budget and safety/ethics screening.	Proposal, guide allotment record, preliminary PO/PSO mapping, supervisor consent.	PO1, PO2, PO3, PO6, PO8, PO11, PSO1-PSO3
Review I	Literature survey, problem analysis, objective refinement, standards/datasheet study and methodology selection.	Review-I sheet, literature summary, presentation copy, signed progress form circulated to mentor.	PO1, PO2, PO4, PO10, PO12
Review II	System architecture, circuit/model/algorithm design, simulation plan, component selection and implementation readiness.	Review-II sheet, design documents, simulation files, BOM, signed progress form.	PO3, PO4, PO5, PO11, PSO1, PSO2
Review III	Prototype progress, testing plan, troubleshooting, cost monitoring, safety checks, documentation and external dissemination plan.	Review-III sheet, prototype photographs, test logs, updated report, publication/competition plan if applicable.	PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO12, PSO1-PSO3
Final defence	Working demonstration, report quality, presentation, viva voce, external/panel assessment, publication or competition evidence and PO/PSO attainment.	Final rubric, project report, demonstration record, viva marks, external evaluation sheet, PO/PSO attainment sheet.	PO1-PO11, PSO1-PSO3

D. Project Evaluation Framework: 60% Supervisor and 40% External/Panel Evaluation

The final project assessment is distributed between continuous supervisor assessment and external/panel evaluation. The supervisor component carries 60% weightage and is based on regular monitoring, technical progress, implementation quality, project discipline and signed progress forms. The external/panel component carries 40% weightage and is based on the project defence before a panel of faculty members, with external faculty or industry expert evaluation included where available. The panel evaluates the final demonstration, technical soundness, report, viva voce and the quality of project evidence.

Assessment Component	Weightage	Evaluators	Typical Evidence
Continuous supervisor assessment	60%	Project supervisor	Project progress forms signed by supervisor, review sheets, working notes, attendance/participation, design files, code, simulation/hardware progress, mentor-circulated progress records
External / panel evaluation	40%	External faculty/industry	Final report, presentation, working

during project defence		expert where available and panel of departmental faculty members	demonstration, viva record, external evaluation sheet, publication/competition evidence, final PO/PSO attainment sheet
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Supervisor Assessment Rubric - 60 Marks

S.N.	Criterion	Marks	Assessment Focus	Mapped PO/PSO	Evidence
1	Problem identification and objective clarity	8	Relevance, scope, feasibility and linkage with ECE domain.	PO1, PO2, PSO1	Proposal, supervisor remarks
2	Literature/standards/datasheet study	8	Quality of background study and use of references in methodology.	PO1, PO2, PO12	Literature summary, datasheets
3	Design methodology and technical planning	10	Architecture, circuit/model/algorithm design, BOM, tool plan and milestone planning.	PO2, PO3, PO4, PO11, PSO1	Design files, Gantt chart, BOM
4	Implementation progress and troubleshooting	14	Prototype/model/code development, testing effort, debugging and supervisor-observed progress.	PO3, PO4, PO5, PSO1, PSO2	Progress forms, lab records, code, photographs
5	Regularity, teamwork and individual contribution	6	Attendance, role distribution, coordination and timely response to supervisor instructions.	PO8, PO9	Role matrix, review attendance
6	Documentation, progress forms and mentor circulation	6	Signed project progress forms, updated report and communication with mentor where required.	PO10, PO11	Signed forms, mentor circulation record
7	Publication/competition/external exposure preparation	4	Effort toward conference/journal paper, poster, prototype demonstration, hackathon, project contest or industry showcase where applicable.	PO10, PO12, PSO3	Draft paper, submission proof, registration, poster
8	Safety, ethics, societal/environmental relevance	4	Responsible use, privacy/safety checks, sustainability or social utility aspects relevant to the project.	PO6, PO7, PO8, PSO3	Checklist, guide remarks

External/Panel Evaluation Rubric - 40 Marks

S.N.	Criterion	Marks	Assessment Focus	Mapped PO/PSO	Evidence
1	Final demonstration and working status	12	Working prototype/model/software/simulation, testing evidence and result validity.	PO3, PO4, PO5, PSO1, PSO2	Demo record, test logs, screenshots
2	Technical viva and depth of	8	Student understanding of theory, design choices, limitations and	PO1, PO2,	Viva marks, panel remarks

	understanding		troubleshooting.	PO4	
3	Report quality and presentation	8	Report structure, technical writing, diagrams, references, presentation clarity and response to questions.	PO10, PO12	Project report, slides, viva sheet
4	External faculty/industry expert assessment	6	Independent judgement on technical relevance, implementation quality, application potential and professional readiness.	PO3, PO5, PO6, PO11, PSO1-PSO3	External evaluation sheet / expert remarks
5	Publication/Patents and external competition standing/participation	6	Accepted/communicated journal or conference paper, poster presentation, patent filing, hackathon/project contest participation, prize/standing or certified external demonstration. Marks are awarded on verified evidence, not on claim alone.	PO10, PO12, PSO3	Acceptance/communication proof, certificate, rank/standing, participation proof

Interpretation of Publication and External Competition Metric

- The metric is evidence-based and may include journal/conference publication, communicated paper, poster presentation, patent/prototype submission, hackathon participation, project exhibition, industry showcase or external technical competition.
- Participation with valid certificate is considered positively; selection, shortlisting, prize, rank or standing receives higher credit depending on evidence.
- The metric is not used to unfairly penalize projects where publication or competition is not suitable; in such cases, verified external demonstration, poster/report quality or technical dissemination may be considered by the panel.
- All claims must be supported by acceptance letters, certificates, screenshots from official portals, registration records, ranking proof, paper draft/submission proof or evaluator remarks.

E. Correlation of Projects with POs and PSOs

CAYm1: 2024-25

Grp	Supervisor	Project Title	Type	Quality Factors	PO Mapping	PSO Mapping	Justification
1	Mr. Tapas Roy , Dr. Abhijit Banerjee	Real-Time Microlimatic Forecasting and Anomaly Detection System Using Machine Learning	AI/ML application; IoT/embedded product	sustainability; cost; prototype; documentation; data/model validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Dataset/model design with validation; sensor/controller integration and prototype testing; team reporting, cost planning and presentation evidence po8-po11.
2	Mr. Tapas Roy , Dr. Abhijit	Real-Time Microclimatic Data Acquisition	IoT/embedded product	sustainability; cost; prototype;	PO1(3), PO2(3), PO3(3),	PSO1(3), PSO2(2)	Sensor/controller integration and prototype

	Banerjee	Using IoT		documentation	PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3), PO11(2)	), PSO3(3)	testing; environmental or sustainability relevance; team reporting, cost planning and presentation evidence po8-po11.
3	Mr. Mology Mukherjee	3D-PRINTED HUMAN HEART MODEL AND COMPUTATIONAL ANALYSIS	research/simulation; healthcare assistive system	safety/ethics; cost; prototype; documentation; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(3)	Health context with usability and ethics; team reporting, cost planning and presentation evidence po8-po11.
4	Mr. Mology Mukherjee	VIRTUAL DESIGNING OF TRAINER KIT (CDS)	research/simulation	cost; prototype; documentation; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
5	Mr. Mology Mukherjee	CDS Trainer kit	application/product design	cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
6	Dr. Abhijit Banerjee	ENHANCING ENERGY EFFICIENCY OF RIS-ASSISTED 6G BEAM STEERING USING ADVANCED	AI/ML application; communication/R F design	sustainability; cost; prototype; documentation; data/model validation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO6(3), PO7(2), PO8(3),	PSO1(3), PSO2(3), PSO3(3)	Dataset/model design with validation; rf simulation and parameter analysis; environmental or

		REINFORCEMENT LEARNING			PO9(3), PO10(2), PO11(2)		sustainability relevance; team reporting, cost planning and presentation evidence po8-po11.
7	Dr. Abhijit Banerjee	Smart Depression Detection: A KNN-Based Multimodal Approach for Stress Level Classification	AI/ML application; IoT/embedded product; healthcare assistive system	sustainability; safety/ethics; cost; prototype; documentation; data/model validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(3), PSO3(3)	Dataset/model design with validation; sensor/controller integration and prototype testing; health context with usability and ethics; team reporting, cost planning and presentation evidence po8-po11.
8	Dr. Aloke Saha	Design of efficient multi-bit adder using multi-threshold MOSFET	VLSI/circuit design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Circuit design, simulation and metric comparison; team reporting, cost planning and presentation evidence po8-po11.
9	Prof Nilkamal Bhunia & Dr. Ankita Mitra	Design an Block Sparse Adaptive Filter	research/simulation	cost; prototype; documentation; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
10	Mr. Nilkamal Bhunia	Study on Adaptive Filter Algorithms for System Identification	research/simulation	cost; prototype; documentation; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3),	PSO1(3), PSO2(3), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and

					PO10(2), PO11(2)		presentation evidence po8-po11.
11	Dr. Anup Kumar Das	Smart Wagon Loading System	application/product design	cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
12	Dr. Anup Kumar Das	Waste Segregation Using Programmable Logic Controller (PLC)	IoT/embedded product	sustainability; safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(3)	Sensor/controller integration and prototype testing; safety detection, warning or control logic; environmental or sustainability relevance; team reporting, cost planning and presentation evidence po8-po11.
13	Dr. Abhijit Banerjee	Rapid Lidar-Based Scanning and Fault Detection of Solid Non-Geometric Parts for Predictive Maintenance	IoT/embedded product	sustainability; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Sensor/controller integration and prototype testing; team reporting, cost planning and presentation evidence po8-po11.
14	Dr. Abhijit Banerjee	Maximizing Energy Efficiency of RIS-Assisted 5G Beam Steering Using Reinforcement Learning	AI/ML application; communication/R F design	sustainability; cost; prototype; documentation; data/model validation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(3)	Dataset/model design with validation; rf simulation and parameter analysis; environmental or sustainability relevance; team reporting, cost planning

					)		and presentation evidence po8-po11.
15	Dr. Abhijit Banerjee	Optimizing WiFi Area Coverage through RSSI-based Survey and Cluster Analysis	research/simulation	cost; prototype; documentation; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
16	Mr. Samujjwal Ray, Dr. Anirban Bose	Improved Diphthong Detection for Machine Translated Hindi Speech Recognition	IoT/embedded product	sustainability; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Sensor/controller integration and prototype testing; team reporting, cost planning and presentation evidence po8-po11.
17	Dr. Anirban Chattopadhyay	Smart Gas Sensing System Empowered With real-time data storing over IoT	IoT/embedded product	sustainability; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Sensor/controller integration and prototype testing; team reporting, cost planning and presentation evidence po8-po11.
18	Dr. Anirban Chattopadhyay	Smart Health Monitoring Empowered With IoT	IoT/embedded product; healthcare assistive system	sustainability; safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(3)	Sensor/controller integration and prototype testing; health context with usability and ethics; team reporting, cost planning and presentation evidence po8-po11.
19	Mr. Moley Mukherjee	Simple Exponential Smoothing with alpha tuning	application/product design	cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO7(1),	PSO1(3), PSO2(2), PSO3(1)	Problem formulation, design, implementation and testing;

					PO8(3), PO9(3), PO10(2), PO11(2)	)	team reporting, cost planning and presentation evidence po8-po11.
20	Mr. Mology Mukherjee	A RE-ANALYSIS OF COGNITIVE RADIO SYSTEMS SIMULATION BY USING MATLAB	research/simulation	cost; prototype; documentation; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
21	Mr. Nilkamal Bhunia	Design Block Sparse Adaptive Filtering Algorithm for Acoustic Echo Cancellation	research/simulation	cost; prototype; documentation; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
22	Mr. Pradipta Sarkar & Dr. Aloke Saha	Design and Development of Balanced Ternary-based Data Encryption System on Basys-3 FPGA & its ASIC Implementation	VLSI/circuit design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Circuit design, simulation and metric comparison; team reporting, cost planning and presentation evidence po8-po11.
23	Dr. Mrinmoy Chakraborty	IoT Based Home Security System	IoT/embedded product	sustainability; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Sensor/controller integration and prototype testing; team reporting, cost planning and presentation evidence po8-po11.
24	Mr. Samujjwal	Password Door Lock Security	IoT/embedded	sustainability; cost;	PO1(3), PO2(3),	PSO1(3),	Sensor/controller integration

	Ray	System using Arduino and Keypad	product	prototype; documentation	PO3(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO2(2), PSO3(1)	and prototype testing; team reporting, cost planning and presentation evidence po8-po11.
25	Mr. Samujjwal Ray	Wireless Street Light Fault Detection	IoT/embedded product	sustainability; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Sensor/controller integration and prototype testing; team reporting, cost planning and presentation evidence po8-po11.
26	Ms. Dipta Chaudhuri	A Revisit to Relation Between Power Index And Hurst Exponent In Self-Similar Signals	application/product design	cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
27	Ms. Dipta Chaudhuri, Dr. Abhijit Banerjee	A Self-Supervised Framework for Anomaly Detection and Predictive Maintenance in Steel Rod Mills	AI/ML application; IoT/embedded product	sustainability; cost; prototype; documentation; data/model validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Dataset/model design with validation; sensor/controller integration and prototype testing; team reporting, cost planning and presentation evidence po8-po11.
28	Mr. Tapas Roy, Dr. Aritra Bhowmik	Design of dual polarized multiband antenna for wireless application	communication/R F design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.

29	Mr. Tapas Roy, Dr. Aritra Bhowmik	Design of dual polarized multiband antenna for wireless application	communication/R F design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
30	Ms. Subhadra Debroy	Bandwidth Enhancement of Hexagonal Giuseppe Piano Fractal Dielectric Resonator Antenna by Introducing Four Shorting Pins	communication/R F design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
31	Ms. Subhadra Debroy	Design Analysis and Development of Wearable Wideband Antenna	communication/R F design; research/simulation	cost; prototype; documentation; technical standards; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
32	Mr. Surajit Batabyal, Dr. Tapas Mondal	Dual Circularly polarized Ultra Wideband Slot antenna with CPW feed	AI/ML application; communication/R F design	cost; prototype; documentation; data/model validation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Dataset/model design with validation; rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
33	Mr. Surajit Batabyal	Design analysis and Development of Multi band Antenna using Wideband Antenna	communication/R F design; research/simulation	cost; prototype; documentation; technical standards; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3),	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-

					PO9(3), PO10(2), PO11(2)		po11.
34	Ms. Moutusi Mondal	A Comparative Study on Gradient and Bi-Conjugate Gradient Method for Microwave Breast Imaging	research/simulation	cost; prototype; documentation; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
35	Ms. Moutusi Mondal	A Comparative study on Microwave Imaging Techniques used for Early Detection of Breast Cancer	AI/ML application; IoT/embedded product; research/simulation	sustainability; cost; prototype; documentation; data/model validation; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Dataset/model design with validation; sensor/controller integration and prototype testing; team reporting, cost planning and presentation evidence po8-po11.
36	Dr. Aritra Bhowmik. Tapas Roy	CPW-Fed Triple-Band Square Slot Antenna	communication/R F design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
37	Dr. Aritra Bhowmik, Prof. Tapas Roy	Design of a UWB antenna	communication/R F design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
38	Dr. Debipriya	The Smart GNSS	application/produ	cost; prototype;	PO1(3), PO2(3),	PSO1(3),	Problem formulation,

	Dutta	Dynamic System	ct design	documentatio n	PO3(3), PO5(2), PO7(1), PO8(3), PO9(3), PO10(2) , PO11(2)	PSO2(2) , PSO3(1)	design, implementatio n and testing; team reporting, cost planning and presentation evidence po8- po11.
39	Dr. Sourav Moitra , Ms. Keka Hajra	Radiation Reconfigurable SIW Antenna for Next Generation 5G Applications	communication/R F design	cost; prototype; documentatio n; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2) , PO11(2)	PSO1(3) , PSO2(3) , PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8- po11.
40	Dr. Sourav Moitra ,Ms. Keka Hajra	A Quarter Mode SIW (QMSIW) Cavity based Band Pass Filter (BPF) for 5G Wireless Applications	application/produ ct design	cost; prototype; documentatio n	PO1(3), PO2(3), PO3(3), PO5(2), PO7(1), PO8(3), PO9(3), PO10(2) , PO11(2)	PSO1(3) , PSO2(2) , PSO3(1)	Problem formulation, design, implementatio n and testing; team reporting, cost planning and presentation evidence po8- po11.
41	Dr. Sourav Moitra	Design of Wideband HMSIW Filters Using DMS & EBG Periodic Structures	communication/R F design	cost; prototype; documentatio n; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2) , PO11(2)	PSO1(3) , PSO2(3) , PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8- po11.
42	Dr. Sourav Moitra	Design of Corner Coupled Quarter Wave SIW Filter	application/produ ct design	cost; prototype; documentatio n	PO1(3), PO2(3), PO3(3), PO5(2), PO7(1), PO8(3), PO9(3), PO10(2) , PO11(2)	PSO1(3) , PSO2(2) , PSO3(1)	Problem formulation, design, implementatio n and testing; team reporting, cost planning and presentation evidence po8- po11.

43	Dr. Mrinmoy Chakraborty	Cavity-Backed Substrate Integrated Waveguide Antenna With Two Connected I Slot For Dual Frequency Operation	communication/R F design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
44	Dr. Mrinmoy Chakraborty	Design Analysis And Development Of Ultra Wideband Multiple Input Multiple Output Antenna	communication/R F design; research/simulation	cost; prototype; documentation; technical standards; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
45	Dr. Tapas Mondal	Metamaterial Inspired Hexagonal Split Ring Resonator based low profile Stacked Rectangular Microstrip Antenna for Dedicated Short Range Communication System Applications	communication/R F design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
46	Dr. Tapas Mondal	Enhanced Bandwidth with Characteristic Mode Analysis and Symmetric Branch Design for Bell-Leaf Meta surface Antennas	communication/R F design; research/simulation	cost; prototype; documentation; technical standards; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
47	Mr. Soumendra Pain, Dr. Tapas Mondal	Design and Analysis of Metamaterial Inspired Dual Band Printed	communication/R F design; research/simulation	cost; prototype; documentation; technical standards;	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3),	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and

		Antenna for Vehicular communication and Multi-Standard Application		experimental validation	PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	)	presentation evidence po8-po11.
48	Mr. Soumendra Pain	Design and Analysis of Metamaterial Embedded Defected Ground Structured Based Wideband Microstrip Antenna for Smart Transportation System	communication/R F design; research/simulation	cost; prototype; documentation; technical standards; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.

CAYm2: 2023-24

Gr p.	Supervisor	Project Title	Type	Quality Factors	PO Mapping	PSO Mapping	Justification
1	Mr. Tapas Roy	SMART HOME AUTOMATION	IoT/embedded product	sustainability ; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Sensor/controller integration and prototype testing; team reporting, cost planning and presentation evidence po8-po11.
2	Dr. Ardhendu Sekhar Chattopadhyay	Temperature & Humidity Measuring Sensor using ARDUINO UNO	IoT/embedded product	sustainability ; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Sensor/controller integration and prototype testing; team reporting, cost planning and presentation evidence po8-po11.
3	Dr. Abhijit Banerjee	Distributed Unmanned Aerial Vehicle (UAV) Control Strategies for Dynamic oil spill Area mapping	application/product design	sustainability ; safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO6(3), PO7(2), PO8(3), PO9(3), PO10(2)	PSO1(3), PSO2(2), PSO3(3)	Safety detection, warning or control logic; environmental or sustainability relevance; team

					), PO11(2)		reporting, cost planning and presentation evidence po8-po11.
4	Dr. Rajib Banerjee	Voice Controlled Autonomous Wheelchair	healthcare assistive system	safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO6(3), PO7(2), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(2), PSO3(3)	Health context with usability and ethics; safety detection, warning or control logic; team reporting, cost planning and presentation evidence po8-po11.
5	Dr. Aloke Saha	Design of MTCMOS Ternary Combinational Circuit on 45 nm PDK	IoT/embedded product; VLSI/circuit design	sustainability ; cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Sensor/control ler integration and prototype testing; circuit design, simulation and metric comparison; team reporting, cost planning and presentation evidence po8-po11.
6	Dr. Aloke Saha	Design of Novel 3's complement Generator with NP-EMOS Transistor and MT-CMOS based ternary combinational circuits	IoT/embedded product; VLSI/circuit design	sustainability ; cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Sensor/control ler integration and prototype testing; circuit design, simulation and metric comparison; team reporting, cost planning and presentation evidence po8-po11.
7	Dr. Anirban Chattopadhyay	HANDWRITTEN TEXT RECOGNIZATION SYSTEM	AI/ML application	cost; prototype; documentation; data/model validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2)	PSO1(3), PSO2(3), PSO3(1)	Dataset/model design with validation; team reporting, cost planning and presentation evidence po8-po11.

					), PO11(2)		
8	Mr. Nilkamal Bhunia	Sparse Adaptive Filter Algorithm for Acoustic Feedback Cancellation in Digital Hearing Aids	research/simulation; healthcare assistive system	safety/ethics; cost; prototype; documentation; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(3)	Health context with usability and ethics; team reporting, cost planning and presentation evidence po8-po11.
9	Mr. Pradipta Sarkar	LPG Leak Detection System for Home Safety	IoT/embedded product	sustainability ; safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(3)	Sensor/controller integration and prototype testing; safety detection, warning or control logic; team reporting, cost planning and presentation evidence po8-po11.
10	Mr. Soumenendra Pain	Design of METAMATERIALinspire Wideband Planne Antenna for Marine Applications	communication/ RF design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
11	Dr. Anup Kumar Das	Microcontroller based Water Treatment Sceme for Fish Farming	application/product design	safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO6(3), PO7(2), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(2), PSO3(3)	Safety detection, warning or control logic; team reporting, cost planning and presentation evidence po8-po11.
12	Dr. Aritra	Circularly Polarized	AI/ML application;	cost; prototype;	PO1(3), PO2(3),	PSO1(3),	Dataset/model design with

	Bhowmik	MIMO Antenna	communication/ RF design	documentati on; data/model validation; technical standards	PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2) , PO11(2)	PSO2(3) , PSO3(1)	validation; rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8- po11.
13	Dr. Debipriya Dutta	Study Ionospheric Effect on position solution Accuracy using Android based Smartphones	application/produ ct design	cost; prototype; documentati on	PO1(3), PO2(3), PO3(3), PO5(2), PO7(1), PO8(3), PO9(3), PO10(2) , PO11(2)	PSO1(3) , PSO2(2) , PSO3(1)	Problem formulation, design, implementatio n and testing; team reporting, cost planning and presentation evidence po8- po11.
14	Ms. Dipta Chaudhuri	Earth-quake Detector using ARDUINO	IoT/embedded product	sustainability ; cost; prototype; documentati on	PO1(3), PO2(3), PO3(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3) , PO11(2)	PSO1(3) , PSO2(2) , PSO3(1)	Sensor/control ler integration and prototype testing; team reporting, cost planning and presentation evidence po8- po11.
15	Dr. Narendra Nath Pathak	Sleep Drowsiness detection and Alert	IoT/embedded product	sustainability ; safety/ethics; cost; prototype; documentati on	PO1(3), PO2(3), PO3(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3) , PO11(2)	PSO1(3) , PSO2(2) , PSO3(3)	Sensor/control ler integration and prototype testing; safety detection, warning or control logic; team reporting, cost planning and presentation evidence po8- po11.
16	Mr. Koustav Roy	LIVE Weather Monitoring Using NODEMCU ESP8266	IoT/embedded product	sustainability ; cost; prototype; documentati on	PO1(3), PO2(3), PO3(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3) , PO11(2)	PSO1(3) , PSO2(2) , PSO3(1)	Sensor/control ler integration and prototype testing; team reporting, cost planning and presentation evidence po8- po11.

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17	Keka Hazra, Co-supervisor- Dr. Sourav Moitra	Analysis of various topologies of Wearable SIW Bandpass Filter	research/simulation	cost; prototype; documentation; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
18	Sarit Pal	Real Time Decision Support System in Agriculture	application/product design	cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
19	Dr. Sourav Moitra	Study on Electromagnetic Band Gap Structures (EBG) For Wearable SIW Band Pass Filter	research/simulation	cost; prototype; documentation; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
20	Dr. Mrinmoy Chakraborty	Substrate Integrated Waveguide Antenna Design	communication/RF design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
21	Dr. Mrinmoy Chakraborty	UWB MIMO ANTENNA DESIGN	communication/RF design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3),	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation

					PO9(3), PO10(2), PO11(2)		evidence po8-po11.
22	Mr. Moly Mukherjee	3D HOLOGRAPHIC FAN	application/product design	cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
23	Ms. Moutusi Mondal	Automated Mushroom Classification using Machine Learning	AI/ML application	cost; prototype; documentation; data/model validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Dataset/model design with validation; team reporting, cost planning and presentation evidence po8-po11.
24	Dr.Rajdeep Ray	Brain Tumor Detection and Classification	AI/ML application; IoT/embedded product; healthcare assistive system	sustainability ; safety/ethics; cost; prototype; documentation; data/model validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(3), PSO3(3)	Dataset/model design with validation; sensor/controller integration and prototype testing; health context with usability and ethics; team reporting, cost planning and presentation evidence po8-po11.
25	Dr. Tribeni Prasad Banerjee	Glaucoma detection using Image Processing	AI/ML application; IoT/embedded product	sustainability ; cost; prototype; documentation; data/model validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Dataset/model design with validation; sensor/controller integration and prototype testing; team reporting, cost planning and presentation evidence po8-po11.

26	Dr. Tribeni Prasad Banerjee	Area Efficient Lightweight Cypher System Implementation for edge device	application/product design	cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
27	Dr. Tapas Mondal	Design of a Compact Dual-Band Bandpass Filter using Coupled Lines and Shorted Stubs	application/product design	cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
28	Dr. Tapas Mondal	Vehicular Traffic Management using Dual Antenna	communication/RF design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
29	Subhadra Deb Roy	Elimination of Higher order in Microstrip Patch Antenna at W-LAN (Upper) Band Using only Stubs	communication/RF design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
30	Surajit Batabyal	Design Analysis and Development of Multiband Antenna using Wideband Antenna	communication/RF design; research/simulation	cost; prototype; documentation; technical standards; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.

					), PO11(2)		
31	Dr.Ramkrishna Rakshit	Facial attendance System	AI/ML application	cost; prototype; documentation; data/model validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Dataset/model design with validation; team reporting, cost planning and presentation evidence po8-po11.
32	Mr Mology Mukherjee	Fire Fighting System Hydrant System Fire control	application/product design	safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO6(3), PO7(2), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(2), PSO3(3)	Safety detection, warning or control logic; team reporting, cost planning and presentation evidence po8-po11.
33	Ms. Dipta Chaudhury	HERID PRINT	application/product design	cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.

CAYm3: 2022-23

Grp	Supervisor	Project Title	Type	Quality Factors	PO Mapping	PSO Mapping	Justification
1	Dr. Ardhendu Sekhar Chattopadhyay	Anti sleep for Alarm Driver	application/product design	safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO6(3), PO7(2), PO8(3), PO9(3),	PSO1(3), PSO2(2), PSO3(3)	Safety detection, warning or control logic; team reporting, cost planning and presentation

					PO10(2), PO11(2)		evidence po8-po11.
2	Dr. Ardhendu Sekhar Chattopadhyay	Let the mute speak	healthcare assistive system	safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO6(3), PO7(2), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(2), PSO3(3)	Health context with usability and ethics; team reporting, cost planning and presentation evidence po8-po11.
3	Dr. Rajib Banerjee	Flood Management System	IoT/embedded product	sustainability; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(3)	Sensor/controller integration and prototype testing; environmental or sustainability relevance; team reporting, cost planning and presentation evidence po8-po11.
4	Dr. Rajib Banerjee	Air Quality Sensing and Monitoring using IOT	IoT/embedded product	sustainability; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(3)	Sensor/controller integration and prototype testing; environmental or sustainability relevance; team reporting, cost planning and presentation evidence po8-po11.
5	Dr. Rajib Banerjee	Smart Vehicle Health Tracking System	IoT/embedded product; healthcare assistive system	sustainability; safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(3)	Sensor/controller integration and prototype testing; health context with usability and ethics; team reporting, cost planning and presentation evidence po8-po11.
6	Dr. Abhijit Banerjee	Brain Tumor Classification using	AI/ML application; healthcare	safety/ethics; cost; prototype;	PO1(3), PO2(3), PO3(3),	PSO1(3), PSO2(3)	Dataset/model design with validation;

		Convolutional Neural Network	assistive system	documentation; data/model validation	PO4(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(2), PO11(2)	, PSO3(3)	health context with usability and ethics; team reporting, cost planning and presentation evidence po8-po11.
7	Dr. Abhijit Banerjee	Real Time Vehicle Detection using Yolov8 with speed	AI/ML application; IoT/embedded product	sustainability; cost; prototype; documentation; data/model validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Dataset/model design with validation; sensor/controller integration and prototype testing; team reporting, cost planning and presentation evidence po8-po11.
8	Dr. Abhijit Banerjee	Parking Assistance using Masked RCNN Based Segmentation	AI/ML application	cost; prototype; documentation; data/model validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Dataset/model design with validation; team reporting, cost planning and presentation evidence po8-po11.
9	Dr. Aloke Saha	Design of BCD and Ternary Priority Encoder	VLSI/circuit design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Circuit design, simulation and metric comparison; team reporting, cost planning and presentation evidence po8-po11.
10	Dr. Aloke Saha	Design of Ternary Shift register on CMOS Technology	VLSI/circuit design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Circuit design, simulation and metric comparison; team reporting, cost planning and presentation evidence po8-po11.

11	Dr. Ankita Mitra	RFID BASED ADVANCED FOOT-STEP POWER GENERATION SYSTEM USING ARDUINO UNO	IoT/embedded product; communication/R F design	sustainability; cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Sensor/controller integration and prototype testing; rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
12	Dr. Anup Kumar Das	An Arduino Based Automatic Lighting & Fault Detection System	IoT/embedded product	sustainability; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Sensor/controller integration and prototype testing; team reporting, cost planning and presentation evidence po8-po11.
13	Dr. Anup Kumar Das	An Arduino Based Accident Helping System	IoT/embedded product	sustainability; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Sensor/controller integration and prototype testing; team reporting, cost planning and presentation evidence po8-po11.
14	Anirban Chattopadhyay	Investigation Periodicities and Forecasting of AQ1 Data for INDIA	application/product design	cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
15	Anirban Chattopadhyay	Correlation Analysis and Prediction of PM2.5 based Meteorological factor in DELHI	AI/ML application; research/simulation	cost; prototype; documentation; data/model validation; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Dataset/model design with validation; team reporting, cost planning and presentation evidence po8-po11.

16	Dr. Aritra Bhowmik	Design of MIMO Antenna using Hybrid Electric and Magnetic Structure	communication/R F design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
17	Subhadra Deb Roy	Elimination of Harmonics of Microstrip Antenna using stub & DGS at Bluetooth Band	communication/R F design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
18	Dipta Chaudhari	Smart Attendance System using Facial Recognition	AI/ML application	cost; prototype; documentation; data/model validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Dataset/model design with validation; team reporting, cost planning and presentation evidence po8-po11.
19	Dipta chaudhuri	DTMF based Home Automation	IoT/embedded product	sustainability; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Sensor/controller integration and prototype testing; team reporting, cost planning and presentation evidence po8-po11.
20	Debipriya dutta	Low cost LPG Gas Leakage Detection and Prevention Kit	IoT/embedded product	sustainability; safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(3)	Sensor/controller integration and prototype testing; safety detection, warning or control logic; team reporting, cost planning and presentation evidence po8-

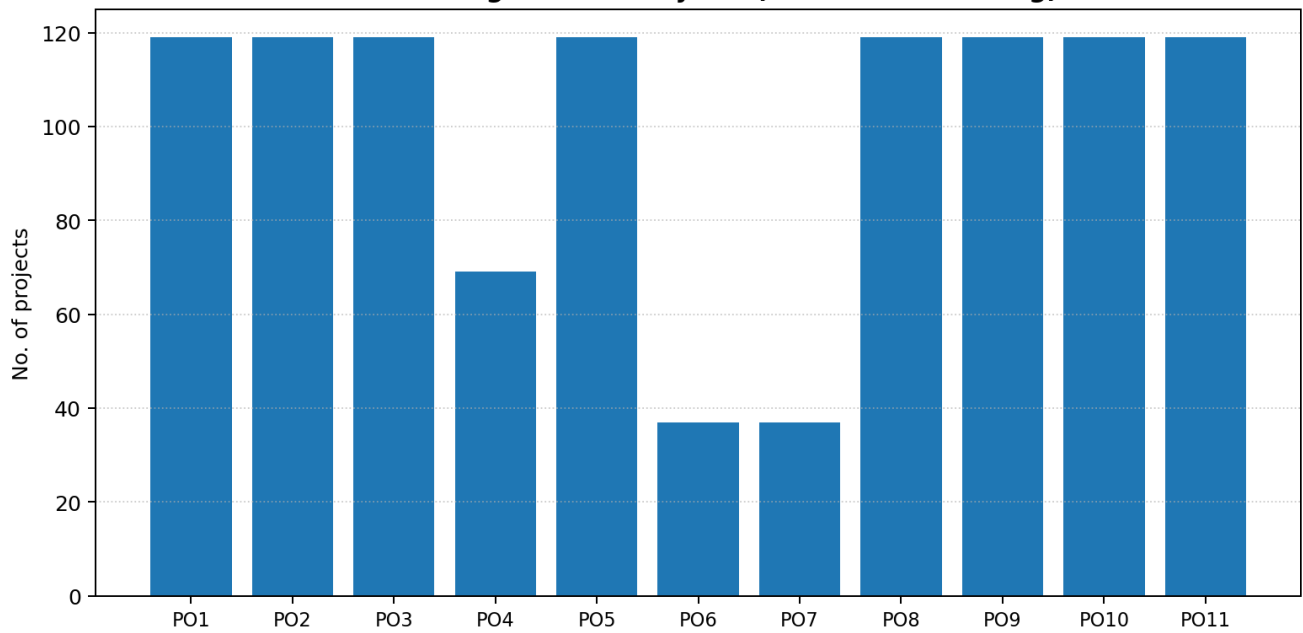
							po11.
21	Dr. Narendra Nath Pathak	IOT based security system	IoT/embedded product	sustainability; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Sensor/controller integration and prototype testing; team reporting, cost planning and presentation evidence po8-po11.
22	Dr. Narendra Nath Pathak	Gas leak and fire safety system	IoT/embedded product	sustainability; safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(3)	Sensor/controller integration and prototype testing; safety detection, warning or control logic; team reporting, cost planning and presentation evidence po8-po11.
23	Dr. Narendra Nath Pathak	Fasion MNIST classification using CNN	AI/ML application	cost; prototype; documentation; data/model validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Dataset/model design with validation; team reporting, cost planning and presentation evidence po8-po11.
24	Dr. Rajdeep Ray	IOT based Smart Health Monororing Device	IoT/embedded product; healthcare assistive system	sustainability; safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(3)	Sensor/controller integration and prototype testing; health context with usability and ethics; team reporting, cost planning and presentation evidence po8-po11.
25	Nilkamal Bhunia	GSM based Fire and Smoke Detection and Prevention System	IoT/embedded product	sustainability; safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3),	PSO1(3), PSO2(2), PSO3(3)	Sensor/controller integration and prototype testing; safety detection, warning or control logic; team reporting,

					PO10(3), PO11(2)		cost planning and presentation evidence po8-po11.
26	Nilkamal Bhunia	Sparse Adaptive Filtering Algorithm for Acoustic Feedback Cancellation	research/simulation	cost; prototype; documentation; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
27	Dr. Sarit Pal	Health Monitoring System using Arduino	IoT/embedded product; healthcare assistive system	sustainability; safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(3)	Sensor/controller integration and prototype testing; health context with usability and ethics; team reporting, cost planning and presentation evidence po8-po11.
28	Dr. Sarit Pal	Gps and GSM based smart blind stick	application/product design	cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
29	Dr.Tapas Mondal	Triple Band Bandpass Filter using Ring Resonator	application/product design	cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(2), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(2), PSO3(1)	Problem formulation, design, implementation and testing; team reporting, cost planning and presentation evidence po8-po11.
30	Dr.Tapas Mondal	Designing a Wide Bandwidth Bandpass Filter for use	communication/R F design	cost; prototype; documentation; technical	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3),	PSO1(3), PSO2(3)	Rf simulation and parameter analysis; team reporting, cost planning and

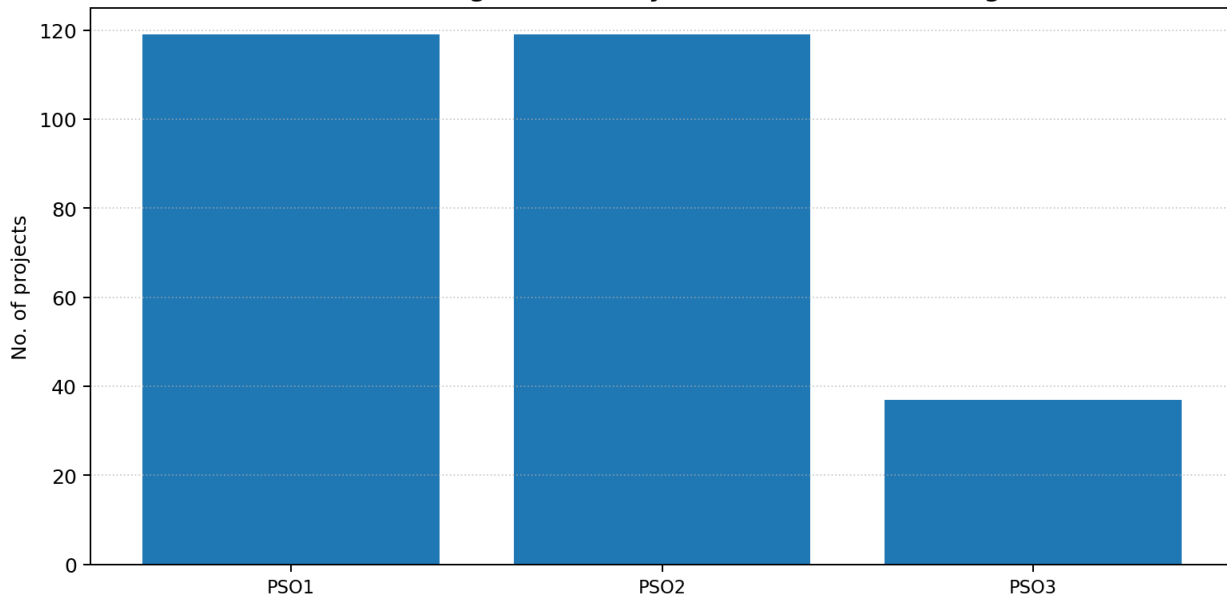
		in Wideband Application		standards	PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO3(1)	presentation evidence po8-po11.
31	Dr. Abhijit Banerjee & Pradipta Sarkar	Behavioral Pattern prediction from real time Tweets	AI/ML application	cost; prototype; documentation; data/model validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Dataset/model design with validation; team reporting, cost planning and presentation evidence po8-po11.
32	Kaustav roy	Pulse Oximeter and Heart Rate Monitor	IoT/embedded product; healthcare assistive system	sustainability; safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(3)	Sensor/controller integration and prototype testing; health context with usability and ethics; team reporting, cost planning and presentation evidence po8-po11.
33	Moutusi Mondal	Auto Intensity Control of Street Light using Arduino	IoT/embedded product	sustainability; safety/ethics; cost; prototype; documentation	PO1(3), PO2(3), PO3(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3), PO11(2)	PSO1(3), PSO2(2), PSO3(3)	Sensor/controller integration and prototype testing; safety detection, warning or control logic; team reporting, cost planning and presentation evidence po8-po11.
34	Dr. Mrinmoy Chakraborty and Surajit Batabyal	Design Development of Dielectric Resonator Antennas	communication/R F design	cost; prototype; documentation; technical standards	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2), PO11(2)	PSO1(3), PSO2(3), PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8-po11.
35	Prof. Keka	Solar based wireless EV	application/product	cost; prototype;	PO1(3), PO2(3),	PSO1(3),	Problem formulation,

	Hajra	Charging System	t design	documentatio n	PO3(3), PO5(2), PO7(1), PO8(3), PO9(3), PO10(2) , PO11(2)	PSO2(2) , PSO3(1)	design, implementation and testing; team reporting, cost planning and presentation evidence po8- po11.
36	Prof. Tapas Roy	Smart Vehicle Recognition System	AI/ML application	cost; prototype; documentatio n; data/model validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2) , PO11(2)	PSO1(3) , PSO2(3) , PSO3(1)	Dataset/model design with validation; team reporting, cost planning and presentation evidence po8- po11.
37	Surajit Batabyal and Dr. Mrinmoy Chakraborty	Design and Analysis of Compact and Broadband MICROSTRIP ANTENNAS	communication/R F design; research/simulatio n	cost; prototype; documentatio n; technical standards; experimental validation	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO7(1), PO8(3), PO9(3), PO10(2) , PO11(2)	PSO1(3) , PSO2(3) , PSO3(1)	Rf simulation and parameter analysis; team reporting, cost planning and presentation evidence po8- po11.
38	Soumendra Pain	Waste Management through Smart Dusbin using Arduino UNO	IoT/embedded product	sustainability; cost; prototype; documentatio n	PO1(3), PO2(3), PO3(3), PO5(3), PO6(3), PO7(2), PO8(3), PO9(3), PO10(3) , PO11(2)	PSO1(3) , PSO2(2) , PSO3(3)	Sensor/controll er integration and prototype testing; environmental or sustainability relevance; team reporting, cost planning and presentation evidence po8- po11.

PO Coverage across Projects (Moderate or Strong)



PSO Coverage across Projects (Moderate or Strong)



PO	Descriptor	Projects Covered	Coverage
PO1	Engineering knowledge	119	100.0%
PO2	Problem analysis	119	100.0%
PO3	Design/development of solutions	119	100.0%
PO4	Investigation of complex problems	69	58.0%
PO5	Engineering tool usage	119	100.0%
PO6	Engineer and the world	37	31.1%
PO7	Ethics	37	31.1%
PO8	Individual and collaborative teamwork	119	100.0%

PO9	Communication	119	100.0%
PO10	Project management and finance	119	100.0%
PO11	Life-long learning	119	100.0%
PSO	Descriptor	Projects Covered	Coverage
PSO1	ECE system/component design	119	100.0%
PSO2	Engineering hardware and software tool usage	119	100.0%
PSO3	Social, environmental and ethical responsibility	37	31.1%

PO	Project-Level Justification	Typical Evidence	Remarks
PO1 Engineering Knowledge	Application of electronics, communication, signal processing, embedded systems, VLSI, control, instrumentation and computing concepts in project design.	Project report, design notes, viva.	Addressed based on project type and rubric mapping.
PO2 Problem Analysis	Identification and analysis of engineering problems involving sensing, automation, communication, signal processing, robotics, surveillance, healthcare, energy use or industrial requirements.	Problem statement, literature survey, review presentation.	Addressed based on project type and rubric mapping.
PO3 Design/Development of Solutions	Design of circuits, antennas, embedded products, algorithms, prototypes, dashboards, automation systems or communication models.	Design files, block diagrams, schematics, code, prototype.	Core project outcome.
PO4 Investigation of Complex Problems	Experimental testing, simulation, data analysis, result interpretation and troubleshooting.	Test logs, simulation outputs, performance comparison.	Seen in reviews and final defence.
PO5 Modern Tool Usage	Use of MATLAB, Simulink, LTspice, HFSS/CST, Vivado, Arduino/ESP32/Raspberry Pi, Python and laboratory instruments.	Software files, screenshots, code repository, lab records.	Linked with tool usage rubric.
PO6 Engineer and Society	Projects addressing healthcare, safety, surveillance, automation, public utility, assistive technology or industrial needs.	Use-case analysis, field relevance statement, expert remarks.	Applicable where project has social/industrial context.
PO7 Environment and Sustainability	Projects involving energy saving, low-power design, smart monitoring, sustainable technology choices or e-waste awareness.	Sustainability note, power/cost analysis.	Applicable where relevant.
PO8 Ethics	Consideration of data privacy, safe use, responsible automation, sensor data handling and ethical deployment of technology.	Ethics checklist, guide remarks.	Checked during proposal/reviews.
PO9 Individual and Team Work	Team-based execution with defined roles for design, coding, hardware, testing, documentation and presentation.	Role matrix, attendance, review remarks.	Assessed by supervisor.
PO10 Communication	Technical report writing, presentations, viva voce, poster preparation,	Report, slides, viva marks, publication/competition	Assessed in review and defence.

	publication writing and demonstration to evaluators.	evidence.	
PO11 Project Management and Finance	Timeline planning, milestone tracking, BOM, component procurement, cost monitoring and resource utilization.	Gantt chart, BOM, review sheets, progress forms.	Assessed by supervisor.
PO12 Life-long Learning	Self-learning of new tools, datasheets, frameworks, hardware platforms, research papers and recent technologies.	Learning log, references, repository, certificates, publication/competition preparation.	Visible through project execution and dissemination.

PSO	Project-Level Interpretation	Assessment Link
PSO1	Application of core ECE knowledge to signal processing, communication systems, embedded systems, VLSI, sensors, control, antenna and electronic-circuit projects.	Design, analysis, implementation and technical viva components.
PSO2	Selection and use of engineering hardware/software tools such as simulation platforms, microcontroller kits, FPGA tools, circuit simulators, Python and measurement instruments.	Tool usage, simulation, implementation, testing and demonstration components.
PSO3	Awareness of social, environmental, ethical and entrepreneurial/professional aspects through projects linked with healthcare, sustainability, safety, automation, public utility, external competition and publication-oriented dissemination.	Safety/ethics/sustainability metric, external expert assessment, publication and external competition metric.

F. Evidence Maintained by the Department

- Phase-wise CGPA-based student release list.
- Faculty-domain list and supervisor consent/allotment records.
- Approved project proposals with preliminary PO/PSO mapping.
- Project Progress Forms confirmed and signed by supervisor and circulated to mentor where required.
- Review-I, Review-II and Review-III assessment sheets.
- BOM, design files, simulation files, code, test logs, prototype photographs and laboratory records.
- Final project report, presentation, demonstration record, viva marks and panel evaluation sheet.
- External faculty/industry expert evaluation sheet or remarks where conducted.
- Publication proof, communicated paper proof, conference/journal acceptance, patent/prototype submission, competition participation certificate or rank/standing proof wherever applicable.
- Final PO/PSO attainment sheet and archived project list.

G. Impact of the Process

- Fairer project group formation through phased CGPA-based release and mixed-phase grouping.
- Balanced guide allotment by limiting supervisor load and matching project domains with faculty expertise.
- Improved project monitoring through signed progress forms, mentor circulation and scheduled reviews.
- Better alignment of project work with POs and PSOs through proposal-level mapping, review-level monitoring and final attainment records.
- Higher external orientation through publication, conference participation, project contests, hackathons, prototype demonstrations and industry/expert evaluation where feasible.
- Improved quality of final defence through evaluation by supervisor, panel of faculty members and external faculty/industry expert where available.

2.3. Internship/Industrial Training (10)

(Describe process, duration, POs/PSOs addressed.)

The Department of Electronics and Communication Engineering implements the Industrial Training / Internship module as a structured activity for exposing students to professional engineering practice, organizational work culture, modern tools, industrial safety, technical documentation and the gap between classroom learning and field-level implementation. The activity is aligned with the affiliating university curriculum and is assessed through documented evidence such as training approval records, NOC, completion certificate, industry mentor feedback, training diary or progress record, technical report, presentation, viva voce and rubric-based evaluation.

The process is kept practical and evidence-oriented. Students normally undertake internship / industrial training for a minimum duration of four weeks, or as prescribed by the curriculum / department for the concerned academic session. Training may be completed in industries, public-sector organizations, research laboratories, technical institutes, startups, core engineering service providers or relevant online / hybrid industry programmes approved by the department.

A. Process Followed for Internship / Industrial Training

Stage	Process Description	Evidence Maintained
1. Notification and orientation	The department notifies students regarding internship period, eligible organizations, documentation requirements, report format, assessment scheme and deadlines.	Circular / notice, orientation record, list of coordinators.
2. Identification of training organization	Students identify suitable organizations based on ECE relevance such as communication, electronics, embedded systems, automation, VLSI, control, IoT, IT tools, power / utility systems, signal processing, networking or related fields.	Student request, organization details, training proposal.
3. Scrutiny and approval	Faculty coordinator / HoD verifies domain relevance, expected learning, duration, student details and requirement of NOC or permission letter.	Approval record, NOC issue register, student list.
4. Training execution	Student completes the training under the guidance of industry / institute mentor and maintains diary, activity log or progress record wherever applicable.	Training diary / log, attendance if available, screenshots / lab records, mentor remarks.
5. Feedback and certification	Completion certificate and industry mentor feedback are collected. Student feedback on training quality and learning outcome is also recorded.	Certificate, mentor feedback, student feedback analysis.
6. Report submission	Student submits a technical report describing organization profile, work carried out, tools used, learning outcome, technical analysis and reflection on industry-academia gap.	Internship / training report, plagiarism check if used, supervisor comments.
7. Presentation and evaluation	Departmental panel conducts presentation and viva voce using a CO-PO/PSO-linked rubric. Where available, external / industry mentor feedback is included in assessment.	Rubric sheet, presentation copy, viva record, marks sheet.
8. Attainment and improvement	Assessment data are used for CO/PO/PSO attainment and corrective measures for the next cycle, such as improved orientation, better organization selection and revised report templates.	Attainment sheet, course file, DAC / department discussion record.

Internship / Industrial Training Process Flow

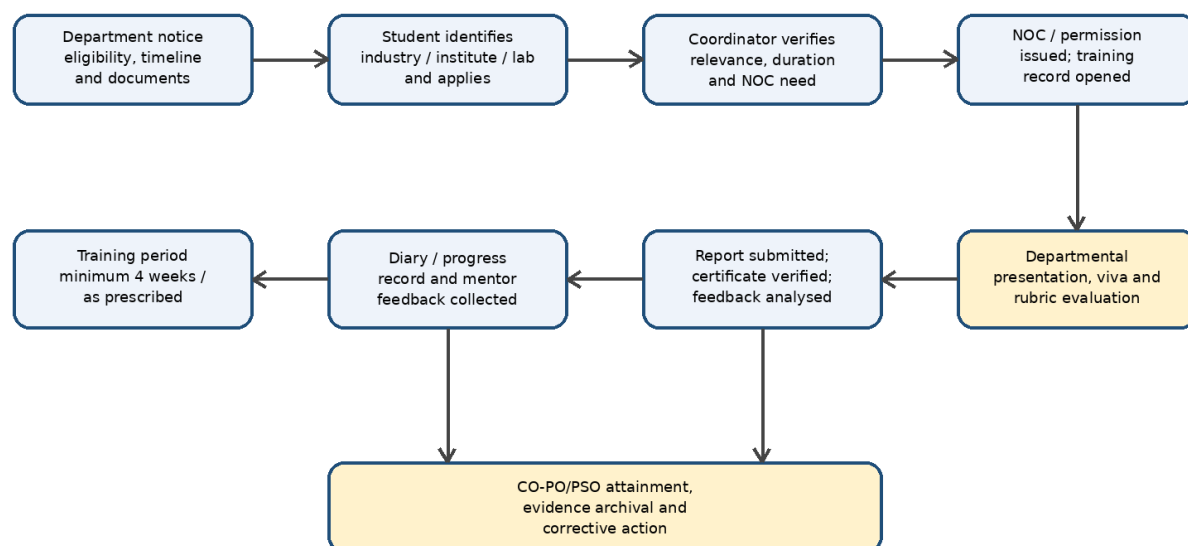


Fig. 2.3.1: Process flow for Internship / Industrial Training approval, monitoring and evaluation.

B. Duration and Mode

Parameter	Departmental Practice
Normal duration	Minimum four weeks, or as prescribed by the university / department for the relevant academic session.
Preferred period	Semester break / summer vacation or any approved slot that does not disturb regular academic delivery.
Permitted organizations	Core industries, PSUs, research laboratories, technical institutes, startups, MSMEs, service providers and approved online / hybrid industry programmes relevant to ECE.
Acceptable evidence	NOC, offer / acceptance letter, completion certificate, mentor feedback, diary / progress record, report, presentation and viva record.
Departmental control	All training records are verified by the faculty coordinator and archived in the course file for assessment and NBA evidence.

C. Course Outcomes Targeted for Attainment

CO Code	Course Outcome Statement
EC781.1	Understand the organizational structure and working environment of the training organization.
EC781.2	Develop work habits and professional attitude required for job success, including punctuality, responsibility and discipline.
EC781.3	Develop business and technical communication skills through interaction, presentation and reporting.
EC781.4	Develop awareness of contemporary engineering practices, tools and industrial issues.
EC781.5	Develop ethical and professional work attitudes relevant to industrial practice.
EC781.6	Develop technical report writing and documentation skills.

EC781.7	Identify the gap between academic curriculum and industrial practice and reflect on future learning needs.
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D. CO-PO and CO-PSO Mapping for Internship / Industrial Training

The following mapping is used for assessment and attainment. The mapping is moderate and realistic because internship evidence normally assesses professional exposure, tool usage, communication, ethics, teamwork, project management and learning adaptability in addition to core engineering knowledge.

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
EC781.1	2	-	-	-	1	3	-	-	2	1	2	1	1	1	1
EC781.2	1	-	-	-	1	-	-	2	3	2	2	2	1	1	2
EC781.3	-	-	-	-	-	1	-	-	2	3	1	1	-	1	1
EC781.4	2	2	1	2	2	2	2	-	-	1	-	3	2	2	2
EC781.5	-	-	-	-	-	2	1	3	2	1	1	1	-	-	3
EC781.6	1	1	-	1	1	1	-	-	-	3	1	2	1	1	1
EC781.7	2	2	1	1	2	2	1	1	-	2	1	3	2	2	2

Scale: 3 = High correlation, 2 = Moderate correlation, 1 = Low correlation, - = No direct measurable correlation.

E. Evaluation Methodology

The assessment is carried out through Continuous Internal Evaluation and Semester End Examination / departmental evaluation. The marks may be scaled as per the university scheme. The department maintains the same rubric structure even when the total marks prescribed by the university vary.

Assessment Part	Assessment Basis	Timing
Continuous Internal Evaluation / formative component	Training approval, diary / progress record, mentor feedback, attendance where available, regularity, professional behaviour and completion of required documentation.	During and immediately after training
Semester End Examination / summative component	Technical report, presentation, viva voce, understanding of training work, contemporary issues, communication and evidence of learning.	After report submission
Value-added achievement component	Publication in journal / conference, patent / IPR filing, participation or standing in national / international external competition, where directly connected with internship or training work.	Assessed only when verified evidence is submitted

F. Internship / Industrial Training Evaluation Rubric

S. N.	Criterion	Marks	Level 4 - Excellent	Level 3 - Good	Level 2 - Satisfactory	Level 1 - Poor	Mapped COs	Mapped PO/PSO	Evidence
1	Technical knowledge and understanding	20	Shows clear understanding of organization, process, tools and technical work carried out.	Adequate understanding with minor gaps.	Basic understanding with limited technical depth.	Poor understanding or unable to explain training work.	EC781.1, EC781.4, EC781.7	PO1, PO2, PO5, PO6, PO12, PSO1, PSO2	Report, viva, mentor feedback
2	Problem identification and contemporary issues	15	Identifies practical issues and relates them to engineering principles and current practices.	Identifies relevant issues with acceptable explanation.	Mentions issues but weak linkage with engineering concepts.	No meaningful problem identification.	EC781.4, EC781.7	PO2, PO4, PO6, PO7, PO12, PSO3	Report, presentation, viva
3	Technical report writing and documentation	20	Report is structured, technically clear, properly formatted and supported by diagrams / data.	Report is clear with minor formatting or depth gaps.	Report is basic and partially organized.	Report is poorly structured or incomplete.	EC781.3, EC781.6	PO10, PO12, PSO2	Submitted report
4	Presentation and viva voce	15	Confident presentation, clear slides and accurate answers to technical questions.	Good presentation with minor gaps in answers.	Average presentation with limited technical clarity.	Poor presentation or inability to answer basic questions.	EC781.3, EC781.6	PO9, PO10, PO12	Slides, viva record
5	Professional attitude, ethics and teamwork	15	Shows punctuality, discipline, ethical conduct, teamwork and professional responsibility.	Professional behaviour mostly satisfactory.	Partial evidence of professional behaviour.	Poor conduct or unverified work habits.	EC781.2, EC781.5	PO6, PO8, PO9, PO11, PSO3	Certificate, mentor feedback

S. N.	Criterion	Marks	Level 4 - Excellent	Level 3 - Good	Level 2 - Satisfactory	Level 1 - Poor	Mapped COs	Mapped PO/PSO	Evidence
			supported by mentor feedback.						
6	Publication / patent / external competition achievement	10	Verified journal / conference publication, patent / IPR filing, or recognized standing in national / international competition linked to training work.	Verified participation / submission with clear technical linkage.	Preliminary evidence such as draft paper, poster, abstract or competition registration.	No verified value-added output.	EC781.3, EC781.4, EC781.6, EC781.7	PO4, PO10, PO12, PSO1, PSO2, PSO3	Publication proof, certificate, acceptance mail, patent / competition record
7	Student reflection and industry-academia gap analysis	5	Clearly reflects on skills learned, curriculum gap and future learning needs.	Reflection is clear but brief.	Reflection is generic.	No meaningful reflection.	EC781.7	PO12, PSO3	Report, feedback form

Note: The value-added achievement criterion is assessed only on verified evidence and is not treated as compulsory for every student. If the university mark distribution does not provide a separate head for this item, it may be included under report / presentation / viva or treated as enrichment evidence in the course file.

2.4. Seminar and Mini/Micro Projects (10)

(Describe process, POs/PSOs addressed.)

The Department of Electronics and Communication Engineering conducts seminars and mini/micro projects as structured academic activities to improve technical communication, design thinking, tool usage, practical implementation and self-learning. Mini projects are primarily offered to fifth and sixth semester students. In addition to curriculum-linked activities, non-curricular laboratories such as the Innovation Lab, XILINX Lab and AICTE IDEA Lab may offer minor projects under the supervision of the respective Lab-in-Charge. Project Lab and Prototype Lab facilities are used for circuit development, sensor interfacing, embedded implementation, simulation, testing and prototype fabrication.

The same basic quality controls used for capstone/major projects are followed at an appropriate scale for mini/micro projects: domain-based topic selection, guide approval, feasibility screening, scheduled reviews, rubric-based evaluation, report submission, presentation/viva and evidence archival. The activity is kept realistic so that students can complete a functional demonstration, simulation, design document, analytical report or validated proof-of-concept within the available semester duration.

Process for Seminar, Mini/Micro Project Identification, Monitoring and Evaluation

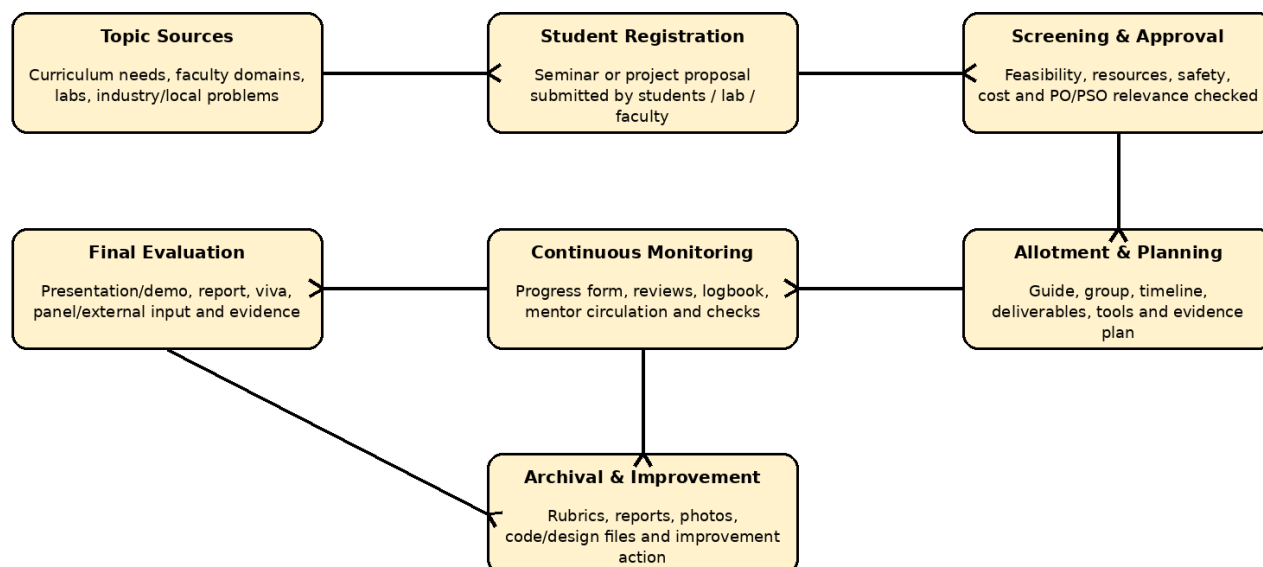


Fig. 2.4.1: Process for seminar, mini/micro project allocation, monitoring and evaluation.

A. Process Followed for Seminar

The seminar activity is used to train students in literature study, technical interpretation, report preparation and oral presentation. Topics are normally selected from contemporary ECE areas, recent engineering applications, standard technologies, research papers, industrial developments and faculty-suggested domains.

S.N.	Stage	Process Followed	Evidence Maintained
1	Topic selection	Students select or receive topics related to communication, signal processing, IoT, embedded systems, VLSI, sensors, control, RF/antenna, data acquisition or allied areas.	Topic list, faculty approval record
2	Guide approval	Faculty verifies scope, technical relevance, availability of references, originality and suitability for the semester level.	Approved topic sheet
3	Literature study	Students study textbooks, datasheets, standards, research papers, application notes and industry resources.	Reference list, seminar synopsis
4	Draft review	Guide checks structure, technical correctness, diagrams, citations and presentation flow.	Draft report/slide review remarks
5	Presentation and viva	Students present before faculty/panel; technical clarity, communication and Q&A response are assessed.	Rubric sheet, attendance, presentation file
6	Archival	Final report, slides and assessment records are maintained in the course/department file.	Report, slides, evaluated rubric

B. Process Followed for Mini/Micro Projects

Mini projects are offered mainly to fifth and sixth semester students. Micro/minor projects may also be offered through departmental and non-curricular laboratories. The project topic may originate from students, faculty members, laboratory requirements, local industrial/societal needs, inter-departmental work, product ideas, simulation problems, hardware development requirements or recent ECE technology trends.

S.N.	Stage	Process Followed	Evidence Maintained
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S.N.	Stage	Process Followed	Evidence Maintained
1	Topic identification	Topics are collected from students, guides, laboratories, industry exposure, local problems and recent ECE domains.	Topic proposal, lab/faculty suggestion record
2	Feasibility screening	Scope, semester duration, resource requirement, safety, cost, availability of components/tools and expected output are checked.	Screening remarks, approval sheet
3	Guide/Lab-in-Charge supervision	Faculty guide or Lab-in-Charge supervises the project depending on whether the work is curriculum-linked or lab-originated.	Guide allotment record
4	Planning	Students prepare problem statement, objectives, block diagram, methodology, tools, timeline, expected deliverables and PO/PSO mapping.	Proposal, Gantt chart, BOM if applicable
5	Continuous review	Progress is reviewed through demonstrations, design files, code/simulation review, project progress form and guide remarks. The progress form is confirmed and signed by the supervisor and circulated to the mentor wherever applicable.	Progress form, review sheet, mentor copy
6	Final evaluation	Evaluation includes prototype/simulation/model, report, presentation, viva, teamwork, tool usage and evidence of competition/publication where applicable.	Final rubric, report, demo record, photographs

The department maintains a controlled faculty load for supervision to keep monitoring meaningful. Group size, workload and faculty domain suitability are considered during allotment. For laboratory-originated minor projects, the Lab-in-Charge records student participation, supervision details and available evidence such as design files, photographs, reports and demonstration records.

C. Facilities Used for Mini/Micro Projects

Facility	Typical Use	PO/PSO Link
Project Lab	Curriculum-linked mini project development, circuit testing, embedded implementation, report preparation and demonstration.	PO1, PO2, PO3, PO5, PO9, PO10, PO11; PSO1, PSO2
Prototype Lab	Prototype fabrication, integration, testing, enclosure preparation, sensor/mechanical integration and functional verification.	PO3, PO4, PO5, PO11; PSO1, PSO2
Innovation Lab	Student innovation, inter-disciplinary proof-of-concept work, hackathon/competition preparation and applied prototype development.	PO3, PO5, PO6, PO7, PO9, PO10, PO11, PO12; PSO1, PSO2, PSO3
XILINX Lab	FPGA/VLSI-oriented design, simulation, HDL implementation, verification and seminar/project work linked with digital system design.	PO1, PO2, PO3, PO5, PO12; PSO1, PSO2
AICTE IDEA Lab	Additive/subtractive manufacturing support, product prototyping, fabrication exposure and project-based interdisciplinary activity.	PO3, PO5, PO6, PO7, PO9, PO11, PO12; PSO1, PSO2, PSO3

D. Seminar Evaluation Rubric

S.N.	Criterion	Marks	Assessment Focus	Mapped PO/PSO
1	Topic relevance and contemporary	10	Topic is relevant to ECE and has clear academic/industrial relevance.	PO1, PO2, PO12, PSO1

S.N.	Criterion	Marks	Assessment Focus	Mapped PO/PSO
	importance			
2	Literature survey and technical background	20	References, standards, datasheets or research papers are studied and interpreted.	PO1, PO2, PO4, PO12
3	Technical depth and analytical understanding	25	Concepts, diagrams, methods and limitations are explained with adequate technical depth.	PO1, PO2, PO4, PSO1
4	Use of tools, demonstrations or application examples	10	Simulation, video demo, case example, dataset, tool output or application note is used where relevant.	PO5, PSO2
5	Report quality and documentation	15	Report is structured, clear, cited and formatted as per departmental guidelines.	PO10, PO12
6	Presentation and viva voce	20	Slides, delivery, time management and response to questions are satisfactory.	PO9, PO10

E. Mini/Micro Project Evaluation Rubric

S.N.	Criterion	Marks	Assessment Focus	Mapped PO/PSO
1	Problem identification and objective clarity	10	Problem is clearly defined, relevant, feasible and suitable for the semester level.	PO1, PO2, PSO1
2	Design methodology and technical correctness	15	Block diagram, circuit/model/algorithm, methodology and technical justification are proper.	PO2, PO3, PO4, PSO1
3	Modern tool/software/hardware usage	15	Appropriate use of simulation tools, EDA tools, microcontrollers, FPGA platforms, Python, instruments or fabrication resources.	PO5, PSO2
4	Implementation, testing and demonstration	25	Functional prototype, simulation, analytical model or proof-of-concept is demonstrated with test observations.	PO3, PO4, PO5, PSO1, PSO2
5	Safety, ethics, environment and societal relevance	5	Relevant safety, ethical, sustainability or societal aspects are identified where applicable.	PO6, PO7, PO8, PSO3
6	Project planning, cost and resource management	10	BOM, timeline, task distribution, component/resource use and review compliance are maintained.	PO9, PO11
7	Report, presentation and viva voce	10	Report, slides, demonstration explanation and viva response are clear.	PO10, PO12
8	Publication / conference / competition participation or standing	5	Evidence of paper submission, presentation, patent disclosure, hackathon/competition participation or ranking is considered where applicable; absence does not penalize routine projects beyond this allotted component.	PO10, PO12, PSO3
9	Supervisor assessment and continuous progress	5	Progress form, review participation, guide remarks and mentoring feedback are satisfactory.	PO9, PO11, PO12

Suggested assessment distribution: 60% may be awarded by the supervisor/guide based on continuous progress, project progress form, implementation effort and documentation. The remaining 40% may be awarded by a project evaluation panel, external faculty member or industry expert, wherever feasible, based on demonstration, presentation, viva voce, report quality and independent technical review.

F. POs and PSOs Addressed through Seminar and Mini/Micro Projects

PO/PSO	How Addressed
PO1	Engineering knowledge is applied through ECE concepts used in seminar topics and mini/micro projects.
PO2	Problem analysis is addressed through problem definition, literature review and technical interpretation.
PO3	Design/development is addressed through circuit, embedded, communication, IoT, VLSI, control or signal-processing solutions.
PO4	Investigation is addressed through simulation, measurement, testing, data interpretation and troubleshooting.
PO5	Modern tool usage is addressed through software tools, EDA platforms, microcontroller kits, FPGA tools, instruments and prototyping facilities.
PO6, PO7, PO8	Societal, environmental and ethical aspects are addressed where projects involve safety, sustainability, healthcare, public utility, data handling or responsible deployment.
PO9, PO10, PO11	Teamwork, communication, planning, costing and resource management are assessed through group work, reports, presentations and review records.
PO12	Self-learning is addressed through study of datasheets, tools, new technologies, standards, research articles and project extensions.
PSO1	Core ECE knowledge is used in signal processing, communication, embedded systems, VLSI, sensors, control and circuit projects.
PSO2	Hardware/software tools are selected and applied for implementation, simulation, testing and verification.
PSO3	Social, ethical, environmental and entrepreneurial orientation is addressed through application-oriented, public-utility, sustainability-linked or competition-oriented work.

G. Evidence Maintained

- Seminar/project topic approval records and guide allotment records.
- Student proposal, synopsis, block diagram, methodology and PO/PSO mapping.
- Project progress form confirmed and signed by supervisor and circulated to mentor wherever applicable.
- Review rubrics, attendance, supervisor remarks and panel assessment sheets.
- Reports, presentation files, simulation files, source code, design files, photographs and demonstration records.
- Evidence of publication, patent disclosure, conference presentation, hackathon/competition participation or ranking, wherever applicable.

2.5. Case Studies and Real-Life Examples (10)

(Type and complexity, POs/PSOs addressed.)

Case studies and real-life examples are used in theory classes, tutorials, laboratories, seminars, mini projects and project discussions to connect curriculum topics with engineering practice. The department uses examples of moderate complexity suitable for undergraduate students, with emphasis on problem identification, design choices, measurement, tool usage, data interpretation, societal relevance and limitations of practical implementation.

A. Process Followed

S.N.	Stage	Description
1	Selection of case/example	Faculty selects examples from industry problems, laboratory work, inter-departmental activity, local utility problems, research papers, standards, product datasheets or recent ECE applications.
2	Curriculum linkage	The selected case is linked with course topics such as sensors, signal

S.N.	Stage	Description
		processing, embedded systems, communication, control, IoT, VLSI, analog/digital circuits or data acquisition.
3	Classroom/laboratory delivery	The case is discussed through block diagrams, numerical analysis, simulation, datasheet interpretation, hardware demonstration, dataset analysis or field problem discussion.
4	Student activity	Students may prepare a short report, design solution, simulate a subsystem, analyze data, present findings or develop a mini-project extension.
5	Assessment and evidence	Assessment may be through assignment, viva, seminar, project review, lab record, case report or presentation. Evidence is stored in the course/project file.

B. Type and Complexity of Case Studies

Type	Complexity	Typical Use	PO/PSO Link
Concept demonstration	Low to moderate	Classroom examples, datasheet interpretation, waveform/response analysis, simulation-based explanation.	PO1, PO2, PO5
Laboratory-linked case	Moderate	Sensor interfacing, signal measurement, circuit verification, DAQ, embedded implementation and instrument-based validation.	PO1, PO2, PO3, PO4, PO5, PSO1, PSO2
Inter-disciplinary case	Moderate to high	ECE subsystem used in civil, mechanical, healthcare, energy, safety or automation applications.	PO2, PO3, PO4, PO6, PO7, PO9, PSO3
Industry/local problem case	Moderate	Automation, monitoring, communication, reliability, energy use, safety or public-utility problems.	PO2, PO3, PO5, PO6, PO7, PO11, PSO1, PSO2, PSO3
Project/innovation-linked case	Moderate to high	Prototype, proof-of-concept, competition/hackathon idea, research-oriented mini-project or minor project.	PO3, PO4, PO5, PO9, PO10, PO11, PO12, PSO1, PSO2, PSO3

C. Representative Case Studies

S.N.	Case Study	Description	ECE Concepts Involved	Complexity	Mapped PO/PSO
1	Structural Health Monitoring using AE Sensor Data Acquisition	An inter-departmental activity with the Civil Engineering Department. ECE students work on acoustic emission sensor signal acquisition, DAQ configuration, signal conditioning, sampling, data logging and preliminary interpretation of structural health indicators.	Sensors, analog front-end, DAQ, sampling, signal processing, instrumentation, data interpretation.	Moderate to high; involves real sensor data and interdisciplinary interpretation.	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO10, PO11; PSO1, PSO2, PSO3
2	IoT-based Electrical Energy and Equipment Monitoring for Campus/Small Industry	Students study a practical monitoring problem involving current/voltage/power sensing, temperature or vibration monitoring, microcontroller-based	IoT architecture, sensors, embedded systems, communication protocol, data logging, dashboard,	Moderate; suitable for 5th/6th semester mini project with prototype and	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO10, PO11, PO12; PSO1, PSO2,

S.N.	Case Study	Description	ECE Concepts Involved	Complexity	Mapped PO/PSO
		acquisition, wireless data transfer and dashboard-based visualization. The case can be implemented as a mini project using ESP32/Raspberry Pi, sensors and cloud/local dashboard tools.	safety and energy-awareness.	test observations.	PSO3
3	FPGA/XILINX-based Digital Controller or Sensor Interface	Using XILINX Lab facilities, students analyze a digital controller/sensor interface problem such as PWM generation, traffic-light controller, sequence detector, UART-based data capture or finite-state-machine implementation. The activity links digital system design with HDL coding, simulation and hardware verification.	Digital design, HDL, FSM, FPGA tools, simulation, timing verification, hardware testing.	Moderate; requires design, simulation and tool-based verification; hardware implementation where feasible.	PO1, PO2, PO3, PO4, PO5, PO10, PO12; PSO1, PSO2

D. Mapping of Case Studies with POs and PSOs

PO/PSO	Case Study Linkage
PO1, PO2	Engineering knowledge and problem analysis are addressed through interpretation of practical systems, measured signals, design requirements and constraints.
PO3, PO4	Design and investigation are addressed through subsystem design, testing, simulation, troubleshooting and data interpretation.
PO5	Modern tool usage is addressed through MATLAB/Python, EDA tools, FPGA tools, microcontroller platforms, DAQ systems, sensors and laboratory instruments.
PO6, PO7, PO8	Societal, environmental and ethical aspects are addressed when cases involve public safety, energy use, structural safety, data handling or responsible deployment.
PO9, PO10, PO11	Teamwork, communication and project management are addressed through group reports, presentations, cost/resource planning and review discussions.
PO12	Life-long learning is addressed through study of recent technologies, datasheets, standards, research literature and tool documentation.
PSO1	Core ECE competence is addressed through circuits, sensors, communication, embedded systems, signal processing, VLSI and control-related applications.
PSO2	Tool selection and application are addressed through simulation, coding, FPGA implementation, measurement and data-analysis tools.
PSO3	Awareness of social, environmental, ethical and career-oriented engineering practice is addressed through safety, sustainability, utility and deployment-oriented cases.

E. Evidence Maintained

- Course file entries showing case-study topics and delivery records.
- Assignments, case-study sheets, presentation slides, lab records or project reports.
- Photographs, simulation screenshots, tool files, code/design files and DAQ/logged data where applicable.
- Rubric sheets or assessment records for seminar, mini project, laboratory or case-study activity.

- Records of inter-departmental activity, lab utilization, competition participation or external presentation where applicable.

2.6. SWAYAM/NPTEL/MOOC/Self Learning (10)

(Number of students registered, certification and POs/PSOs addressed.)

Number of Students Registered, Certification Status, and PO/PSO Mapping

Course Registrations	Unique Learners	Distinct Courses	Certificate Outcomes	Certification Rate
95	59	45	44	46.3%

A. Institutional Approach

The Department promotes SWAYAM/NPTEL/MOOC-based learning as a structured self-learning component to supplement curriculum delivery, expose students to courses offered by IITs/IISc and other national-level platforms, and encourage outcome-oriented independent learning. The activity is aligned with the department's teaching-learning process through course advisement, mentor monitoring, certification tracking, and use of learning outcomes in project, seminar, laboratory, and placement-preparation activities.

Students are encouraged to select courses relevant to Electronics and Communication Engineering, interdisciplinary computing, VLSI, signal processing, embedded systems, semiconductor devices, programming, artificial intelligence, engineering ethics, project management, and industry-oriented skill areas. Faculty mentors guide students in selecting courses according to semester level, prerequisite knowledge, program outcomes, career goals, and project requirements.

B. Process Followed for NPTEL/MOOC/Self-Learning

Awareness and orientation: Students are informed about SWAYAM/NPTEL timelines, course duration, examination pattern, certification criteria, and relevance to curriculum and employability.

Course advisement: Faculty mentors recommend domain-specific and interdisciplinary courses mapped to curriculum gaps, laboratory work, mini projects, major projects, internships, and higher-study preparation.

Registration support: Students are supported during enrolment, assignment submission, exam registration, and certificate upload/record submission to the department.

Continuous monitoring: Mentors track participation through assignment progress, exam registration, course completion status, and certificate submission.

Outcome utilization: Certified learning is considered as evidence of self-learning and is used for enrichment of seminar topics, project problem selection, laboratory practice, and technical interview preparation.

C. Session-wise Student Registration and Certification Status

The following table summarizes the NPTEL/MOOC registration and certification data maintained by the department. A course registration indicates one student registered for one course; unique learner count is also provided because a student may register for more than one course.

Session	Course Registrations	Unique Learners	Distinct Courses	Certificates Earned	No Certificate	Certification Rate
Jul-Oct 2023	10	10	7	7	3	70.0%
Jan-Apr 2024	20	19	8	8	12	40.0%
Jul-Oct 2024	26	25	12	15	11	57.7%
Jul-Dec 2024	9	8	5	6	3	66.7%
Jan-Apr 2025	14	11	12	3	11	21.4%
Jul-Oct 2025	16	13	8	5	11	31.2%
Total	95	59	45	44	51	46.3%

Year	Academic Year	Sessions Covered	Course Registrations	Unique Learners	Distinct Courses	Certificates Earned	No Certificate	Certification Rate
CAY	2025–26	Jul–Oct 2025	16	13	8	5	11	31.2%
CAYm1	2024–25	Jul–Oct 2024, Jul–Dec 2024, Jan–Apr 2025	49	38	29	24	25	49.0%
CAYm2	2023–24	Jul–Oct 2023, Jan–Apr 2024	30	24	13	15	15	50.0%

D. Certification Category-wise Distribution

Session	Elite	Elite+Silver	Elite+Gold	Successfully Completed	No Certificate
Jul-Oct 2023	5	0	0	2	3
Jan-Apr 2024	7	1	0	0	12
Jul-Oct 2024	6	2	1	6	11
Jul-Dec 2024	2	1	1	2	3
Jan-Apr 2025	1	2	0	0	11
Jul-Oct 2025	1	2	0	2	11
Total	22	8	2	12	51

E. Representative Course Areas and Learning Relevance

Course Area	Representative Courses	Relevance to Programme Learning
Programming and Computing	The Joy of Computing using Python; Programming in Java; Data Structures and Algorithms using Java; C-Based VLSI Design; Competitive Programming; Database Management System	Computational thinking, algorithmic implementation, coding practice, data handling, and software support for engineering applications.
Core ECE, Devices, and Circuits	Digital System Design; CMOS Digital VLSI Design; VLSI Design Flow: RTL to GDS; Semiconductor Devices and Circuits; Basic Electrical Circuits; Network Analysis	Strengthening of circuit theory, semiconductor fundamentals, digital design, EDA workflow awareness, and hardware-oriented problem solving.
Signal Processing, Communication, and Electromagnetics	Principles of Signals and Systems; Adaptive Signal Processing; Applied Electromagnetics for Engineers; Electromagnetic Waves in Guided and Wireless Media	Analytical modelling, spectral interpretation, filter concepts, electromagnetic behaviour, and communication-system foundations.
Embedded Systems and Microprocessors	Microprocessors and Microcontrollers; Introduction to Internet of Things; Industry 4.0 and Industrial IoT	Embedded hardware-software interfacing, IoT-based sensing, data acquisition, automation, and real-time system concepts.
AI, Security, Management, and Ethics	Introduction to Machine Learning; Artificial Intelligence: Search	Interdisciplinary problem solving, data-driven analysis, cyber-

	Methods for Problem Solving; Ethical Hacking; Project Management; Engineering Ethics	awareness, project planning, ethical practice, and professional responsibility.
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F. Mapping of SWAYAM/NPTEL/MOOC/Self-Learning with POs and PSOs

The PO/PSO mapping is performed by considering course content, expected competencies, assignment/examination components, and the use of certified learning in projects, seminars, laboratories, and professional development activities. The mapping level may be interpreted as 3-High, 2-Moderate, and 1-Low.

Course/Self-Learning Area	Mapped POs	Mapped PSOs	Mapping Rationale
Programming, Data Structures, AI/ML and Database Courses	PO1, PO2, PO3, PO5, PO12	PSO3	Engineering knowledge, problem analysis, software tools, algorithms, and lifelong learning.
VLSI, Digital Design, Semiconductor Devices and Circuit Courses	PO1, PO2, PO3, PO4, PO5, PO12	PSO1	Circuit/device understanding, system design, verification, simulation tools, and self-learning.
Signals, Systems, Communication, Electromagnetics and Network Courses	PO1, PO2, PO4, PO5, PO12	PSO2	Mathematical modelling, signal/network analysis, domain problem solving, and tool use.
IoT, Microprocessors, Embedded and Industry 4.0 Courses	PO1, PO2, PO3, PO4, PO5, PO12	PSO1, PSO3	Hardware interfacing, sensing, automation, data acquisition, and embedded implementation.
Ethics, Management and Professional Skill Courses	PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1-PSO3 as applicable	Professional practice, project planning, communication, teamwork, ethics, and societal responsibility.

G. Attainment Support and Academic Use

Certified students are encouraged to apply MOOC/NPTEL learning in seminar presentations, mini projects, major projects, laboratory assignments, and internship problem statements.

Faculty mentors use the course and certificate records to identify students with domain strengths in programming, VLSI, signal processing, embedded systems, IoT, AI/ML, and professional skills.

The activity provides direct evidence for self-learning and indirectly supports PO attainment through knowledge enrichment, modern tool exposure, design-oriented thinking, and professional development.

Students who could not earn certification are counselled to improve assignment completion, exam preparation, and selection of courses suited to their current academic level.

H. Evidence Maintained

Student-wise NPTEL/SWAYAM registration records.

Course-wise and session-wise certification details.

NPTEL certificate copies or downloaded certificate records submitted by students/faculty.

Mentor/adviser records showing course selection guidance and follow-up.

Departmental summary sheet containing course code, course title, student name, certificate type, and session.

I. Overall Observation

The available departmental records show sustained participation in SWAYAM/NPTEL/MOOC-based self-learning, with 95 course registrations by 59 unique learners across 45 distinct courses. A total of 44 certificate outcomes were recorded, including Elite, Elite+Silver, Elite+Gold, and Successfully Completed categories. The selected courses demonstrate a balanced coverage of core ECE, computing, VLSI, semiconductor devices, signal processing, IoT, AI/ML, ethics, and project-management domains. This activity supports curriculum enrichment, self-learning culture, and attainment of relevant POs and PSOs.

Annexure: Frequently Registered Course Titles

S. No.	Course Title	Registrations
1	Programming In Java	9
2	Semiconductor Devices and Circuits	5
3	VLSI Design Flow: RTL to GDS	5
4	Google Cloud Computing Foundations	4
5	C-Based VLSI Design	4
6	Ethics in Engineering Practice	4
7	Introduction To Internet Of Things	4
8	The Joy of Computing using Python	4
9	Digital System Design	3
10	Artificial Intelligence: Search Methods for Problem Solving	3
11	Data Structure and Algorithms using Java	3
12	Data Base Management System	3
13	Applied Electromagnetics For Engineers	3
14	Programming, Data Structures and Algorithms using Python	2
15	Principles of Signals and Systems	2

2.7. Solving Complex Engineering Problems Incorporating Sustainability Goals (20)

(Provide details of core courses (Project based learning, problem-based learning), mini projects, integrated design projects, capstone projects, hackathon or any other activity-based learning towards solving complex engineering problems targeting relevant SDGs.)

A. Evidence Basis and NBA Position

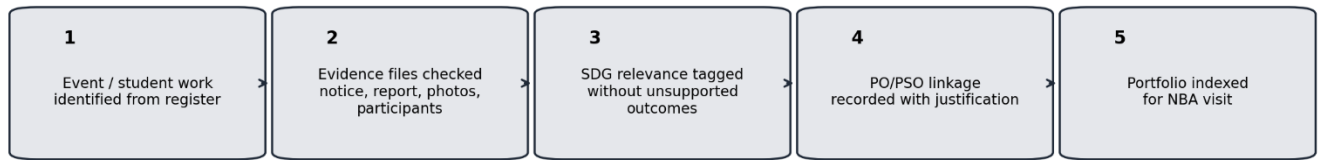
This section records only those SDG-related activities for which an entry is available in the institutional event register supplied for preparation. No undocumented event, project title, participant count, research output, start-up outcome, prototype, or award has been added.

The ECE Department is treated as the primary reference point. Where direct ECE evidence is thin for environmental, health, energy, climate, waste-management, or smart-city SDGs, allied engineering departments and institute-level activities are used as supporting evidence. Such entries are clearly marked by department and are not presented as ECE-only events.

The available register mainly records student activities, technical sessions, visits, workshops, awareness programmers and exhibitions. Project-level portfolios, research papers, prototypes and student assessment sheets

should be kept separately during the NBA visit wherever available.

Strict NBA SDG Evidence Portfolio Workflow



B. Process Used for SDG Evidence Tagging

C. SDG-Aligned Evidence Register

Table 3.6.1: Evidence of student work / student activities / technical exposure aligned with SDGs

Year Block	Date	Dept.	Activity / Student Work Recorded	Type	SDG(s) Addressed	Evidence Available in Register	NBA Use / Justification
CAY	03-09-2025	EE	Energy Conservation with Industrial Case Studies for Future Sustainability	Expert session	SDG 7, SDG 9, SDG 12, SDG 13	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	Energy conservation and industrial case-study exposure; strong sustainability relevance.
CAY	10-10-2025	B.TECH	Blood Donation Camp	Student/community activity	SDG 3	Not linked in event register; must be supported separately	Institute-level health and community-service activity; evidence link not present in register.
CAY	10-11-2025	ME	Smart Manufacturing in Industries	Expert session	SDG 9, SDG 12	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	Smart manufacturing in industries; supporting evidence from allied engineering domain.
CAY	17-11-2025	EE	Emerging Trends and Challenges in Renewable Energy	Expert session	SDG 7, SDG 13	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	Renewable-energy session addressing future energy systems and climate-linked energy transition.
CAY	13-01-	CE	Smart City Planning	Seminar /	SDG 9, SDG 11,	Notice, Brochure/Fly	Smart-city planning

	2026		through Engineering Innovations	technical session	SDG 13	er, Report/Brief, Photos, Participants	through engineering applications; allied department evidence.
CAY	16-01-2026	ECE	Interaction Session on AI and Industrial IoT in Smart Manufacturing	Interaction session	SDG 9, SDG 12	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	ECE-specific AI, Industrial IoT and smart-manufacturing interaction.
CAY	28-01-2026	CSE(DS)	SDG 2K26 – Ideathon and Expo	Ideathon and expo	SDG 4, SDG 9, SDG 17	Notice, Report/Brief, Photos, Participants	Direct SDG Ideathon and Expo; student ideation/exhibition activity.
CAY	19-02-2026	CSE(DS)	Soft Robotics Applications in Healthcare and Agriculture	Technical session	SDG 2, SDG 3, SDG 9	Report/Brief	Soft robotics applications in healthcare and agriculture; allied computing evidence relevant to ECE sensors/actuators.
CAY	25-02-2026	CE	SDG Programme on Climate-Resilient Construction Practices	Awareness and hands-on demonstration	SDG 9, SDG 11, SDG 13	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	Direct SDG programme with hands-on demonstration for climate-resilient construction practices.
CAY	25-03-2026	CE	Industrial Visit to Ultratech Cement RMC Plant	Industrial visit	SDG 9, SDG 11, SDG 12	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	Industrial visit to RMC plant; supports sustainable construction materials and process awareness.
CAYm 1	23-08-2024	ME	Green Manufacturing of Steel	Technical talk / seminar	SDG 9, SDG 12, SDG 13	Notice, Brochure/Flyer, Report/Brief, Photos	Allied engineering evidence on green manufacturing and sustainable production.
CAYm 1	04-09-2024	ECE	Industry Visit to Robotics and Automation	Industry visit / hands-on exposure	SDG 4, SDG 9	Notice, Report/Brief, Participants	ECE industry visit and student participation in robotics and

			Lab, CSIR-CMERI				automation laboratory.
CAYm 1	04-12-2024	ACCOU NTS	Celebration of National Pollution Control Day	Awareness activity	SDG 12, SDG 13	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	Institute-level environmental awareness activity; included because direct ECE environmental SDG evidence is limited.
CAYm 1	25-02-2025	CE	Visit to CSIR-CMERI MSW Management Pilot Plant	Industrial/field visit	SDG 11, SDG 12	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	Allied engineering visit to MSW management pilot plant; supports waste-management and sustainable urban-systems awareness.
CAYm 1	28-02-2025	BASIC SCIENCES AND HUMANITIES	National Science Day 2025	Student activity / exhibition	SDG 4, SDG 9	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	Science outreach and technical awareness activity with evidence files.
CAYm 2	28-11-2023	ECE	Awareness Programme on Soft Robotics and Sensor Design	Student activity / technical awareness	SDG 9	Report/Brief, Photos	ECE-specific innovation exposure; soft robotics and sensor-design opportunity awareness.
CAYm 2	15-04-2024	ECE	Short-Term Training Programme on VLSI and Recent Advancements	Short-term training programme	SDG 4, SDG 9	Notice, Brochure/Flyer, Report/Brief, Photos	ECE-specific training in VLSI and recent technology, supporting industry-relevant technical capacity.

D. SDG to PO/PSO Mapping for Attainment Justification

SDG	Evidence Used	Mapped POs/PSOs	Justification for Attainment
SDG 3: Good Health and Well-being	Blood donation camp; healthcare and wearable/soft-robotics application session.	PO6, PO7, PO8, PO9, PO10; PSO3	Relates engineering education to public health, social responsibility, ethical participation and communication-oriented outreach.
SDG 4: Quality Education	Science Day, SDG Ideathon & Expo, ECE technology sessions, VLSI/STTP and robotics	PO1, PO2, PO5, PO10, PO12; PSO1, PSO2	Supports technical learning beyond syllabus, tool exposure, engineering communication and continuous

	exposure.		learning.
SDG 7: Affordable and Clean Energy	Energy conservation industrial case studies and renewable-energy technical sessions.	PO1, PO2, PO6, PO7, PO11, PO12; PSO3	Connects energy-system engineering with sustainability, environmental responsibility and project-management awareness.
SDG 9: Industry, Innovation and Infrastructure	ECE robotics/automation exposure, AI and Industrial IoT, smart manufacturing, VLSI, soft robotics and sensor design.	PO1, PO2, PO3, PO4, PO5, PO11; PSO1, PSO2	Strengthens innovation, design, problem analysis, modern tool usage and industry-relevant ECE competence.
SDG 11: Sustainable Cities and Communities	MSW management plant visit, smart-city planning, RMC plant visit, climate-resilient construction programme.	PO3, PO4, PO6, PO7, PO11; PSO3	Links engineering solutions with urban infrastructure, safety, sustainability and civic relevance.
SDG 12: Responsible Consumption and Production	Green manufacturing of steel, energy conservation, smart manufacturing, waste-management and RMC plant exposure.	PO6, PO7, PO8, PO11; PSO3	Supports responsible production, resource-use awareness, environmental compliance and ethical engineering practice.
SDG 13: Climate Action	Pollution control day, climate-resilient construction, renewable-energy and green-manufacturing sessions.	PO6, PO7, PO8, PO12; PSO3	Addresses climate awareness, environmental responsibility, societal impact and continued learning in sustainability-linked engineering.
SDG 17: Partnerships for the Goals	Activities involving external laboratories, industry experts, CSIR-CMERI and SDG expo formats.	PO9, PO10, PO11, PO12; PSO3	Promotes collaboration, communication, professional exposure and participation in institutional innovation ecosystems.

2.8. Steps Taken for Enhancing Industry Institute Partnerships (15)

(Provide details of partial delivery of courses, industry supported labs, industry offered short-term programs/training etc.)

The Department of Electronics and Communication Engineering has adopted a structured Industry-Institute Interaction (III) mechanism to connect curriculum delivery, laboratory practice, internships, industrial consultancy, expert interaction and project-based learning. The mechanism is not limited to one-time lectures; it is implemented through formal collaborations, MoUs wherever applicable, industry-supported laboratories, partial course delivery by external experts, short-term training, industrial visits, internship facilitation, consultancy-linked problems and faculty-guided student projects.

The department maintains activity-wise records such as MoU/collaboration documents, invitation letters, approval notes, notices, attendance sheets, expert profiles, photographs, student feedback, certificates, internship/project reports, utilization registers and action-taken records. These records are used to verify the continuity, relevance and effectiveness of Industry-Institute Partnership activities.

Table No. 2.8.1: Summary of Industry-Institute Partnership mechanisms and evidences.

S.N.	Partnership mechanism	Implementation in the department	Primary evidence / records	Expected outcome
1	MoUs and formal collaborations	MoUs, institutional collaboration records and activity approvals are used for expert	MoU copy, communication record, approval note, activity report, beneficiary list	Sustained access to industry expertise, facilities, problem statements and

		sessions, internships, industrial training, consultancy-linked work, technical visits and project mentoring.		external mentoring
2	Partial course delivery by industry experts	Industry experts, alumni and domain specialists deliver selected modules, demonstrations and application-oriented sessions in AI/ML, IoT, VLSI, embedded systems, communication systems, cloud and Industry 4.0 areas.	Invitation letter, schedule, attendance, presentation material, feedback analysis	Better alignment between syllabus content and industrial practice
3	Industry-supported and technology-supported laboratories	Students use FPGA boards, VIVADO, Mentor Graphics/Tanner EDA, ANSYS Electronics Desktop, antenna measurement kits, embedded boards, PCB fabrication support, Innovation Lab, XILINX/FPGA facility, Project Lab and Prototype Lab.	Lab stock register, utilization logbook, equipment list, project file, photographs	Hands-on exposure to tool flow, measurement practice, design realization and prototype validation
4	Short-term training / workshops	Training programs and workshops are organized in PCB design, embedded systems, MATLAB/Python, data analytics, cloud computing, IoT and wireless communication systems.	Notice, trainer profile, attendance, certificates, assignments, report	Employability-oriented skill development beyond routine curriculum
5	Internships, industrial exposure and industrial visits	Students are guided for summer internships, industrial training, project internships and field visits to industries, research facilities and technology organizations.	Offer/completion letter, diary/logbook, evaluation sheet, visit report, photographs	Workplace exposure, documentation practice, safety awareness and practical understanding of industrial systems
6	Industry-linked and consultancy-linked projects	Faculty-guided projects are linked with real industrial problem areas such as LiDAR-based steel bloom	Project proposal, progress review, dataset/problem statement, report,	Problem-solving ability, project management, data interpretation and applied engineering

		measurement, IBA-data-based predictive maintenance, cobble reduction, demand forecasting and applied AI/ML analytics.	prototype/demo record	design
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Faculty-led internship, training and collaboration activities supporting Industry-Institute Partnership.

IIPC maintains ongoing, wide-ranging engagements with industry and academia focused on industrial automation, sensing, data acquisition, and AI/ML-driven process analytics. Long-term collaborations with Durgapur Steel Plant (Steel Authority of India Limited), Bhilai Steel Plant (Steel Authority of India Limited), and the BAIET Foundation involve practical projects such as steel bloom measurement, LiDAR inspection, motor condition monitoring, IBA data analysis, prefailure alert generation, cobble reduction, and predictive maintenance—work that supports digital transformation and process intelligence in heavy-industry operations. A short, targeted engagement with Jyothy Labs applied time-series modelling and sales-data analytics to build demand-forecasting and decision-support frameworks.

Alongside industry projects, IIPC contributes to knowledge dissemination and capacity building through invited and expert lectures at the Centre for Development of Advanced Computing (Kolkata), Durgapur Government College, and Dr. B. C. Roy Polytechnic, and delivered a keynote technical discussion at Chittaranjan Locomotive Works. These activities cover AI and additive manufacturing applications, machine-learning fundamentals, cloud and AI/ML services for faculty and students, and sector-specific perspectives on automation, maintenance culture, and workforce readiness—bridging applied research, consultancy, and teaching to advance both industrial practice and academic training.

Table No. 2.8.3: Major steps taken for enhancing Industry-Institute Partnerships.

S.N.	Step initiative /	Mode of implementation	Department-level details	Relevance to students	POs/PSOs addressed	Evidence maintained
1	Industry-supported laboratories	Strengthening of laboratories through sponsored facilities, professional software tools, development boards, measurement platforms and prototype facilities.	Innovation Lab supported by Texas Instruments, XILINX/FPGA facility, VLSI/EDA tools, ANSYS Electronics Desktop, antenna measurement kit, PCB fabrication support, Project Lab and Advanced Prototype Lab are used for open-ended learning and project activity.	Students receive exposure to industrial tool chains, embedded platforms, FPGA implementation, simulation, RF/antenna measurement and hardware realization.	PO1, PO2, PO3, PO4, PO5, PO9, PO12; PSO1, PSO2, PSO3	Stock register, utilization register, project records, lab manuals, photographs
2	Partial delivery of courses	Selected modules, expert lectures, demonstrations, alumni sessions and application-oriented classes are delivered by industry experts	Topics include AI/ML, IoT, VLSI design flow, embedded systems, communication systems, cloud computing, data analytics, 5G/wireless systems	Students understand professional applications of classroom concepts and gain awareness of skill expectations in	PO1, PO5, PO8, PO10, PO12; PSO1, PSO2	Notice, attendance, expert profile, lecture material, feedback, activity report

		and domain specialists.	and Industry 4.0 applications.	industry.		
3	Industry-oriented training programs	Short-term training, workshops and certification-oriented sessions are organized with industries, technology partners, vendors and alumni.	Training areas include PCB design, embedded system development, MATLAB/Python, data analytics, cloud computing, IoT, wireless communication and industrial automation.	Students acquire tool-based and employment-oriented skills beyond the minimum syllabus requirement.	PO2, PO3, PO5, PO9, PO10, PO12; PSO1, PSO2	Schedule, attendance, certificates, assignment record, photographs
4	Industrial visits and field exposure	Students participate in organized visits to manufacturing units, research facilities, communication sectors, power/industrial plants and technology organizations.	Post-visit reports and faculty evaluation are used to document learning on industrial workflow, process control, instrumentation, safety and quality assurance.	Students connect theory with plant-level systems, industrial constraints and professional safety culture.	PO6, PO7, PO8, PO9, PO12; PSO2, PSO3	Permission letter, student list, visit report, photographs, feedback
5	Internship opportunities	Internships are facilitated through industries, startups, government organizations, research organizations and technology partners.	Students undertake industrial training, summer internship and project internship with report submission, presentation and evaluation.	Students develop workplace discipline, technical reporting ability and practical problem-solving experience.	PO3, PO4, PO8, PO9, PO10, PO11, PO12; PSO1, PSO2, PSO3	Offer letter, completion certificate, diary/logbook, evaluation sheet, report
6	Industry-sponsored / industry-linked projects	Project themes are identified from real industrial needs, consultancy assignments, faculty interaction and partner organizations.	Project areas include steel bloom measurement, predictive maintenance, cobble reduction, industrial sensing, data acquisition, demand forecasting, AI/ML analytics, embedded systems and prototype fabrication.	Students work on problem definition, design, data acquisition, modelling, testing, documentation and demonstration.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PO12; PSO1, PSO2, PSO3	Project proposal, review sheets, prototype records, report, demo photographs
7	Professional society and technical forum	Seminars, technical talks, hackathons, project exhibitions and	Students present projects, attend talks, interact with experts and participate in contests and	Students improve technical communication, teamwork,	PO8, PO9, PO10, PO12; PSO1,	Event report, certificates, photographs, judging sheet,

	activities	innovation challenges are arranged through IETE/IEEE-type forums, alumni and technical resource persons.	technical demonstrations.	engineering ethics and professional networking.	PSO2	participation list
8	MoUs and institutional collaborations	MoUs and formal collaboration documents are used wherever applicable to conduct internships, expert lectures, skill development programs, collaborative research and student training.	The department/institution uses these collaborations to access external expertise, technical facilities, project problems and training opportunities.	Students obtain structured exposure to industries, laboratories and professional bodies.	PO3, PO5, PO8, PO9, PO10, PO12; PSO1, PSO2, PSO3	MoU copy, correspondence, activity report, beneficiary list, outcome mapping

MoUs, Collaboration Records and Continuity Mechanism

MoUs and formal collaboration records are treated as operational instruments rather than only archival documents. The department uses them to plan expert lectures, partial module delivery, industrial training, internships, student visits, collaborative project guidance, technical demonstrations and skill-development programs. Where a formal MoU is not available for a specific one-time activity, the department maintains approval notes, invitation letters, correspondence, attendance, photographs and outcome reports as activity-level proof.

The Industry-Institute Interaction file is reviewed at department level. The review checks whether the activity supports course outcomes, project work, internship readiness, employability, higher studies or research orientation. Gaps identified from feedback are addressed through repeat training, selection of updated topics, mentoring for project teams, increased laboratory usage, follow-up with industry contacts and proposal of new MoUs/collaboration routes.

Table No. 2.8.4: Outcome-based review and records maintained.

S.N.	Activity type	Effectiveness parameter	Review frequency	Responsible unit	Records / proof
1	Expert lecture / partial course delivery	Attendance, student feedback, syllabus-gap relevance, CO/PO support and quality of interaction.	After each activity	Course coordinator / III coordinator	Notice, attendance, feedback, lecture notes, photographs
2	Short-term training workshop	Hands-on completion, assignment/output, certificate issue, tool relevance and student feedback.	After program completion	Training coordinator / HoD	Schedule, certificates, assessment sheet, report
3	Industry-supported laboratory usage	Utilization hours, project output, equipment usage, student-to-setup adequacy and working condition.	Semester-wise	Lab in-charge / technical staff	Logbook, stock register, lab record, project file

4	Internship / industrial training	Completion certificate, supervisor feedback, report quality, seminar evaluation and learning outcome.	Semester-wise	Internship coordinator / mentors	Offer letter, certificate, diary, evaluation sheet
5	Industry-linked project	Problem relevance, prototype/result quality, review performance, documentation quality and demonstration.	At every project review stage	Project coordinator / project guides	Synopsis, review sheet, report, demo photographs
6	MoU / collaboration activity	Number of activities conducted, beneficiaries, student participation, continuity and conversion into internships/projects/training.	Annual / semester-wise	HoD / III coordinator	MoU copy, correspondence, action-taken report, beneficiary list

Criterion 3: Outcome Based Assessment (120)

3.1. Evaluation of Continuous Assessment: Unit Tests, Mid-Term, Assignments, etc. (10)

(Describe the process of evaluation followed during continuous assessment to maintain quality of assessment; constructive alignment of questions with COs and hence POs/ PSOs. Details to be kept in course files for evaluation.)

1. Purpose and Scope

Continuous Assessment is implemented as a planned, documented and CO-mapped evaluation process for measuring student performance throughout the semester. The process covers unit tests, mid-term examinations, class tests, assignments, tutorials, laboratory sessional work, projects, presentations, viva-voce and other course-specific internal assessment components. Each assessment instrument is designed to test stated Course Outcomes and, through approved CO-PO/PSO mapping, supports the measurement of Program Outcomes and Program Specific Outcomes.

The evaluation process maintains assessment quality through explicit outcome tagging, Bloom's taxonomy tagging, uniform marking schemes, rubrics for descriptive or skill-oriented tasks, documented answer keys or solution outlines, representative evaluated scripts, CO-wise mark redistribution, weak learner analysis and corrective action records. These records are preserved in the respective course files for academic audit and NBA evaluation.

2. Continuous Assessment Framework

The internal assessment system is distributed across several instruments so that student learning is evaluated at regular intervals and through different modes. The framework combines written tests, analytical assignments, laboratory performance, design/problem-solving tasks and oral or presentation-based evaluation wherever applicable.

Assessment Component	Typical Purpose	Quality Control Mechanism	Primary Course File Evidence
Unit Test / Class Test	Evaluation of module-wise conceptual understanding, numerical ability and problem-solving skill.	Question-wise CO and Bloom level mapping; moderation of question paper; solution key; marks entry mapped to COs.	Question paper, answer key, evaluated scripts, mark sheet, CO-wise analysis.
Mid-Term / Internal Examination	Evaluation of a larger syllabus portion with balanced coverage of COs and cognitive levels.	Blueprint based on syllabus coverage; CO-wise distribution of marks; answer scheme; sample evaluated copies.	Mid-term paper, solution scheme, consolidated marks, CO redistribution sheet.
Assignments / Tutorials	Evaluation of self-learning, analytical thinking, design interpretation, simulation and technical reporting.	Task-wise CO-Bloom tagging; plagiarism/originality check where applicable; rubric-based evaluation.	Assignment brief, submitted samples, rubric, marks, feedback record.
Laboratory Sessional / Practical Work	Evaluation of experiment execution, data interpretation, instrument handling, simulation skill and viva performance.	Experiment-wise CO mapping; observation records; lab rubrics; viva questions; continuous performance log.	Lab manual, lab records, sessional marks, viva marks, evaluated samples.
Mini Project / Seminar / Presentation	Evaluation of design thinking, implementation, communication, literature use and team contribution.	Rubric covering technical accuracy, design/analysis depth, documentation, presentation and professionalism.	Rubrics, presentation records, project reports, attendance, marks and feedback.

3. Constructive Alignment with COs, POs and PSOs

Constructive alignment is ensured by linking every relevant assessment item to one or more Course Outcomes. Since each Course Outcome is already mapped with Program Outcomes and Program Specific Outcomes using the approved correlation matrix, performance in continuous assessment provides direct evidence toward PO and PSO attainment.

Stage	Practice Followed	Expected Evidence
CO definition	Course Outcomes are finalized before course delivery and communicated to students through course plans, lesson plans and course files.	Course plan, CO statement, CO-PO/PSO mapping matrix.
Assessment blueprint	Questions/tasks are selected to cover relevant COs and required Bloom levels. Suitable difficulty balance is maintained across recall, understanding, application, analysis and design-oriented tasks.	Assessment blueprint or question-wise mapping table.
Question/task tagging	Each question, problem, assignment task or practical component is	Tagged question paper, assignment

	tagged with CO number and Bloom level.	brief, lab evaluation sheet.
Evaluation	Marks are awarded using answer keys, marking schemes or rubrics depending on the assessment type.	Answer key, marking scheme, rubric and evaluated samples.
Attainment computation	Marks are redistributed CO-wise and converted into CO attainment percentages; the values are later used for PO/PSO attainment computation.	CO attainment sheet, PO/PSO attainment sheet.

4. Evaluation Process Followed for Maintaining Quality

4.1 Question Paper and Assignment Design

The concerned course instructor prepares the assessment instrument in alignment with the approved syllabus, teaching plan and Course Outcomes.

Questions are distributed across relevant COs so that the test does not remain limited to only memory-based recall.

Bloom levels are indicated wherever applicable, normally covering lower-order and higher-order cognitive skills depending on course level and module depth.

Assignment tasks are framed to support self-learning, analytical response, simulation/design work, literature use and structured technical reporting.

Academic integrity instructions, referencing expectations and submission rules are communicated to students for assignment-based evaluation.

4.2 Scrutiny, Moderation and Uniform Evaluation

Question papers and assignment tasks are reviewed for syllabus coverage, ambiguity, marks distribution, difficulty balance and CO alignment.

For common courses or multiple sections, coordination among concerned faculty members is maintained to ensure comparable evaluation standard.

Answer keys, model solutions or marking schemes are prepared for written assessment wherever applicable.

Rubrics are used for assignments, reports, presentations, projects, design work and laboratory-based continuous evaluation.

Evaluated scripts and sample student work are retained in the course file to demonstrate evaluation consistency and transparency.

4.3 Feedback and Corrective Action

Performance is analysed after each major continuous assessment component to identify weak COs, common error patterns and low-performing student groups.

Students are informed of their performance and are guided through discussion of solution approaches, frequent mistakes and expected answer quality.

Corrective actions include tutorial classes, problem-solving sessions, additional assignments, peer-assisted learning, remedial quizzes, lab demonstrations and targeted mentoring.

Follow-up evidence is maintained through attendance records, remedial action reports, re-test or quiz marks and improvement analysis wherever applicable.

5. CO-wise Mark Redistribution and Attainment Computation

For each continuous assessment component, marks obtained by students are redistributed to the corresponding COs according to the CO mapping of questions or tasks. If a question maps to more than one CO, the marks are apportioned as per the mapping rule adopted by the course instructor and department. The following computation model is used for evidence-based attainment analysis.

Computation Item	Expression / Rule	Interpretation
CO-wise percentage	CO Percentage = (Total CO-mapped	Student performance is measured

	marks obtained / Total CO-mapped marks possible) $\times 100$	separately for each CO from mapped questions or tasks.
Internal and end-semester weighted model	Final CO (%) = Internal (%) $\times 0.30$ + University (%) $\times 0.70$	Where adopted, internal and university components are combined using approved weightage.
Grade scale	Grade 3: $\geq 60\%$; Grade 2: 40% to 59%; Grade 1: $< 40\%$	Attainment level is assigned using the approved percentage range.
Target achievement	Student achieves target if assigned grade $\geq$ target grade	Target grade is normally fixed by the department/course committee.
Class-level CO attainment	CO Attainment (%) = (Number of students meeting target / Total students appeared) $\times 100$	Class attainment is calculated from student-level target achievement.
Attainment status	YES if CO attainment $\geq 60\%$; NO if CO attainment $< 60\%$	This rule identifies attained and non-attained COs for subsequent action.

6. Weak Learner Identification and Quality Improvement

Students requiring additional academic support are identified using CO-wise and overall internal assessment performance. A student may be considered for remedial support when performance remains below the target grade in two or more COs, when the average CO grade is below the target, or when repeated poor performance is observed in tests, assignments or laboratory evaluation.

Observed Issue	Identification Evidence	Corrective Measure	Follow-up Evidence
Low score in CO-mapped numerical questions	Question-wise analysis and CO attainment sheet	Additional numerical practice, tutorial class and solved problem discussion	Tutorial attendance, practice sheet, re-test/quiz marks
Weak conceptual clarity	Class test answer pattern, viva response and assignment quality	Concept revision class, peer learning and short concept quiz	Quiz score, faculty remark and improvement record
Poor laboratory execution	Observation book, lab sessional marks and viva performance	Repeat demonstration, supervised practice and lab mentoring	Updated lab record and improved sessional marks
Poor assignment/report quality	Rubric score, plagiarism/originality issue or incomplete submission	Resubmission with guidance, referencing support and format correction	Revised assignment and rubric-based improvement

3.2. Evaluation of Semester End Exam (SEE) Question Paper (10)

(Describe the process of setting of SEE papers & their evaluation to maintain quality of assessment, constructive alignment of questions with COs and POs/PSOs. Details to be kept in course files for evaluation.)

1. Purpose and Scope

The Semester End Examination (SEE) is considered a major direct assessment component for measuring student achievement against the stated Course Outcomes (COs). The SEE question paper setting, moderation, conduct, evaluation and result processing are carried out through a documented mechanism so that the final assessment is fair, syllabus-aligned, outcome-oriented and traceable to the Programme Outcomes (POs) and Programme Specific Outcomes (PSOs).

The department maintains SEE-related records in the course file to establish that the examination questions are constructively aligned with the COs, mapped to suitable cognitive levels, evaluated through a standard marking scheme, and used for CO attainment and subsequent PO/PSO attainment computation.

Parameter	Departmental Practice / Requirement
Assessment type	Direct assessment through Semester End Examination / University Examination.

Main quality focus	Question paper validity, CO coverage, Bloom-level distribution, syllabus coverage, difficulty balance, evaluation consistency and attainment traceability.
Outcome linkage	SEE question-wise marks are mapped to COs. CO attainment is used for PO/PSO attainment through CO-PO/PSO correlation.
Course-file evidence	Final SEE question paper, CO mapping sheet, moderation record, marking scheme, sample evaluated scripts and attainment calculation sheet.

2. Constructive Alignment of SEE Questions with COs and PO/PSO

Constructive alignment is ensured by connecting each SEE question to one or more COs before it is used for attainment calculation. Since each CO is already mapped with relevant POs and PSOs in the Course Articulation Matrix, the question-level CO mapping creates indirect traceability from individual SEE questions to POs/PSOs.

Alignment Layer	Process Followed	Evidence Maintained
Question to CO	Each question or sub-question is tagged with the relevant CO(s) as per the course outcome statement and syllabus unit coverage.	Question-wise CO mapping sheet attached with the SEE paper.
Question to Bloom Level	Questions are reviewed for appropriate cognitive level such as Remember, Understand, Apply, Analyse, Evaluate or Create, depending on the course requirement.	Bloom-level distribution table / question paper analysis sheet.
CO to PO/PSO	Mapped COs are linked to POs/PSOs through the approved CO-PO/PSO mapping matrix.	Course Articulation Matrix and CO-PO/PSO correlation table.
Marks to CO Attainment	Student marks obtained in CO-mapped questions are redistributed CO-wise for attainment computation.	CO-wise mark redistribution and attainment sheet.

3. SEE Question Paper Setting Process

The SEE question paper is prepared to test the expected depth and breadth of the course. The setter ensures adequate coverage of all prescribed modules, suitable distribution of marks, inclusion of numerical/design/analytical questions wherever applicable, and coverage of the mapped COs.

Step	Activity	Quality Control
S1	Review of syllabus, lesson plan, CO statements and approved CO-PO/PSO mapping before paper setting.	Prevents questions outside syllabus and ensures outcome-linked paper design.
S2	Preparation of SEE question paper with marks distribution as per institutional / university examination pattern.	Maintains uniformity of question structure, total marks and time requirement.
S3	Question-wise tagging with CO and Bloom level.	Provides traceability for attainment calculation and cognitive-level verification.
S4	Preparation of answer key / solution outline / marking scheme for descriptive, numerical and design-based questions.	Improves uniformity in evaluation and reduces evaluator-dependent variation.
S5	Submission of paper set(s), mapping sheet and marking scheme to the competent examination authority.	Creates documented evidence for moderation and approval.

4. SEE Process for Autonomous Batch: AY 2025-26 Onwards

For autonomous batches, SEE paper setting and evaluation are conducted through the college examination mechanism under the Controller of Examinations (COE). The following process is followed and retained as examination evidence.

Stage	Process Description	Responsibility / Record
Three-set submission	The course teacher prepares three SEE question paper sets, namely Set-I, Set-II and Set-III, along with question-wise CO mapping and proposed marks distribution.	Course teacher / setter; three question paper sets and mapping sheets.
Submission to COE	All sets are submitted to the COE with the marking scheme or solution outline, wherever applicable.	COE receipt / submission record.
Moderation	The COE sends the sets to appointed moderators. Moderation checks syllabus coverage, CO coverage balance, ambiguity, difficulty level, time feasibility and fairness.	Moderator comments and corrected versions.
Finalisation	The COE finalises the moderated paper for conduct of SEE, maintaining confidentiality and examination control.	Final approved question paper.
Conduct of SEE	The examination is conducted as per the notified academic calendar and examination rules.	Attendance sheet, seating arrangement and examination record.
Evaluation	Answer scripts are evaluated by an internal faculty pool under COE supervision using the approved marking scheme.	Evaluator allocation record, evaluated scripts and marks statement.
Attainment integration	SEE marks are incorporated into CO attainment calculation using the adopted weightage model.	CO attainment sheet and PO/PSO attainment sheet.

5. SEE Process for Non-Autonomous Batches: AY 2024-25 and Earlier

For non-autonomous batches governed by MAKAUT, the Semester End Examination is conducted by the University as per the programme announced by the Controller of Examinations. The department preserves university question papers, results and internal course-file mapping records to support CO attainment and PO/PSO traceability.

Although the university centrally conducts the examination, the department analyses the SEE question paper after the examination, maps questions to COs wherever required for attainment calculation, and uses the available marks evidence along with internal assessment data for course outcome analysis.

Item	Autonomous Batch	Non-Autonomous / MAKAUT Batch
Question paper setting	Three sets prepared by course teacher and submitted to COE.	Question paper set by University as per examination system.
Moderation	Moderation through COE-appointed moderator(s).	As per University mechanism; departmental post-exam CO mapping retained for attainment.
Evaluation	Internal faculty pool under COE supervision.	University evaluation process; marks used for attainment analysis.
Course-file record	Paper sets, final paper, moderation record, marking scheme, evaluated samples and attainment sheet.	University question paper, result / marks record, CO mapping, attainment sheet and analysis.

6. Evaluation Method and Quality Assurance

SEE evaluation is carried out using a marking scheme or solution outline so that marks are awarded uniformly across evaluators and answer scripts. For numerical problems, design questions and derivations, step-wise marks are indicated wherever possible. For descriptive questions, key points, expected depth, assumptions and diagrams are considered during evaluation.

Evaluation Quality Parameter	Implementation
Standard marking scheme	Model answer / solution outline is prepared or used to guide uniform evaluation.
Step-wise evaluation	Marks are awarded for intermediate steps, assumptions, formula selection,

	diagrams, derivations and final answer correctness as applicable.
Fairness and consistency	Evaluator instructions and moderation of evaluation practices reduce variation across scripts.
Sample verification	Representative evaluated scripts are preserved in the course file for audit and departmental review.
Result analysis	CO-wise performance, weak COs, common errors and attainment gaps are identified after evaluation.

7. CO-wise Redistribution of SEE Marks and Attainment Computation

After evaluation, marks obtained by each student in SEE questions are redistributed to the mapped COs. If a question is mapped to more than one CO, the marks are distributed as per the adopted question-level mapping rule. This ensures that the final CO attainment is not based only on total marks, but on outcome-wise performance.

CO Percentage = (Total CO-mapped marks obtained / Total CO-mapped marks possible) x 100

Final CO Percentage = (Internal Assessment Percentage x 0.30) + (SEE / University Examination Percentage x 0.70)

The computed CO-wise final percentages are used for grade assignment, target achievement checking and class-level CO attainment. The CO attainment values are then transferred to PO/PSO computation using the approved CO-PO/PSO correlation matrix.

Attainment Stage	Basis of Calculation	Output
Student-level CO score	Marks obtained in questions mapped to a CO divided by maximum marks available for that CO.	CO-wise percentage for each student.
Final CO percentage	Internal assessment and SEE / university marks combined using approved weightage.	Final CO-wise percentage.
Target check	Student CO grade / percentage compared against defined target.	Target achieved / not achieved.
Class-level CO attainment	Number of students meeting target divided by number of students appeared.	CO attainment percentage and status.
PO/PSO attainment	CO attainment combined using CO-PO/PSO correlation weights.	PO/PSO attainment values.

3.3. Evaluation of Laboratory Work and Workshop (Continuous and SEE) (10)

(Describe different assessment tools — semester end examinations, mid-semester tests, laboratory examinations, student portfolios etc. — to measure the student learning and hence attainment of course outcomes. Student portfolio is a collection of artifacts that demonstrate skills, personal characteristics and accomplishments created by the student during study period. The process adopted to map the assessment questions, parameters of assessment rubrics etc. to the course outcomes to be explained with examples. The process of data collection from different assessment tools and the analysis of collected data to arrive at CO attainment levels need to be explained with examples.)

This section describes the assessment tools used for laboratory, workshop, project-based and practice-oriented courses, the method adopted for mapping assessment parameters to Course Outcomes (COs), the data collection process, and the analysis procedure used to compute CO attainment levels. The evaluation mechanism is designed to verify student performance in practical knowledge, experimental procedure, observation, analysis, design ability, safety practice, documentation, teamwork and professional communication.

A. Purpose and Scope

Laboratory work and workshop practice are evaluated as direct, outcome-oriented learning components. The purpose is to assess whether students can translate classroom concepts into experimental, design, simulation, fabrication, testing and troubleshooting tasks. Continuous assessment records day-to-day performance, while the end-semester laboratory examination verifies independent execution, interpretation of results and viva-voce

performance under controlled conditions.

Parameter	Departmental Practice / Requirement
Assessment type	Direct assessment through continuous laboratory assessment, laboratory records, internal practical tests, viva-voce, student portfolio and semester-end laboratory / workshop examination.
Main quality focus	CO coverage, practical skill measurement, rubric-based evaluation, procedural accuracy, result analysis, safety compliance and attainment traceability.
Outcome linkage	Experiment-wise marks, test marks, viva marks, portfolio marks and SEE marks are mapped to relevant COs. CO attainment is later used for PO/PSO attainment through the approved CO-PO/PSO matrix.
Course-file evidence	Laboratory manual, experiment list, CO mapping sheet, rubrics, attendance, laboratory records, continuous assessment sheet, practical examination marks, sample records and attainment sheet.

B. Assessment Tools Used for Laboratory and Workshop Evaluation

Different assessment tools are used because laboratory learning cannot be measured only through one final examination. Continuous tools measure preparation, participation and skill development across the semester. End-semester tools measure individual competence after completion of the prescribed laboratory or workshop component.

S. No.	Assessment Tool	Purpose of Assessment	Typical Evidence Maintained
1	Laboratory attendance and participation	Measures regularity, engagement in experiments, safety practice and participation in assigned tasks.	Attendance register, lab batch sheet, observation record.
2	Pre-lab preparation / oral questions	Checks readiness, understanding of theory, circuit / setup knowledge and awareness of procedure before starting the experiment.	Pre-lab questions, faculty observation, viva record.
3	Experiment execution / workshop task performance	Measures ability to use instruments, tools, machines, software, components and prescribed procedures.	Experiment-wise assessment sheet, workshop job card, faculty rubric.
4	Observation, calculation and analysis	Measures correctness of observations, tabulation, graph plotting, result interpretation, error analysis and engineering judgement.	Laboratory record, observation book, evaluated sheets.
5	Laboratory record / journal	Measures documentation quality, neatness, completeness, diagrams, circuit connections, results and conclusion writing.	Signed laboratory record / journal.
6	Mid-semester laboratory test / internal practical test	Measures independent performance during the semester and identifies weak COs early.	Internal test paper / task sheet, marks sheet, evaluated scripts.
7	Student portfolio	Collects student-created artifacts such as experiment reports, mini-project outputs, simulation files, workshop models, photographs, reflection notes and certificates related to laboratory learning.	Portfolio file / digital folder with artifacts and rubric.
8	Semester-end laboratory / workshop examination	Measures final practical competence, execution ability, result analysis and viva performance.	Practical examination question, answer / record sheet, external/internal marks, viva marks.

C. Constructive Alignment of Assessment Parameters with COs

Each laboratory course defines COs that represent measurable practical abilities. Before the start of the semester,

the course teacher maps each experiment, workshop job, internal practical test, portfolio component and end-semester practical examination to the relevant COs. The same mapping is used during marks entry and CO attainment calculation.

Alignment Layer	Process Followed	Evidence Maintained
Experiment / workshop task to CO	Each experiment, simulation, fabrication activity or workshop job is tagged with one or more COs according to its learning intent.	Experiment-wise CO mapping sheet.
Rubric parameter to CO	Assessment parameters such as setup preparation, execution, observation, analysis, documentation and viva are linked with suitable COs.	Rubric-CO mapping table.
Question / task to CO	Internal laboratory test and semester-end laboratory examination questions are mapped to COs before marks are redistributed.	Question-wise CO mapping sheet.
CO to PO/PSO	Mapped COs are linked to POs and PSOs through the approved Course Articulation Matrix.	CO-PO/PSO correlation matrix.
Marks to attainment	Student marks from different tools are consolidated CO-wise using the approved weightage model.	CO-wise mark redistribution and attainment sheet.

D. Sample Rubric for Continuous Laboratory / Workshop Assessment

A rubric-based method is used to reduce evaluator-dependent variation and to make the assessment transparent. The following sample illustrates how continuous laboratory and workshop marks may be assigned and connected with COs. The exact weightage may vary according to the approved course structure.

Rubric Parameter	Marks / Weightage	Performance Indicators	Mapped CO Example
Preparation and understanding	10%	Understands aim, theory, circuit / tool requirement, procedure and safety precautions.	CO1
Experimental / workshop execution	30%	Connects circuit / setup correctly, uses instruments or machines properly, follows procedure and completes the assigned job.	CO2
Observation and data recording	15%	Records readings accurately, maintains units, tables, graphs and required measurements.	CO2, CO3
Analysis and interpretation	20%	Performs calculation, compares expected and observed results, identifies errors and draws valid conclusions.	CO3
Documentation / portfolio evidence	15%	Maintains laboratory record, simulation files, workshop job sheet, photographs and reflective notes in proper format.	CO4
Viva-voce and communication	10%	Explains method, result, limitations, safety issues and application of the experiment / workshop task.	CO1, CO4

E. Example of Experiment-wise CO Mapping

The course teacher prepares an experiment-wise mapping matrix for every laboratory course. This matrix is used for planning coverage, identifying assessment focus and computing CO-wise attainment.

Experiment / Activity	Assessment Components	Mapped COs	Assessment Evidence
Experiment 1: Verification / measurement-based experiment	Setup, observation, calculation and viva	CO1, CO2	Observation sheet, evaluated lab record, viva marks.
Experiment 2: Design / simulation-based experiment	Design logic, simulation result, interpretation and documentation	CO2, CO3	Simulation file, report, marks sheet.

Experiment 3: Hardware implementation / troubleshooting	Implementation, fault identification, testing and result analysis	CO2, CO3, CO4	Hardware evaluation sheet, faculty rubric.
Workshop job / fabrication task	Tool handling, accuracy, safety, finish and submission	CO2, CO4	Job card, dimensional check sheet, workshop record.
Student portfolio	Compilation of reports, outputs, photographs, reflections and improvement evidence	CO3, CO4	Portfolio evaluation rubric.
Semester-end practical examination	Individual task execution, result analysis and viva-voce	CO1, CO2, CO3, CO4	Practical exam mark sheet and CO mapping.

F. Data Collection Process

Assessment data are collected throughout the semester in a structured manner. Each assessment entry is linked with a defined assessment tool and mapped CO. This allows the department to compute CO attainment from actual student performance rather than from aggregate marks alone.

Stage	Data Collected	Responsible Person	Record / Format
Beginning of semester	List of experiments / workshop tasks, CO mapping, assessment plan and rubrics.	Course teacher / laboratory in-charge	Laboratory manual, course file, assessment plan.
During each laboratory class	Attendance, preparedness, execution quality, observation, documentation and safety practice.	Laboratory teacher / technical assistant	Continuous assessment sheet and observation register.
Mid-semester review	Internal practical test marks, incomplete records, weak experiment performance and feedback.	Course teacher	Internal test marks sheet and review note.
Portfolio submission	Reports, simulation files, photographs, models, reflective notes and selected artifacts.	Course teacher	Portfolio rubric and checklist.
End-semester examination	Practical task marks, record marks, viva marks and external/internal examiner marks.	Examiner / COE / department	Practical examination marks statement.
After evaluation	CO-wise redistributed marks, attainment percentage, target achievement and weak COs.	Course teacher / Programme Assessment Committee	CO attainment sheet and analysis report.

G. CO Attainment Calculation from Laboratory / Workshop Assessment

After completion of assessment, marks obtained by each student are redistributed to the mapped COs. If an assessment component is mapped to more than one CO, marks are apportioned according to the approved mapping rule. The CO-wise percentage is then calculated and compared with the predefined attainment target.

CO Percentage = (Total CO-mapped marks obtained / Total CO-mapped marks possible) x 100

Final Laboratory CO Percentage = (Continuous Assessment Percentage x Internal Weightage) + (SEE Laboratory / Workshop Examination Percentage x SEE Weightage)

Assessment Component	Typical Weightage	Mapped Data Used for CO Attainment
Continuous laboratory / workshop performance	40% to 60%	Experiment-wise execution marks, observation marks, record marks, safety and attendance-linked performance marks.
Mid-semester laboratory test / internal practical test	10% to 20%	Task-wise marks redistributed to mapped COs.
Student portfolio / report / project	10% to 20%	Portfolio rubric marks mapped to documentation, analysis,

evidence		self-learning and application-related COs.
Semester-end laboratory / workshop examination	30% to 50%	Practical task marks, record marks and viva marks mapped to relevant COs.

H. Illustrative CO Attainment Analysis

The following format may be used to show how collected assessment data are analysed to determine CO attainment. Actual values are entered course-wise after completion of the laboratory / workshop assessment.

CO	Marks Source	Average Percentage	CO	Target	Attainment Status	Observation
CO1	Pre-lab, viva, SEE viva	78%		60%	Achieved	Students understood concepts and procedure satisfactorily.
CO2	Execution, tool / instrument use, practical task	72%		60%	Achieved	Most students could perform experiments with acceptable procedural accuracy.
CO3	Observation, calculation, result analysis, portfolio	58%		60%	Marginal / Not achieved	Difficulty observed in error analysis and interpretation of results.
CO4	Record, report, portfolio, communication	74%		60%	Achieved	Documentation and oral explanation were satisfactory.

I. Course File Evidence Maintained for NBA Evaluation

- Laboratory manual / workshop manual with experiment list and course outcomes.
- Experiment-wise / workshop-task-wise CO mapping sheet.
- Assessment rubrics for continuous assessment, portfolio and end-semester practical examination.
- Laboratory attendance and batch allotment record.
- Continuous assessment sheet showing student-wise and experiment-wise marks.
- Mid-semester laboratory test / internal practical test records, wherever applicable.
- Student laboratory records, journals, observation books and workshop job sheets.
- Student portfolio samples containing reports, simulation outputs, photographs, models, reflective notes and other artifacts.
- Semester-end laboratory / workshop examination question / task sheet, viva record and marks statement.
- CO-wise mark redistribution sheet and CO attainment calculation.
- Weak CO analysis and corrective action record for the next course offering.

J. Review and Corrective Action Mechanism

After completion of laboratory / workshop evaluation, the course teacher reviews CO-wise attainment with the department. If any CO remains below the target, the experiment design, laboratory demonstration, student preparation level, instrument availability, rubrics and common student errors are examined. Corrective measures are recorded and implemented in the next cycle.

Observed Issue	Possible Corrective Action
Low attainment in execution-related CO	Increase demonstrations, provide video / written procedure, conduct supervised practice and improve batch-wise mentoring.
Poor observation and calculation	Introduce pre-formatted observation tables, sample calculations and

accuracy	additional checking during laboratory hours.
Weak result analysis and interpretation	Add post-lab discussion, error-analysis exercises and comparison of theoretical and practical outcomes.
Incomplete laboratory records / portfolios	Use periodic record checking, portfolio checklist and defined submission deadlines.
Common safety or tool-handling errors	Repeat safety briefing, display operating instructions and assess safety compliance through rubrics.

3.4. Evaluation of Industrial Training/ Internship (Continuous and SEE) (10)

(Provide details of rubrics used to assess learning in internships/industrial trainings linking POs/PSOs targeted for attainment. Evidence of student assessments using rubrics should be kept in the course file for evaluation.)

1. Purpose and Scope

Industrial Training / Internship is evaluated as an outcome-oriented learning component intended to assess student exposure to industrial practices, engineering problem identification, application of domain knowledge, use of modern tools, professional communication, ethics, teamwork and self-learning. The evaluation process is carried out through continuous monitoring and end-semester assessment using defined rubrics linked with the relevant Course Outcomes (COs), Programme Outcomes (POs) and Programme Specific Outcomes (PSOs).

The assessment evidence is preserved in the course file to demonstrate that student performance in internships / industrial trainings is evaluated systematically, transparently and consistently. The final assessment record supports CO attainment calculation and, through CO-PO/PSO mapping, contributes to PO/PSO attainment evidence.

Parameter	Departmental Practice / Requirement
Assessment component	Industrial Training / Internship including continuous monitoring and end-semester evaluation / viva-voce / presentation / report assessment.
Quality focus	Training relevance, technical learning, problem-solving exposure, documentation quality, presentation, professional conduct and industry feedback.
Outcome linkage	Rubric criteria are mapped with COs. COs are linked to POs/PSOs through the approved course articulation matrix.
Course-file evidence	Training approval, industry certificate, diary/logbook, report, presentation, viva records, rubric sheets, marks statement and attainment sheet.

2. Assessment Scheme for Industrial Training / Internship

The assessment scheme may vary as per the applicable curriculum and examination regulation. However, the department follows a common quality framework in which student learning is assessed through continuous evidence during training and final evaluation through report, presentation and viva-voce.

Assessment Stage	Indicative Components	Evaluator / Evidence
Continuous Assessment	Training progress, diary/logbook, weekly or periodic reporting, supervisor interaction, problem understanding, discipline and professional conduct.	Faculty mentor / training coordinator; logbook, progress record, mentor review sheet and industry communication.
Industry Assessment	Workplace conduct, attendance, task completion, technical involvement, initiative, teamwork and supervisor feedback.	Industry supervisor certificate / feedback form / completion certificate.
SEE / Final Evaluation	Internship report, seminar presentation, viva-voce, demonstration of learning, technical analysis and reflection on outcomes.	Departmental evaluation panel; report, PPT, viva sheet and rubric-based marks.
Attainment	Criterion-wise marks are aggregated and	CO-wise attainment sheet and

Processing	redistributed to COs according to the rubric mapping.	PO/PSO computation sheet.
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3. Constructive Alignment with COs and POs/PSOs

Constructive alignment is ensured by mapping each internship assessment criterion to the relevant COs. The mapped COs are linked to POs/PSOs through the approved CO-PO/PSO mapping matrix. This makes the internship assessment traceable from student evidence to CO attainment and then to PO/PSO attainment.

Alignment Layer	Process Followed	Evidence Maintained
Rubric criterion to CO	Each criterion such as technical learning, tool usage, documentation, communication and professional conduct is mapped to one or more COs.	Internship assessment rubric with CO tags.
CO to PO/PSO	Mapped COs are linked to POs/PSOs using the approved course articulation matrix.	CO-PO/PSO mapping matrix in course file.
Student evidence to marks	Training report, certificate, logbook, presentation and viva performance are evaluated using rubrics.	Evaluated rubric sheets and marks register.
Marks to attainment	Criterion-wise marks are aggregated and converted to CO-wise performance for attainment analysis.	CO attainment calculation sheet.

4. Internship / Industrial Training Rubric Framework

The following generic rubric framework is used for assessing learning in internships and industrial trainings. Course-specific and regulation-specific weightages may be inserted by the concerned course teacher / training coordinator. The final rubric sheet used in the course file must show actual CO codes and targeted PO/PSO codes.

Rubric Criterion	What is Assessed / Evidence	Weight (%)	Indicative Target	CO-PO/PSO
Training relevance and approval	Relevance of the industry / organisation / domain to ECE; clarity of training objectives; approval before commencement.	5-10	COx -> PO6/PO11/PSO	
Technical learning and domain exposure	Understanding of industrial process, systems, tools, standards, products, workflows or engineering practices observed during training.	15-20	COx -> PO1/PO2/PSO1	
Problem identification and engineering analysis	Ability to identify engineering problems, constraints, practical limitations, failure modes or improvement opportunities.	15-20	COx -> PO2/PO3/PO4	
Use of modern tools / methods	Exposure to instruments, software, design tools, testing platforms, automation systems, data acquisition or industry-standard procedures.	10-15	COx -> PO5/PSO2	
Training diary / logbook and continuous reporting	Regularity of entries, clarity of weekly work, mentor interaction, attendance and evidence of continuous engagement.	10-15	COx -> PO9/PO10/PO12	
Internship report quality	Structure, technical content, diagrams, analysis, learning reflection, referencing, formatting and originality.	15-20	COx -> PO10/PO12	
Presentation and	Clarity of presentation, response to questions, depth of understanding, ability to connect	15-20	COx -> PO10/PO12/PSO	

viva-voce	training with curriculum and outcomes.		
Professional conduct and ethics	Discipline, punctuality, workplace behaviour, teamwork, safety awareness, confidentiality and responsible conduct.	5-10	COx -> PO8/PO9

5. Rubric Performance Levels

Each criterion is assessed using a four-level scale to maintain uniformity across evaluators. The scale may be converted to marks as per the assigned criterion-wise weightage.

Level	Descriptor	Performance Description
Level 4	Excellent	Demonstrates strong technical understanding, clear evidence of training engagement, independent analysis, professional documentation and confident viva response.
Level 3	Good	Shows adequate technical understanding and satisfactory evidence; minor gaps in analysis, documentation or presentation.
Level 2	Satisfactory	Shows partial understanding; limited evidence of industrial exposure; weak analysis or reporting; requires guidance.
Level 1	Poor	Incomplete or weak evidence; poor understanding of training work; inadequate documentation; unable to justify learning during viva.

6. Continuous Evaluation Process

Continuous evaluation is conducted during or immediately after the training period through mentor monitoring, diary/logbook review, progress interaction and verification of training evidence. This stage ensures that the student is not evaluated only at the end, but is monitored for continuity, sincerity and learning progression.

Continuous Evaluation Item	Assessment Method	Record Maintained
Training approval and registration	Verification of training organisation, topic, duration, mentor allocation and student registration.	Approval form / registration list.
Periodic progress monitoring	Faculty mentor checks training progress through logbook, email update, meeting or other approved communication mode.	Mentor review sheet / progress record.
Diary / logbook assessment	Student records day-wise or week-wise activities, observations, tools used, learning points and supervisor validation.	Signed diary / logbook.
Industry feedback	Supervisor feedback on attendance, conduct, task involvement and learning attitude is collected where available.	Feedback form / certificate.

7. SEE / Final Evaluation Process

The end-semester / final evaluation is conducted by the departmental panel through report assessment, seminar presentation and viva-voce. The panel evaluates the student using the approved rubric and verifies whether the reported training work is technically meaningful, adequately documented and aligned with the expected outcomes of the internship course.

Final Evaluation Component	Evaluation Focus	Evidence
Internship / training report	Technical depth, organisation profile, work description, tools used, analysis, diagrams, learning outcomes and formatting.	Bound / soft-copy report with declaration and certificate.

Seminar presentation	Clarity, sequencing, visual quality, technical explanation, time management and ability to summarise training outcomes.	Presentation file and panel assessment sheet.
Viva-voce	Understanding of industrial work, concepts, methods, limitations, safety, ethics and relevance to ECE curriculum.	Viva marks sheet / rubric sheet.
Certificate and supervisor feedback	Completion, duration, attendance, conduct and industry validation of training.	Industry certificate and feedback form.

8. Sample CO-PO/PSO Linkage for Internship Rubrics

The table below provides a model linkage. The exact COs and PO/PSO targets must be replaced with course-specific codes approved for the corresponding internship / industrial training course.

Internship Assessment Criterion	Probable CO Linkage	Targeted PO/PSO Linkage
Technical learning and industrial exposure	CO1: Explain industrial systems, processes, tools and professional practices relevant to ECE.	PO1, PO2, PSO1
Problem identification and analysis	CO2: Analyse practical engineering problems, constraints and improvement opportunities observed during training.	PO2, PO3, PO4
Modern tool / instrumentation exposure	CO3: Demonstrate awareness of tools, instruments, software platforms or test methods used in industry.	PO5, PSO2
Professional communication and documentation	CO4: Prepare a structured technical report and present training outcomes effectively.	PO10, PO12
Professional ethics, teamwork and lifelong learning	CO5: Demonstrate discipline, teamwork, ethical conduct and self-learning attitude in an industrial environment.	PO8, PO9, PO12

9. Evidence of Student Assessment Kept in Course File

The following documents are preserved in the internship / industrial training course file for NBA evaluation and verification:

- Approved CO-PO/PSO mapping for the internship / industrial training course.
- Assessment scheme showing continuous and SEE / final evaluation components.
- Student-wise training approval / registration list with industry or organisation details.
- Internship offer / permission letter, where available.
- Industry completion certificate mentioning duration and nature of training.
- Industry supervisor feedback form / conduct report, where available.
- Student training diary / logbook with periodic entries and mentor verification.
- Faculty mentor review records or progress monitoring sheets.
- Internship / industrial training report submitted by each student.
- Presentation schedule, panel constitution and seminar evaluation sheets.
- Viva-voce assessment records and evaluated rubric sheets.
- Criterion-wise marks register and final marks statement.
- Sample evaluated rubrics of low, average and high performers.

- CO-wise attainment sheet and linked PO/PSO attainment computation.
- Corrective-action record for weak performance trends, if identified.

10. Quality Assurance and Corrective Action

After completion of evaluation, the training coordinator and course teacher analyse student performance criterion-wise and CO-wise. If weak performance is observed in technical analysis, reporting, tool exposure or communication, corrective measures are planned for the next cycle. These may include pre-internship orientation, improved logbook format, structured mentor reviews, better report template, industry-domain briefing sessions and viva preparation support.

Observed Gap	Corrective Action
Weak report quality	Provide report template, sample structure, referencing instructions and pre-submission review.
Poor linkage between training and curriculum	Conduct pre-internship orientation explaining expected COs, PO/PSO linkage and documentation requirements.
Insufficient technical depth	Guide students to include system diagrams, tools used, process flow, observations, limitations and engineering analysis.
Weak viva performance	Arrange mentor-level review meeting and presentation rehearsal before final evaluation.
Incomplete evidence	Use a standard checklist for certificate, diary, report, presentation and feedback collection before assessment.

3.5. Evaluation of Projects (20)

(Provide details of rubrics used to assess learning in projects linking POs/PSOs targeted for attainment. Evidence of student assessments using rubrics should be kept in the course file for evaluation.)

1. Purpose and Scope

The Department of Electronics and Communication Engineering follows a structured and transparent mechanism for project identification, guide allotment, progress monitoring, evaluation and attainment mapping. The process is designed to maintain domain relevance, balanced supervision, equal opportunity among students, measurable project-quality control and direct linkage with Program Outcomes (POs) and Program Specific Outcomes (PSOs).

Project assessment is conducted using criterion-based rubrics covering problem identification, literature and standards study, design methodology, implementation, testing, teamwork, documentation, professional conduct, sustainability, safety, ethics, project management, dissemination and final defence. The evaluated rubric sheets and supporting evidence are archived in the course file for NBA verification.

2. Quality Factors Considered for Student Projects

S.N.	Quality Factor	Implementation in Project Evaluation	Mapped PO/PSO
1	Environment and sustainability	Preference is given to projects that minimize energy use, reduce waste, avoid avoidable hazardous materials and promote sustainable engineering choices.	PO6, PO7, PSO3
2	Safety	Hardware, electrical, RF, embedded, robotics and laboratory projects are checked for safe operating voltage/current limits, mechanical safety, thermal risk and user safety.	PO6, PO8, PSO3
3	Ethics	Projects involving data, surveillance, biomedical signals, automation or social systems are reviewed for responsible use, privacy, fairness and misuse risk.	PO8, PO6, PSO3
4	Cost and feasibility	Teams prepare a bill of material, use available laboratory resources where possible and justify cost against scope and expected outcome.	PO11, PO3
5	Type of project	Projects are classified as application, product, research, review,	PO3, PO4, PO5

		simulation, hardware prototype or software/algorithm development so that assessment criteria remain suitable.	
6	Standards and good practice	Students are encouraged to refer to datasheets, communication standards, safety norms, documentation conventions, coding standards and testing procedures where applicable.	PO5, PO11, PSO2
7	Prototype / implementation	Projects are expected to produce a working prototype, validated simulation, algorithmic model, design file or demonstrable experimental result.	PO3, PO4, PO5, PSO1, PSO2
8	Communication and documentation	Reports, presentations, viva voce, posters, demonstrations and design records are assessed for clarity and traceability.	PO10, PO12

3. Project Identification and Topic Screening

Project topics are collected from students, faculty members, laboratory requirements, industry interactions, local societal needs, recent ECE technology trends and research problems.

Each topic is screened for ECE relevance, feasibility, time and resource requirement, component/software availability, risk, cost, safety, ethical acceptability and expected contribution to POs/PSOs.

Projects may include hardware prototypes, simulation-based studies, embedded and IoT systems, signal-processing applications, communication models, VLSI or circuit design tasks, control/instrumentation systems, data-driven applications and interdisciplinary ECE applications.

Topics having scope for publication, patentable idea development, external competition participation, industry linkage or social utility are encouraged when feasible for undergraduate execution.

4. Student Release and Guide Allotment Process

The department follows a phased and transparent process for project group formation and guide allotment. Student names are released in three phases based on CGPA. A list of faculty members with relevant domains is circulated. Students approach faculty members for supervision consent based on domain interest, proposed topic and faculty availability.

Each project group may consist of up to three students.

Each faculty member may supervise a maximum of three project groups, subject to workload balancing.

Each project group preferably includes one student from each CGPA-based release phase to maintain diversity and equal opportunity.

Faculty members select students from approaching candidates based on domain suitability, student interest, feasibility and group balance.

Final allotment is approved by the department after checking group size, supervisor load, domain fit and fairness of distribution.

Step	Activity	Responsibility	Evidence Maintained
1	Preparation of tentative project/domain areas and faculty expertise list.	Department / Faculty members	Faculty-domain list, notice/circulation
2	Release of student names in three phases based on CGPA.	Department	Phase-wise student release list
3	Students approach faculty members for supervision consent.	Students / Faculty members	Student request, faculty consent record
4	Formation of project groups with up to three students, preferably one from each phase.	Faculty / Department	Group formation sheet
5	Faculty load verification with maximum three groups per supervisor.	HoD / Project coordinator	Guide-load statement
6	Final approval and publication of guide allotment.	Department	Approved project allotment list

5. Project Proposal and Initial Approval

After guide allotment, each team prepares a project proposal containing the problem statement, objectives, scope, methodology, expected deliverables, project type, budget, risk/safety considerations, ethical considerations and preliminary PO/PSO mapping. The supervisor verifies technical feasibility and confirms the proposal before departmental review.

Proposal Component	Purpose	Evidence
Problem statement and objectives	Defines the engineering problem and expected outcome.	Approved project proposal
Literature / datasheet / standards study	Supports technical background and method selection.	Reference list, datasheets, notes
Methodology and work plan	Shows design approach, tools, hardware/software and schedule.	Methodology chart, Gantt chart
Budget and resource requirement	Records expected components, software, instruments and cost.	BOM, cost sheet
Risk, safety and ethics note	Checks safe execution, responsible use and data/privacy issues where applicable.	Checklist / guide remarks
PO/PSO mapping	Links project work with graduate attributes and programme-specific outcomes.	PO/PSO mapping sheet

6. Continuous Monitoring and Review Mechanism

Continuous assessment is carried out through scheduled project reviews and supervisor-level monitoring. A Project Progress Form is filled for each review or milestone, confirmed and signed by the project supervisor, and circulated to the mentor for student-level follow-up wherever required. The form records work completed, pending work, attendance/participation, technical issues, corrective instructions and the next milestone.

Stage	Monitoring Focus	Evidence Maintained	PO/PSO Link
Project identification and proposal	Problem relevance, feasibility, project type, guide approval, expected deliverables, budget and safety/ethics screening.	Proposal, allotment record, preliminary PO/PSO mapping, supervisor consent.	PO1, PO2, PO3, PO6, PO8, PO11, PSO1-PSO3
Review I	Literature survey, problem analysis, objective refinement, standards/datasheet study and methodology selection.	Review-I sheet, literature summary, presentation copy, signed progress form circulated to mentor.	PO1, PO2, PO4, PO10, PO12
Review II	System architecture, circuit/model/algorithm design, simulation plan, component selection and implementation readiness.	Review-II sheet, design documents, simulation files, BOM, signed progress form.	PO3, PO4, PO5, PO11, PSO1, PSO2
Review III	Prototype progress, testing plan, troubleshooting, cost monitoring, safety checks, documentation and external dissemination plan.	Review-III sheet, prototype photographs, test logs, updated report, publication/competition plan where applicable.	PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO12, PSO1-PSO3
Final defence	Working demonstration, report quality, presentation, viva voce, external/panel assessment and PO/PSO attainment.	Final rubric, report, demo record, viva marks, external evaluation sheet, PO/PSO attainment sheet.	PO1-PO12, PSO1-PSO3

7. Project Evaluation Framework: 60% Supervisor Assessment and 40% External/Panel Evaluation

The final project assessment is distributed between continuous supervisor assessment and external/panel

evaluation. The supervisor component carries 60% weightage and is based on regular monitoring, technical progress, implementation quality, project discipline and signed progress forms. The external/panel component carries 40% weightage and is based on the project defence before a panel of faculty members, with external faculty or industry expert assessment included where available.

Assessment Component	Weightage	Evaluators	Typical Evidence
Continuous supervisor assessment	60%	Project supervisor	Signed progress forms, review sheets, working notes, attendance/participation, design files, code, simulation/hardware progress, mentor-circulated progress records
External / panel evaluation during project defence	40%	External faculty/industry expert where available and panel of departmental faculty members	Final report, presentation, working demonstration, viva record, external evaluation sheet, publication/competition evidence, final PO/PSO attainment sheet

8. Supervisor Assessment Rubric - 60 Marks

S.N.	Criterion	Marks	Assessment Focus	Mapped PO/PSO	Evidence
1	Problem identification and objective clarity	8	Relevance, scope, feasibility and linkage with ECE domain.	PO1, PO2, PSO1	Proposal, supervisor remarks
2	Literature/standards/datasheet study	8	Quality of background study and use of references in methodology.	PO1, PO2, PO12	Literature summary, datasheets
3	Design methodology and technical planning	10	Architecture, circuit/model/algorithm design, BOM, tool plan and milestone planning.	PO2, PO3, PO4, PO11, PSO1	Design files, Gantt chart, BOM
4	Implementation progress and troubleshooting	14	Prototype/model/code development, testing effort, debugging and supervisor-observed progress.	PO3, PO4, PO5, PSO1, PSO2	Progress forms, lab records, code, photographs
5	Regularity, teamwork and individual contribution	6	Attendance, role distribution, coordination and timely response to supervisor instructions.	PO8, PO9	Role matrix, review attendance
6	Documentation, progress forms and mentor circulation	6	Signed progress forms, updated report and communication with mentor where required.	PO10, PO11	Signed forms, mentor circulation record
7	Publication/competition/external exposure preparation	4	Effort toward conference/journal paper, poster, prototype demonstration, hackathon, project contest or industry showcase where applicable.	PO10, PO12, PSO3	Draft paper, submission proof, registration, poster
8	Safety, ethics, societal/environmental	4	Responsible use, privacy/safety checks, sustainability or social utility	PO6, PO7, PO8, PSO3	Checklist, guide remarks

	relevance		aspects relevant to the project.		
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9. External/Panel Evaluation Rubric - 40 Marks

S.N	Criterion	Marks	Assessment Focus	Mapped PO/PSO	Evidence
1	Final demonstration and working status	12	Working prototype/model/software/simulation, testing evidence and result validity.	PO3, PO4, PO5, PSO1, PSO2	Demo record, test logs, screenshots
2	Technical viva and depth of understanding	8	Student understanding of theory, design choices, limitations and troubleshooting.	PO1, PO2, PO4	Viva marks, panel remarks
3	Report quality and presentation	8	Report structure, technical writing, diagrams, references, presentation clarity and response to questions.	PO10, PO12	Project report, slides, viva sheet
4	External faculty/industry expert assessment	6	Independent judgement on technical relevance, implementation quality, application potential and professional readiness.	PO3, PO5, PO6, PO11, PSO1-PSO3	External evaluation sheet / expert remarks
5	Publication/patents and external competition standing/participation	6	Accepted/communicated journal or conference paper, poster presentation, patent filing, hackathon/project contest participation, prize/standing or certified external demonstration. Marks are awarded only on verified evidence.	PO10, PO12, PSO3	Acceptance/communication proof, certificate, rank/standing, participation proof

10. Interpretation of Publication and External Competition Metric

The metric may include journal/conference publication, communicated paper, poster presentation, patent/prototype submission, hackathon participation, project exhibition, industry showcase or external technical competition.

Participation with valid certificate is considered positively; selection, shortlisting, prize, rank or standing receives higher credit depending on evidence.

The metric is not used to unfairly penalize projects where publication or competition is not suitable; verified external demonstration, poster/report quality or technical dissemination may be considered by the panel.

All claims must be supported by acceptance letters, certificates, screenshots from official portals, registration records, ranking proof, paper draft/submission proof or evaluator remarks.

11. Correlation of Projects with POs

PO	Project-Level Justification	Typical Evidence	Remarks
PO1 Engineering Knowledge	Application of electronics, communication, signal processing, embedded systems, VLSI, control, instrumentation and computing concepts in project design.	Report, design notes, viva.	Addressed based on project type and rubric mapping.

PO2 Problem Analysis	Identification and analysis of engineering problems involving sensing, automation, communication, signal processing, robotics, surveillance, healthcare, energy use or industrial requirements.	Problem statement, literature survey, review presentation.	Addressed based on project type and rubric mapping.
PO3 Design/Development of Solutions	Design of circuits, antennas, embedded products, algorithms, prototypes, dashboards, automation systems or communication models.	Design files, block diagrams, schematics, code, prototype.	Core project outcome.
PO4 Investigation of Complex Problems	Experimental testing, simulation, data analysis, result interpretation and troubleshooting.	Test logs, simulation outputs, performance comparison.	Seen in reviews and final defence.
PO5 Modern Tool Usage	Use of MATLAB, Simulink, LTspice, HFSS/CST, Vivado, Arduino/ESP32/Raspberry Pi, Python and laboratory instruments.	Software files, screenshots, code repository, lab records.	Linked with tool usage rubric.
PO6 Engineer and Society	Projects addressing healthcare, safety, surveillance, automation, public utility, assistive technology or industrial needs.	Use-case analysis, field relevance statement, expert remarks.	Applicable where project has social/industrial context.
PO7 Environment and Sustainability	Projects involving energy saving, low-power design, smart monitoring, sustainable technology choices or e-waste awareness.	Sustainability note, power/cost analysis.	Applicable where relevant.
PO8 Ethics	Consideration of data privacy, safe use, responsible automation, sensor data handling and ethical deployment of technology.	Ethics checklist, guide remarks.	Checked during proposal/reviews.
PO9 Individual and Team Work	Team-based execution with defined roles for design, coding, hardware, testing, documentation and presentation.	Role matrix, attendance, review remarks.	Assessed by supervisor.
PO10 Communication	Technical report writing, presentations, viva voce, poster preparation, publication writing and demonstration to evaluators.	Report, slides, viva marks, publication/competition evidence.	Assessed in review and defence.
PO11 Project Management and Finance	Timeline planning, milestone tracking, BOM, component procurement, cost monitoring and resource utilization.	Gantt chart, BOM, review sheets, progress forms.	Assessed by supervisor.
PO12 Life-long Learning	Self-learning of new tools, datasheets, frameworks, hardware platforms, research papers and recent technologies.	Learning log, references, repository, certificates, dissemination preparation.	Visible through project execution and dissemination.

12. Correlation of Projects with PSOs

PSO	Project-Level Interpretation	Assessment Link
PSO1	Application of core ECE knowledge to signal processing, communication systems, embedded systems, VLSI, sensors, control, antenna and electronic-circuit projects.	Design, analysis, implementation and technical viva components.
PSO2	Selection and use of engineering hardware/software tools such as simulation platforms, microcontroller kits, FPGA tools, circuit simulators, Python and measurement instruments.	Tool usage, simulation, implementation, testing and demonstration components.

PSO3	Awareness of social, environmental, ethical and entrepreneurial/professional aspects through projects linked with healthcare, sustainability, safety, automation, public utility, external competition and dissemination.	Safety/ethics/sustainability metric, external expert assessment, publication and external competition metric.
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13. Evidence Maintained by the Department

Phase-wise CGPA-based student release list.

Faculty-domain list and supervisor consent/allotment records.

Approved project proposals with preliminary PO/PSO mapping.

Project Progress Forms confirmed and signed by supervisor and circulated to mentor where required.

Review-I, Review-II and Review-III assessment sheets.

BOM, design files, simulation files, code, test logs, prototype photographs and laboratory records.

Final project report, presentation, demonstration record, viva marks and panel evaluation sheet.

External faculty/industry expert evaluation sheet or remarks where conducted.

Publication proof, communicated paper proof, conference/journal acceptance, patent/prototype submission, competition participation certificate or rank/standing proof wherever applicable.

Final PO/PSO attainment sheet and archived project list.

3.6. Evidence of Addressing Sustainable Development Goals (SDGs) (10)

(Provide details of student work carried out to meet sustainable development goals such as research work, project work, student activities etc. Evidence in the form of a portfolio should be made available during the visit.)

A. Evidence Basis and NBA Position

This section records only those SDG-related activities for which an entry is available in the institutional event register supplied for preparation. No undocumented event, project title, participant count, research output, start-up outcome, prototype, or award has been added.

The ECE Department is treated as the primary reference point. Where direct ECE evidence is thin for environmental, health, energy, climate, waste-management, or smart-city SDGs, allied engineering departments and institute-level activities are used as supporting evidence. Such entries are clearly marked by department and are not presented as ECE-only events.

The available register mainly records student activities, technical sessions, visits, workshops, awareness programmes and exhibitions. Project-level portfolios, research papers, prototypes and student assessment sheets should be kept separately during the NBA visit wherever available.

B. Process Used for SDG Evidence Tagging

Strict NBA SDG Evidence Portfolio Workflow



C. SDG-Aligned Evidence Register

Table 3.6.1: Evidence of student work / student activities / technical exposure aligned with SDGs

Year Block	Date	Dept.	Activity / Student Work Recorded	Type	SDG(s) Addressed	Evidence Available in Register	NBA Use / Justification
CAY	03-09-2025	EE	Energy Conservation with Industrial Case Studies for Future Sustainability	Expert session	SDG 7, SDG 9, SDG 12, SDG 13	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	Energy conservation and industrial case-study exposure; strong sustainability relevance.
CAY	10-10-2025	B.TECH	Blood Donation Camp	Student/community activity	SDG 3	Not linked in event register; must be supported separately	Institute-level health and community-service activity; evidence link not present in register.
CAY	10-11-2025	ME	Smart Manufacturing in Industries	Expert session	SDG 9, SDG 12	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	Smart manufacturing in industries; supporting evidence from allied engineering domain.
CAY	17-11-2025	EE	Emerging Trends and Challenges in Renewable Energy	Expert session	SDG 7, SDG 13	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	Renewable-energy session addressing future energy systems and climate-linked energy transition.
CAY	13-01-2026	CE	Smart City Planning through Engineering	Seminar / technical session	SDG 9, SDG 11, SDG 13	Notice, Brochure/Flyer, Report/Brief, Photos,	Smart-city planning through engineering applications;

			Innovations			Participants	allied department evidence.
CAY	16-01-2026	ECE	Interaction Session on AI and Industrial IoT in Smart Manufacturing	Interaction session	SDG 9, SDG 12	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	ECE-specific AI, Industrial IoT and smart-manufacturing interaction.
CAY	28-01-2026	CSE(DS)	SDG 2K26 – Ideathon and Expo	Ideathon and expo	SDG 4, SDG 9, SDG 17	Notice, Report/Brief, Photos, Participants	Direct SDG Ideathon and Expo; student ideation/exhibition activity.
CAY	19-02-2026	CSE(DS)	Soft Robotics Applications in Healthcare and Agriculture	Technical session	SDG 2, SDG 3, SDG 9	Report/Brief	Soft robotics applications in healthcare and agriculture; allied computing evidence relevant to ECE sensors/actuators.
CAY	25-02-2026	CE	SDG Programme on Climate-Resilient Construction Practices	Awareness and hands-on demonstration	SDG 9, SDG 11, SDG 13	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	Direct SDG programme with hands-on demonstration for climate-resilient construction practices.
CAY	25-03-2026	CE	Industrial Visit to Ultratech Cement RMC Plant	Industrial visit	SDG 9, SDG 11, SDG 12	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	Industrial visit to RMC plant; supports sustainable construction materials and process awareness.
CAYm 1	23-08-2024	ME	Green Manufacturing of Steel	Technical talk / seminar	SDG 9, SDG 12, SDG 13	Notice, Brochure/Flyer, Report/Brief, Photos	Allied engineering evidence on green manufacturing and sustainable production.
CAYm 1	04-09-2024	ECE	Industry Visit to Robotics and Automation Lab, CSIR-CMERI	Industry visit / hands-on exposure	SDG 4, SDG 9	Notice, Report/Brief, Participants	ECE industry visit and student participation in robotics and automation laboratory.
CAYm	04-12-	ACCOUN	Celebration	Awareness	SDG 12,	Notice,	Institute-level

1	2024	TS	of National Pollution Control Day	activity	SDG 13	Brochure/Flyer, Report/Brief, Photos, Participants	environmental awareness activity; included because direct ECE environmental SDG evidence is limited.
CAYm 1	25-02-2025	CE	Visit to CSIR-CMERI MSW Management Pilot Plant	Industrial/field visit	SDG 11, SDG 12	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	Allied engineering visit to MSW management pilot plant; supports waste-management and sustainable urban-systems awareness.
CAYm 1	28-02-2025	BASIC SCIENCES AND HUMANITIES	National Science Day 2025	Student activity / exhibition	SDG 4, SDG 9	Notice, Brochure/Flyer, Report/Brief, Photos, Participants	Science outreach and technical awareness activity with evidence files.
CAYm 2	28-11-2023	ECE	Awareness Programme on Soft Robotics and Sensor Design	Student activity / technical awareness	SDG 9	Report/Brief, Photos	ECE-specific innovation exposure; soft robotics and sensor-design opportunity awareness.
CAYm 2	15-04-2024	ECE	Short-Term Training Programme on VLSI and Recent Advancements	Short-term training programme	SDG 4, SDG 9	Notice, Brochure/Flyer, Report/Brief, Photos	ECE-specific training in VLSI and recent technology, supporting industry-relevant technical capacity.

Note: Entries marked as institute-level or allied-department evidence should be kept as supporting SDG evidence. They should not be claimed as ECE-only project work unless separate department-level project records are available.

D. SDG to PO/PSO Mapping for Attainment Justification

SDG	Evidence Used	Mapped POs/PSOs	Justification for Attainment
SDG 3: Good Health and Well-being	Blood donation camp; healthcare and wearable/soft-robotics application session.	PO6, PO7, PO8, PO9, PO10; PSO3	Relates engineering education to public health, social responsibility, ethical participation and communication-oriented outreach.
SDG 4: Quality Education	Science Day, SDG Ideathon & Expo, ECE technology sessions, VLSI/STTP and robotics	PO1, PO2, PO5, PO10, PO12; PSO1,	Supports technical learning beyond syllabus, tool exposure, engineering communication and continuous

	exposure.	PSO2	learning.
SDG 7: Affordable and Clean Energy	Energy conservation industrial case studies and renewable-energy technical sessions.	PO1, PO2, PO6, PO7, PO11, PO12; PSO3	Connects energy-system engineering with sustainability, environmental responsibility and project-management awareness.
SDG 9: Industry, Innovation and Infrastructure	ECE robotics/automation exposure, AI and Industrial IoT, smart manufacturing, VLSI, soft robotics and sensor design.	PO1, PO2, PO3, PO4, PO5, PO11; PSO1, PSO2	Strengthens innovation, design, problem analysis, modern tool usage and industry-relevant ECE competence.
SDG 11: Sustainable Cities and Communities	MSW management plant visit, smart-city planning, RMC plant visit, climate-resilient construction programme.	PO3, PO4, PO6, PO7, PO11; PSO3	Links engineering solutions with urban infrastructure, safety, sustainability and civic relevance.
SDG 12: Responsible Consumption and Production	Green manufacturing of steel, energy conservation, smart manufacturing, waste-management and RMC plant exposure.	PO6, PO7, PO8, PO11; PSO3	Supports responsible production, resource-use awareness, environmental compliance and ethical engineering practice.
SDG 13: Climate Action	Pollution control day, climate-resilient construction, renewable-energy and green-manufacturing sessions.	PO6, PO7, PO8, PO12; PSO3	Addresses climate awareness, environmental responsibility, societal impact and continued learning in sustainability-linked engineering.
SDG 17: Partnerships for the Goals	Activities involving external laboratories, industry experts, CSIR-CMERI and SDG expo formats.	PO9, PO10, PO11, PO12; PSO3	Promotes collaboration, communication, professional exposure and participation in institutional innovation ecosystems.

3.7. Attainment of Course Outcomes (25)

3.7.1. Describe the Assessment Tools and Processes Used to Gather the Data for the Evaluation of Course Outcome (05)

(Describe different assessment tools (semester end examinations, mid-semester tests, laboratory examinations, student portfolios etc.) to measure the student learning and hence attainment of course outcomes.)

The department measures student learning through a structured outcome-based assessment process in which every major assessment instrument is mapped to the approved Course Outcomes (COs). The process uses direct evidence from internal tests, continuous assessment, semester-end examination, laboratory/practical evaluation, assignments, projects and student portfolios. Indirect feedback is used as supporting evidence for review and improvement. The resulting CO attainment data are used for course-level analysis, remedial planning and subsequent PO/PSO attainment computation.

Assessment Tools Used for CO Evaluation

Assessment tool	Evidence gathered	CO measurement mechanism	Stage / frequency
Class tests / continuous assessments (CA1, CA2, CA3)	Written answers, derivations, numerical solutions, short/long questions, design and analysis problems.	Each question or sub-question is mapped to one or more COs. Marks are redistributed to mapped COs and converted into CO-wise student performance.	As per academic calendar during the semester.
Continuous	Written Test.	Mapped to relevant COs. For	During the later

assessment component / CA4		integrative components, marks may be distributed across all COs as per the approved attainment sheet.	part of the semester.
Semester-end university examination	External written examination and university result/grade data.	External performance is converted to CO-wise attainment using the approved distribution rule and course result data.	End of semester.
Laboratory continuous assessment	Experiment execution, instrument handling, simulation/coding, observation records, debugging, safety practice and viva.	Each experiment is mapped to one or more laboratory COs. Rubrics are used to assign marks against mapped COs.	During each laboratory cycle.
Laboratory end-semester / practical examination	Practical task, hardware/software implementation, record book, interpretation of results and viva voce.	Practical-exam performance is mapped to laboratory COs through experiment-level and rubric-level mapping.	End of semester / practical examination schedule.
Assignments, tutorials and student portfolios	Solved assignments, design notes, simulation files, code, project logs, case-study reports and corrected submissions.	Each task is mapped to specific COs and assessed through a marking scheme or rubric.	Throughout the semester.
Indirect assessment	Course-exit survey, student feedback and course teacher observations.	Feedback items are aligned to COs and used as supplementary evidence for reviewing attainment gaps.	At course completion.

Process for Collection and Use of Assessment Data

Course Outcomes are finalized in line with the syllabus, course content, Bloom's taxonomy level and expected competency.

Before each test, assignment, laboratory task or portfolio activity, the course teacher prepares the assessment instrument with CO-wise question mapping and marks distribution.

For a question mapped to multiple COs, marks are apportioned to the respective COs based on the coverage and cognitive demand of the question.

Student-wise marks are entered in the CO attainment sheet. The sheet generates CO-wise marks, percentages or levels, target achievement status and class-level attainment.

Internal and external components are combined using the approved course scheme / departmental attainment procedure. The applicable weightage is recorded in the course file.

COs not meeting the target are reviewed by the course teacher, CO-PO coordinator and Head of the Department. Corrective measures are documented and tracked in the next offering.

Process step	Responsibility	Documentary evidence
CO finalization and Bloom's-level identification	Course teacher, module coordinator, academic coordinator	Syllabus copy, CO statement sheet, course file
Assessment planning and CO-question mapping	Course teacher	Question paper, assignment sheet, answer key, CO mapping table
Conduct and evaluation of assessment	Course teacher / laboratory teacher / examiner	Attendance, answer scripts, lab records, viva marks, assignment records
Marks entry and verification	Course teacher, departmental academic team	Student-wise marks sheet, CO-wise consolidated sheet
CO attainment calculation	Course teacher, CO-PO coordinator	Internal attainment, external attainment and direct CO attainment sheet
Review and improvement action	HOD, course teacher,	Course-end report, remedial class record,

	department faculty members	action-taken record
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Calculation-Based Attainment Procedure

Step 1 - Student assessment marks: Marks are collected from CA1, CA2, CA3, CA4 / continuous assessment, laboratory components and semester-end university examination.

Step 2 - Redistribution to COs: Marks of every question are transferred to the mapped COs. If a 5-mark question is mapped to CO1 and CO2, the marks are split according to the approved CO-question mapping, such as 3 marks to CO1 and 2 marks to CO2. This ensures that a student's performance is evaluated against the actual outcome tested by the question.

Step 3 - CO-wise percentage: For each CO, the marks obtained by a student are divided by the maximum marks assigned to that CO and multiplied by 100. This produces the student-wise CO performance percentage.

Step 4 - Level / grade assignment: The CO-wise percentage is converted to attainment level using the approved departmental rubric. A typical 1-2-3 scale is: Level 3 for 60% and above, Level 2 for 40% to 59%, and Level 1 for below 40%.

Step 5 - Target achievement: A student is considered to have attained a CO when the student's CO level is equal to or greater than the target level defined for the course.

Step 6 - Class-level CO attainment: The number of students attaining the target is divided by the total number of assessed students and expressed as a percentage. The attainment status is marked as achieved when the value meets the departmentally approved threshold.

Calculation item	Formula / rule used	Illustrative interpretation
Student CO percentage	$\text{CO \%} = (\text{Marks obtained for the CO} / \text{Maximum marks assigned to the CO}) \times 100$	If a student obtains 5 marks out of 12 assigned to CO1, $\text{CO1 \%} = (5/12) \times 100 = 41.67\%$.
CO level conversion	Level 3: $\geq 60\%$; Level 2: 40%-59%; Level 1: $< 40\%$	A CO percentage of 53% is treated as Level 2 under the 1-2-3 attainment scale.
Student target decision	Target achieved when student CO level $\geq$ target level	If target level is 2 and the student level is 2 or 3, the student is counted as having attained the CO.
Class-level CO attainment	$\text{CO attainment \%} = (\text{Number of students attaining target} / \text{Number of assessed students}) \times 100$	If 35 out of 50 students attain CO1 target, $\text{CO1 attainment} = (35/50) \times 100 = 70\%$.
Direct CO attainment by scheme	$\text{Direct CO attainment} = (\text{Internal component} \times \text{approved internal weight}) + (\text{External component} \times \text{approved external weight})$	For 20:80 scheme: $(0.20 \times 3) + (0.80 \times 2) = 2.20$. For 30:70 scheme, the corresponding approved weights are applied.
CO-PO contribution	PO attainment is computed from contributing CO attainment values using CO-PO correlation weights 1, 2 and 3.	If CO1, CO2 and CO3 contribute to PO1 with weights 3, 2 and 1, the weighted average of the contributing CO values is used.

Flow of Evidence from Assessment to Attainment

Input	Processing in attainment sheet	Output used for review
CA1, CA2, CA3 question-wise marks	Question marks are allocated to mapped COs and converted into CO-wise student performance.	Internal CO attainment evidence.
CA4 / integrative continuous assessment	Marks are mapped to selected COs or distributed across COs where the approved sheet treats it as a common integrative component.	Supplementary internal CO evidence.
University examination result / grade	External performance is converted to CO-wise external attainment using the approved	External CO attainment evidence.

	distribution rule.	
Laboratory / practical marks	Experiment-wise and rubric-wise performance is mapped to laboratory COs.	Laboratory CO attainment evidence.
Student portfolio and assignments	Task-wise mapped marks and rubrics support specific COs and help identify weak outcome areas.	Supporting evidence for corrective action.
Consolidated CO attainment sheet	Internal and external attainment are combined using approved weights and target rules.	Final direct CO attainment and action plan.

Laboratory and Project-Based CO Evaluation

For laboratory courses and project-oriented components, the assessment is not limited to final output. Student performance is judged through continuous observation, experiment execution, troubleshooting ability, result interpretation, documentation, safety practices and viva voce. Rubrics are used wherever applicable to maintain uniformity across batches and evaluators.

Rubric parameter	Typical evidence	CO relevance
Preparation and theoretical understanding	Pre-lab questions, circuit/design explanation, simulation preparation	Knowledge and comprehension-oriented COs
Execution and tool usage	Instrument handling, coding, simulation, measurement and debugging	Application and skill-oriented COs
Result analysis	Observation table, waveform/plot, error analysis and inference	Analysis and evaluation-oriented COs
Documentation and viva	Laboratory record, report, oral response and reflection	Communication and synthesis-oriented COs

Quality Assurance and Evidence Retention

- Question papers, assignments and laboratory tasks are checked for syllabus coverage, CO coverage and appropriate Bloom's level wherever applicable.
- Evaluated answer scripts, marks registers, laboratory records, rubrics, sample assignments, course-exit feedback and consolidated attainment sheets are retained in the course file.
- The course teacher submits the course-end report indicating CO-wise attainment, weak COs, probable causes and proposed corrective measures.
- Corrective actions may include remedial/tutorial classes, additional problem-solving sessions, extra laboratory practice, revision of teaching strategy, supplementary learning material and mentoring of weak students.
- Effectiveness of corrective action is reviewed in the next course offering through comparison of CO attainment and student performance evidence.

Outcome of the Process

The process provides traceable evidence that student learning is assessed through multiple tools and that every major assessment item contributes to one or more Course Outcomes. It supports transparent CO attainment calculation, identification of weak outcome areas, planning of remedial measures and evidence-based computation of PO/PSO attainment.

3.7.2. Record the Attainment of Course Outcomes of all Courses with Respect to Set Attainment Levels (20)

(Program shall set course outcome attainment levels for each course. Measuring CO attainment through Continuous Internal Examinations (CIE) and Semester End Examination (SEE) needs to be detailed. Target may be stated in terms of percentage of students getting more than class average marks or set by the program in each of the associated COs in the assessment instruments (midterm tests, assignments, mini projects, reports and presentations etc. as mapped with the COs.))

The program has defined Course Outcome (CO) attainment levels on a three-point scale. The attainment calculation is based on student performance in Continuous Internal Evaluation (CIE) and Semester End Examination (SEE), with CO-wise mapping of assessment instruments such as class tests, assignments, laboratory work, mini-projects,

reports, presentations and end-semester examinations.

A course is treated as ATTAINED when the calculated CO attainment score is greater than or equal to the set target level; otherwise, it is marked as NOT ATTAINED. The record below is prepared from the consolidated course attainment summary.

Component		Basis of Measurement	Weightage/Use		Output
CIE		Internal tests, assignments, laboratory assessment, mini-projects, reports and presentations mapped to relevant COs	Used for internal attainment component		CO-wise internal attainment score
SEE		University/Semester End Examination question-wise marks mapped to COs	Used for external attainment component		CO-wise SEE attainment score
Final CO Attainment		Combination of CIE and SEE attainment as per departmental assessment process	Compared with target level		Course-wise CO attained value and attainment status
Attainment Rule			Description		
CO Attainment Level			Calculated on a 0 to 3 scale from mapped assessment performance.		
Target Level			Level 2 for all courses in the consolidated record.		
Attainment Decision			ATTAINED if CO Attained >= Target; NOT ATTAINED if CO Attained < Target.		
Semester	No. of Courses	Target Level	Average CO Attainment	Courses Attained	Courses Not Attained
1st	12	2.0	2.17	7	5
2nd	16	2.0	2.32	12	4
3rd	20	2.0	2.16	10	10
4th	22	2.0	2.35	20	2
5th	30	2.0	2.41	26	4
6th	18	2.0	2.34	17	1
7th	21	2.0	2.54	21	0
8th	12	2.0	2.56	12	0
Overall	151	2.00	2.36	125	26

Overall, 125 out of 151 course records meet the prescribed attainment target, while 26 records require corrective academic action or closer CO-wise monitoring in the next assessment cycle.

Course-wise CO Attainment Record

S. N.	SUBJECT	SEM	TARGET	CO ATTAINED	REMARKS
1	EC501	5th	2	2.08	ATTAINED
2	EC502	5th	2	2.62	ATTAINED
3	EC503	5th	2	2.27	ATTAINED
4	EC504	5th	2	2.25	ATTAINED
5	EC591	5th	2	2.53	ATTAINED
6	EC592	5th	2	2.60	ATTAINED
7	EC593	5th	2	2.56	ATTAINED

S. N.	SUBJECT	SEM	TARGET	CO ATTAINED	REMARKS
8	MC-HU581	5th	2	2.85	ATTAINED
9	OE-EC506A	5th	2	2.75	ATTAINED
10	PE-EC505A	5th	2	1.77	NOT ATTAINED
11	EC781	7th	2	2.08	ATTAINED
12	EC782	7th	2	2.39	ATTAINED
13	HS-HU701	7th	2	2.74	ATTAINED
14	OE-EC704A	7th	2	2.40	ATTAINED
15	PE-EC701C	7th	2	2.51	ATTAINED
16	PE-EC702A	7th	2	2.04	ATTAINED
17	PE-EC703A	7th	2	2.46	ATTAINED
18	BSCH101	1st	2	1.79	NOT ATTAINED
19	BSCH191	1st	2	2.83	ATTAINED
20	BSM102	1st	2	1.75	NOT ATTAINED
21	ESEE101	1st	2	1.97	NOT ATTAINED
22	ESEE191	1st	2	2.34	ATTAINED
23	ESME191	1st	2	2.43	ATTAINED
24	BSM202	2nd	2	1.69	NOT ATTAINED
25	BSPH201	2nd	2	1.71	NOT ATTAINED
26	BSPH291	2nd	2	2.74	ATTAINED
27	ESCS201	2nd	2	2.41	ATTAINED
28	ESCS291	2nd	2	2.41	ATTAINED
29	ESME292	2nd	2	2.49	ATTAINED
30	HMHU201	2nd	2	2.65	ATTAINED
31	HMHU291	2nd	2	2.63	ATTAINED
32	BS-M301	3rd	2	1.84	NOT ATTAINED
33	EC301	3rd	2	1.87	NOT ATTAINED
34	EC302	3rd	2	1.84	NOT ATTAINED
35	EC303	3rd	2	1.80	NOT ATTAINED
36	EC304	3rd	2	1.76	NOT ATTAINED
37	EC391	3rd	2	2.24	ATTAINED
38	EC392	3rd	2	2.53	ATTAINED
39	MC381	3rd	2	2.84	ATTAINED
40	PCC-CS301	3rd	2	2.35	ATTAINED
41	PCC-CS391	3rd	2	2.59	ATTAINED
42	BS-B401	4th	2	2.50	ATTAINED
43	BS-M(CS)491	4th	2	2.49	ATTAINED
44	BS-M401	4th	2	2.21	ATTAINED
45	EC401	4th	2	2.12	ATTAINED
46	EC402	4th	2	1.95	NOT ATTAINED
47	EC403	4th	2	2.11	ATTAINED

S. N.	SUBJECT	SEM	TARGET	CO ATTAINED	REMARKS
48	EC491	4th	2	2.60	ATTAINED
49	EC492	4th	2	2.52	ATTAINED
50	EC493	4th	2	2.73	ATTAINED
51	ES-CS401	4th	2	2.41	ATTAINED
52	HS-HU481	4th	2	2.62	ATTAINED
53	EC501	5th	2	1.99	NOT ATTAINED
54	EC502	5th	2	2.31	ATTAINED
55	EC503	5th	2	2	ATTAINED
56	EC504	5th	2	1.86	NOT ATTAINED
57	EC591	5th	2	2.52	ATTAINED
58	EC592	5th	2	2.61	ATTAINED
59	EC593	5th	2	2.76	ATTAINED
60	MC-HU581	5th	2	2.84	ATTAINED
61	OE-EC506A	5th	2	2.71	ATTAINED
62	PE-EC505A	5th	2	1.92	NOT ATTAINED
63	EC601	6th	2	1.87	NOT ATTAINED
64	EC602	6th	2	2.44	ATTAINED
65	EC681	6th	2	2.42	ATTAINED
66	EC691	6th	2	2.54	ATTAINED
67	EC692	6th	2	2.58	ATTAINED
68	HS-HU601	6th	2	2.55	ATTAINED
69	MC681	6th	2	2.03	ATTAINED
70	OE-EC604A	6th	2	2.53	ATTAINED
71	PE-EC603C	6th	2	2.34	ATTAINED
72	EC781	7th	2	2.72	ATTAINED
73	EC782	7th	2	2.69	ATTAINED
74	HS-HU701	7th	2	2.75	ATTAINED
75	OE-EC704A	7th	2	2.62	ATTAINED
76	PE-EC701C	7th	2	2.60	ATTAINED
77	PE-EC702A	7th	2	2.35	ATTAINED
78	PE-EC703A	7th	2	2.75	ATTAINED
79	EC881	8th	2	2.35	ATTAINED
80	EC882	8th	2	2.89	ATTAINED
81	OE-EC803A	8th	2	2.75	ATTAINED
82	OE-EC804C	8th	2	2.80	ATTAINED
83	PE-EC801B	8th	2	2.34	ATTAINED
84	PE-EC802B	8th	2	2.66	ATTAINED
85	BSCH101	1st	2	1.88	NOT ATTAINED
86	BSCH191	1st	2	2.78	ATTAINED
87	BSM102	1st	2	1.56	NOT ATTAINED

S. N.	SUBJECT	SEM	TARGET	CO ATTAINED	REMARKS
88	ESEE101	1st	2	2.01	ATTAINED
89	ESEE191	1st	2	2.29	ATTAINED
90	ESME191	1st	2	2.39	ATTAINED
91	BSM202	2nd	2	1.52	NOT ATTAINED
92	BSPH201	2nd	2	1.73	NOT ATTAINED
93	BSPH291	2nd	2	2.69	ATTAINED
94	ESCS201	2nd	2	2.38	ATTAINED
95	ESCS291	2nd	2	2.39	ATTAINED
96	ESME292	2nd	2	2.48	ATTAINED
97	HMHU201	2nd	2	2.65	ATTAINED
98	HMHU291	2nd	2	2.62	ATTAINED
99	BS-M301	3rd	2	1.89	NOT ATTAINED
100	EC301	3rd	2	1.65	NOT ATTAINED
101	EC302	3rd	2	1.89	NOT ATTAINED
102	EC303	3rd	2	1.79	NOT ATTAINED
103	EC304	3rd	2	1.69	NOT ATTAINED
104	EC391	3rd	2	2.23	ATTAINED
105	EC392	3rd	2	2.64	ATTAINED
106	MC381	3rd	2	2.80	ATTAINED
107	PCC-CS301	3rd	2	2.23	ATTAINED
108	PCC-CS391	3rd	2	2.67	ATTAINED
109	BS-B401	4th	2	2.26	ATTAINED
110	BS-M(CS)491	4th	2	2.38	ATTAINED
111	BS-M401	4th	2	2.03	ATTAINED
112	EC401	4th	2	1.95	NOT ATTAINED
113	EC402	4th	2	2.04	ATTAINED
114	EC403	4th	2	2.13	ATTAINED
115	EC491	4th	2	2.55	ATTAINED
116	EC492	4th	2	2.44	ATTAINED
117	EC493	4th	2	2.65	ATTAINED
118	ES-CS401	4th	2	2.54	ATTAINED
119	HS-HU481	4th	2	2.54	ATTAINED
120	EC501	5th	2	2.12	ATTAINED
121	EC502	5th	2	2.63	ATTAINED
122	EC503	5th	2	2.03	ATTAINED
123	EC504	5th	2	2.10	ATTAINED
124	EC591	5th	2	2.62	ATTAINED
125	EC592	5th	2	2.64	ATTAINED
126	EC593	5th	2	2.82	ATTAINED
127	MC-HU581	5th	2	2.77	ATTAINED

S. N.	SUBJECT	SEM	TARGET	CO ATTAINED	REMARKS
128	OE-EC506A	5th	2	2.68	ATTAINED
129	PE-EC505A	5th	2	2.19	ATTAINED
130	EC601	6th	2	2.04	ATTAINED
131	EC602	6th	2	2.26	ATTAINED
132	EC681	6th	2	2.36	ATTAINED
133	EC691	6th	2	2.53	ATTAINED
134	EC692	6th	2	2.42	ATTAINED
135	HS-HU601	6th	2	2.51	ATTAINED
136	MC681	6th	2	2.03	ATTAINED
137	OE-EC604A	6th	2	2.59	ATTAINED
138	PE-EC603C	6th	2	2.07	ATTAINED
139	EC781	7th	2	2.67	ATTAINED
140	EC782	7th	2	2.65	ATTAINED
141	HS-HU701	7th	2	2.88	ATTAINED
142	OE-EC704A	7th	2	2.58	ATTAINED
143	PE-EC701C	7th	2	2.68	ATTAINED
144	PE-EC702B	7th	2	2.39	ATTAINED
145	PE-EC703A	7th	2	2.48	ATTAINED
146	EC881	8th	2	2.43	ATTAINED
147	EC882	8th	2	2.37	ATTAINED
148	OE-EC803A	8th	2	2.63	ATTAINED
149	OE-EC804B	8th	2	2.32	ATTAINED
150	PE-EC801B	8th	2	2.55	ATTAINED
151	PE-EC802B	8th	2	2.57	ATTAINED

3.8. Attainment of Program Outcomes and Program Specific Outcomes (25)

(The attainment of POs and PSOs by direct assessment based on student performance and indirect assessment based on surveys are to be presented through program level Course-PO and PSO matrices as indicated.)

PO and PSO Attainment:

The PO and PSO attainment is determined primarily through direct assessment of student performance in courses. Course-wise PO/PSO contribution is calculated using the course attainment level and the approved Course-PO and Course-PSO mapping. The consolidated direct attainment record is presented below on a three-point scale.

Direct attainment is obtained from course-level performance. Indirect attainment may be incorporated through graduate exit survey, alumni feedback, employer feedback and student course-end survey as per institutional practice. Where survey data are maintained separately, the final program-level attainment may be computed by combining direct and indirect attainment in the prescribed departmental ratio.

Outcome	Average Direct Attainment	Minimum	Maximum	Interpretation
PO1	3.00	2.73	3.00	Strong attainment
PO2	2.75	1.82	3.00	Strong attainment
PO3	2.38	1.53	2.89	Strong attainment

Outcome	Average Direct Attainment	Minimum	Maximum	Interpretation
PO4	1.44	0.93	1.75	Moderate attainment / improvement required
PO5	0.53	0.00	1.73	Low or limited mapped attainment
PO6	0.15	0.00	1.75	Low or limited mapped attainment
PO7	0.15	0.00	1.75	Low or limited mapped attainment
PO8	0.15	0.00	1.75	Low or limited mapped attainment
PO9	0.15	0.00	1.75	Low or limited mapped attainment
PO10	0.15	0.00	1.75	Low or limited mapped attainment
PO11	0.29	0.00	1.75	Low or limited mapped attainment
PO12	1.28	0.00	1.75	Moderate attainment / improvement required
PSO1	3.00	2.73	3.00	Strong attainment
PSO2	1.91	0.91	3.00	Moderate attainment / improvement required
PSO3	0.15	0.00	1.73	Low or limited mapped attainment

The direct attainment table indicates that PO1, PO2, PO3, PSO1 and PSO2 are strongly supported by the assessed courses. Outcomes with lower mapped attainment values should be reviewed during curriculum delivery planning, course mapping revision, project allotment, laboratory enrichment, seminar activities and industry-oriented assignments.

Table No. 3.8.1: PO and PSO attainment value using direct assessment tools.

Course code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
EC501	3.00	2.50	2.12	1.30	0.00	0.00	0.00	0.00	0.00	0.00	1.30	0.00	3.00	1.25	0.00
EC502	3.00	3.00	2.66	1.63	0.00	0.00	0.00	0.00	0.00	0.00	1.63	0.00	3.00	1.57	0.00
EC503	3.00	2.72	2.31	1.43	0.00	0.00	0.00	0.00	0.00	0.00	1.43	0.00	3.00	1.36	0.00
EC504	3.00	2.70	2.29	1.40	0.00	0.00	0.00	0.00	0.00	0.00	1.40	0.00	3.00	1.35	0.00
EC591	3.00	3.00	2.53	1.52	1.52	0.00	0.00	0.00	0.00	0.00	1.52	0.00	3.00	3.00	0.00
EC592	3.00	3.00	2.60	1.56	1.56	0.00	0.00	0.00	0.00	0.00	1.56	0.00	3.00	3.00	0.00
EC593	3.00	3.00	2.56	1.54	1.54	0.00	0.00	0.00	0.00	0.00	1.54	0.00	3.00	3.00	0.00
MC-HU581	3.00	3.00	2.85	1.71	0.00	1.71	1.71	1.71	1.71	1.71	1.71	0.00	3.00	1.71	1.71
OE-EC506A	3.00	3.00	2.77	1.69	0.00	0.00	0.00	0.00	0.00	0.00	1.69	0.00	3.00	1.65	0.00
PE-EC505A	3.00	2.13	1.80	1.10	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	3.00	1.06	0.00
EC781	3.00	2.50	2.08	1.25	1.25	0.00	0.00	0.00	0.00	0.00	1.25	0.00	3.00	2.50	0.00
EC782	3.00	2.87	2.39	1.43	1.43	0.00	0.00	0.00	0.00	0.00	1.43	0.00	3.00	2.87	0.00
HS-HU701	3.00	3.00	2.77	1.69	0.00	1.69	1.69	1.69	1.69	1.69	1.69	0.00	3.00	1.65	1.65
OE-EC704A	3.00	2.88	2.44	1.49	0.00	0.00	0.00	0.00	0.00	0.00	1.49	0.00	3.00	1.44	0.00
PE-EC701C	3.00	3.00	2.55	1.56	0.00	0.00	0.00	0.00	0.00	0.00	1.56	0.00	3.00	1.51	0.00

PE-EC702A	3.00	2.45	2.08	1.28	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00	3.00	1.23	0.00
PE-EC703A	3.00	2.96	2.49	1.52	0.00	0.00	0.00	0.00	0.00	0.00	1.52	0.00	3.00	1.48	0.00
BSCH101	3.00	2.15	1.81	1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.10	3.00	1.07	0.00
BSCH191	3.00	3.00	2.83	1.70	1.70	0.00	0.00	0.00	0.00	0.00	0.00	1.70	3.00	3.00	0.00
BSM102	3.00	2.10	1.76	1.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06	3.00	1.05	0.00
ESEE101	3.00	2.37	2.00	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.22	3.00	1.18	0.00
ESEE191	3.00	2.81	2.34	1.40	1.40	0.00	0.00	0.00	0.00	0.00	0.00	1.40	3.00	2.81	0.00
ESME191	3.00	2.92	2.43	1.46	1.46	0.00	0.00	0.00	0.00	0.00	0.00	1.46	3.00	2.92	0.00
BSM202	3.00	2.03	1.71	1.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04	3.00	1.01	0.00
BSPH201	3.00	2.05	1.73	1.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05	3.00	1.03	0.00
BSPH291	3.00	3.00	2.74	1.64	1.64	0.00	0.00	0.00	0.00	0.00	0.00	1.64	3.00	3.00	0.00
ESCS201	3.00	2.89	2.45	1.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.51	3.00	1.45	0.00
ESCS291	3.00	2.89	2.41	1.44	1.44	0.00	0.00	0.00	0.00	0.00	0.00	1.45	3.00	2.89	0.00
ESME292	3.00	2.98	2.49	1.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.49	3.00	1.49	0.00
HMHU201	3.00	3.00	2.68	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.64	3.00	1.59	0.00
HMHU291	3.00	3.00	2.63	1.58	1.58	0.00	0.00	0.00	0.00	0.00	0.00	1.58	3.00	3.00	0.00
BS-M301	3.00	2.21	1.87	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.14	3.00	1.11	0.00
EC301	3.00	2.24	1.90	1.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.16	3.00	1.12	0.00
EC302	3.00	2.20	1.86	1.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13	3.00	1.10	0.00
EC303	3.00	2.16	1.82	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.11	3.00	1.08	0.00
EC304	3.00	2.11	1.78	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09	3.00	1.05	0.00
EC391	3.00	2.69	2.24	1.34	1.34	0.00	0.00	0.00	0.00	0.00	0.00	1.34	3.00	2.69	0.00
EC392	3.00	3.00	2.54	1.52	1.52	0.00	0.00	0.00	0.00	0.00	0.00	1.52	3.00	3.00	0.00
MC381	3.00	3.00	2.85	1.71	0.00	1.71	1.71	1.71	1.71	1.71	1.71	1.71	3.00	1.71	1.71
PCC-CS301	3.00	2.82	2.38	1.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.46	3.00	1.41	0.00
PCC-CS391	3.00	3.00	2.59	1.55	1.55	0.00	0.00	0.00	0.00	0.00	0.00	1.55	3.00	3.00	0.00
BS-B401	3.00	3.00	2.55	1.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.57	3.00	1.50	0.00
BS-M(CS)491	3.00	2.99	2.49	1.49	1.49	0.00	0.00	0.00	0.00	0.00	0.00	1.49	3.00	2.99	0.00
BS-M401	3.00	2.65	2.23	1.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.36	3.00	1.32	0.00
EC401	3.00	2.54	2.14	1.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.31	3.00	1.27	0.00
EC402	3.00	2.34	1.97	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20	3.00	1.17	0.00
EC403	3.00	2.53	2.14	1.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.31	3.00	1.27	0.00
EC491	3.00	3.00	2.60	1.56	1.56	0.00	0.00	0.00	0.00	0.00	0.00	1.56	3.00	3.00	0.00
EC492	3.00	3.00	2.52	1.51	1.51	0.00	0.00	0.00	0.00	0.00	0.00	1.51	3.00	3.00	0.00
EC493	3.00	3.00	2.73	1.64	1.64	0.00	0.00	0.00	0.00	0.00	0.00	1.64	3.00	3.00	0.00
ES-CS401	3.00	2.89	2.45	1.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.51	3.00	1.44	0.00
HS-HU481	3.00	3.00	2.62	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	3.00	3.00	1.57
EC501	3.00	2.39	2.01	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.22	3.00	1.20	0.00
EC502	3.00	2.77	2.34	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.44	3.00	1.38	0.00
EC503	3.00	2.40	2.04	1.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.26	3.00	1.20	0.00
EC504	3.00	2.23	1.88	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15	3.00	1.12	0.00

EC591	3.00	3.00	2.52	1.51	1.51	0.00	0.00	0.00	0.00	0.00	0.00	1.51	3.00	3.00	0.00
EC592	3.00	3.00	2.62	1.57	1.57	0.00	0.00	0.00	0.00	0.00	0.00	1.57	3.00	3.00	0.00
EC593	3.00	3.00	2.76	1.66	1.66	0.00	0.00	0.00	0.00	0.00	0.00	1.66	3.00	3.00	0.00
MC-HU581	3.00	3.00	2.84	1.71	0.00	1.71	1.71	1.71	1.71	1.71	1.71	1.71	3.00	1.70	1.70
OE- EC506A	3.00	3.00	2.74	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.66	3.00	1.63	0.00
PE- EC505A	3.00	2.30	1.94	1.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.19	3.00	1.15	0.00
EC601	3.00	2.24	1.89	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15	3.00	1.12	0.00
EC602	3.00	2.93	2.48	1.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	3.00	1.47	0.00
EC681	3.00	2.90	2.42	1.45	1.45	0.00	0.00	0.00	0.00	0.00	0.00	1.45	3.00	2.90	0.00
EC691	3.00	3.00	2.54	1.52	1.52	0.00	0.00	0.00	0.00	0.00	0.00	1.52	3.00	3.00	0.00
EC692	3.00	3.00	2.58	1.55	1.55	0.00	0.00	0.00	0.00	0.00	0.00	1.55	3.00	3.00	0.00
HS-HU601	3.00	3.00	2.61	1.61	0.00	1.61	1.61	1.61	1.61	1.61	1.61	1.61	3.00	1.53	1.53
MC681	3.00	2.44	2.03	1.22	0.00	1.22	1.22	1.22	1.22	1.22	1.22	1.22	3.00	1.22	1.22
OE- EC604A	3.00	3.00	2.57	1.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.58	3.00	1.52	0.00
PE- EC603C	3.00	2.80	2.37	1.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.46	3.00	1.40	0.00
EC781	3.00	3.00	2.72	1.63	1.63	0.00	0.00	0.00	0.00	0.00	0.00	1.63	3.00	3.00	0.00
EC782	3.00	3.00	2.70	1.62	1.62	0.00	0.00	0.00	0.00	0.00	0.00	1.62	3.00	3.00	0.00
HS-HU701	3.00	3.00	2.78	1.70	0.00	1.70	1.70	1.70	1.70	1.70	1.70	1.70	3.00	1.65	1.65
OE- EC704A	3.00	3.00	2.65	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	3.00	1.57	0.00
PE- EC701C	3.00	3.00	2.64	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.63	3.00	1.56	0.00
PE- EC702A	3.00	2.82	2.39	1.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.48	3.00	1.41	0.00
PE- EC703A	3.00	3.00	2.79	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.70	3.00	1.65	0.00
EC881	3.00	2.82	2.35	1.41	1.41	0.00	0.00	0.00	0.00	0.00	0.00	1.41	3.00	2.82	0.00
EC882	3.00	3.00	2.89	1.73	1.73	0.00	0.00	0.00	0.00	0.00	0.00	1.73	3.00	3.00	0.00
OE- EC803A	3.00	3.00	2.78	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.70	3.00	1.65	0.00
OE- EC804C	3.00	3.00	2.84	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.73	3.00	1.68	0.00
PE- EC801B	3.00	2.81	2.39	1.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	3.00	1.41	0.00
PE- EC802B	3.00	3.00	2.69	1.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.65	3.00	1.59	0.00
BSCH101	3.00	2.25	1.89	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15	3.00	1.13	0.00
BSCH191	3.00	3.00	2.78	1.67	1.67	0.00	0.00	0.00	0.00	0.00	0.00	1.67	3.00	3.00	0.00
BSM102	2.81	1.87	1.58	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96	2.81	0.94	0.00
ESEE101	3.00	2.41	2.03	1.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.24	3.00	1.21	0.00
ESEE191	3.00	2.75	2.29	1.37	1.37	0.00	0.00	0.00	0.00	0.00	0.00	1.37	3.00	2.75	0.00
ESME191	3.00	2.87	2.39	1.43	1.43	0.00	0.00	0.00	0.00	0.00	0.00	1.43	3.00	2.87	0.00
BSM202	2.73	1.82	1.53	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93	2.73	0.91	0.00
BSPH201	3.00	2.07	1.75	1.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.07	3.00	1.04	0.00

BSPH291	3.00	3.00	2.69	1.61	1.61	0.00	0.00	0.00	0.00	0.00	0.00	1.61	3.00	3.00	0.00
ESCS201	3.00	2.85	2.41	1.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.48	3.00	1.43	0.00
ESCS291	3.00	2.87	2.39	1.43	1.43	0.00	0.00	0.00	0.00	0.00	0.00	1.43	3.00	2.87	0.00
ESME292	3.00	2.97	2.48	1.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.49	3.00	1.49	0.00
HMHU201	3.00	3.00	2.69	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.64	3.00	1.59	0.00
HMHU291	3.00	3.00	2.62	1.57	1.57	0.00	0.00	0.00	0.00	0.00	0.00	1.57	3.00	3.00	0.00
BS-M301	3.00	2.26	1.91	1.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17	3.00	1.13	0.00
EC301	2.96	1.98	1.67	1.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.03	2.96	0.99	0.00
EC302	3.00	2.26	1.91	1.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17	3.00	1.13	0.00
EC303	3.00	2.15	1.82	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.11	3.00	1.08	0.00
EC304	3.00	2.02	1.71	1.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05	3.00	1.01	0.00
EC391	3.00	2.68	2.23	1.34	1.34	0.00	0.00	0.00	0.00	0.00	0.00	1.34	3.00	2.68	0.00
EC392	3.00	3.00	2.64	1.58	1.58	0.00	0.00	0.00	0.00	0.00	0.00	1.58	3.00	3.00	0.00
MC381	3.00	3.00	2.81	1.69	0.00	1.69	1.69	1.69	1.69	1.69	1.69	1.69	3.00	1.68	1.68
PCC- CS301	3.00	2.68	2.27	1.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.40	3.00	1.34	0.00
PCC- CS391	3.00	3.00	2.67	1.60	1.60	0.00	0.00	0.00	0.00	0.00	0.00	1.60	3.00	3.00	0.00
BS-B401	3.00	2.71	2.29	1.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.40	3.00	1.35	0.00
BS- M(CS)491	3.00	2.86	2.38	1.43	1.43	0.00	0.00	0.00	0.00	0.00	0.00	1.43	3.00	2.86	0.00
BS-M401	3.00	2.44	2.06	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	3.00	1.22	0.00
EC401	3.00	2.34	1.98	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.22	3.00	1.17	0.00
EC402	3.00	2.44	2.07	1.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27	3.00	1.22	0.00
EC403	3.00	2.56	2.17	1.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.34	3.00	1.28	0.00
EC491	3.00	3.00	2.55	1.53	1.53	0.00	0.00	0.00	0.00	0.00	0.00	1.53	3.00	3.00	0.00
EC492	3.00	2.93	2.44	1.46	1.46	0.00	0.00	0.00	0.00	0.00	0.00	1.46	3.00	2.93	0.00
EC493	3.00	3.00	2.66	1.59	1.59	0.00	0.00	0.00	0.00	0.00	0.00	1.60	3.00	3.00	0.00
ES-CS401	3.00	3.00	2.57	1.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.57	3.00	1.52	0.00
HS-HU481	3.00	3.00	2.54	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	3.00	3.00	1.52
EC501	3.00	2.55	2.15	1.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.31	3.00	1.27	0.00
EC502	3.00	3.00	2.66	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.63	3.00	1.58	0.00
EC503	3.00	2.44	2.07	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	3.00	1.22	0.00
EC504	3.00	2.52	2.13	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.30	3.00	1.26	0.00
EC591	3.00	3.00	2.62	1.57	1.57	0.00	0.00	0.00	0.00	0.00	0.00	1.57	3.00	3.00	0.00
EC592	3.00	3.00	2.64	1.58	1.58	0.00	0.00	0.00	0.00	0.00	0.00	1.59	3.00	3.00	0.00
EC593	3.00	3.00	2.82	1.69	1.69	0.00	0.00	0.00	0.00	0.00	0.00	1.69	3.00	3.00	0.00
MC-HU581	3.00	3.00	2.78	1.67	0.00	1.67	1.67	1.67	1.67	1.67	1.67	1.67	3.00	1.66	1.66
OE- EC506A	3.00	3.00	2.71	1.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.65	3.00	1.61	0.00
PE- EC505A	3.00	2.62	2.22	1.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.36	3.00	1.31	0.00
EC601	3.00	2.45	2.07	1.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27	3.00	1.23	0.00
EC602	3.00	2.71	2.29	1.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.40	3.00	1.36	0.00
EC681	3.00	2.83	2.36	1.42	1.42	0.00	0.00	0.00	0.00	0.00	0.00	1.42	3.00	2.83	0.00
EC691	3.00	3.00	2.53	1.52	1.52	0.00	0.00	0.00	0.00	0.00	0.00	1.52	3.00	3.00	0.00

EC692	3.00	2.90	2.42	1.45	1.45	0.00	0.00	0.00	0.00	0.00	0.00	1.45	3.00	2.90	0.00
HS-HU601	3.00	3.00	2.55	1.57	0.00	1.57	1.57	1.57	1.57	1.57	1.57	1.57	3.00	1.51	1.51
MC681	3.00	2.44	2.03	1.22	0.00	1.22	1.22	1.22	1.22	1.22	1.22	1.22	3.00	1.22	1.22
OE-EC604A	3.00	3.00	2.63	1.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.62	3.00	1.55	0.00
PE-EC603C	3.00	2.48	2.10	1.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.29	3.00	1.24	0.00
EC781	3.00	3.00	2.67	1.60	1.60	0.00	0.00	0.00	0.00	0.00	0.00	1.60	3.00	3.00	0.00
EC782	3.00	3.00	2.66	1.59	1.59	0.00	0.00	0.00	0.00	0.00	0.00	1.60	3.00	3.00	0.00
HS-HU701	3.00	3.00	2.89	1.75	0.00	1.75	1.75	1.75	1.75	1.75	1.75	1.75	3.00	1.73	1.73
OE-EC704A	3.00	3.00	2.60	1.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.58	3.00	1.55	0.00
PE-EC701C	3.00	3.00	2.71	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.66	3.00	1.61	0.00
PE-EC702B	3.00	2.86	2.42	1.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.48	3.00	1.43	0.00
PE-EC703A	3.00	2.97	2.50	1.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	3.00	1.49	0.00
EC881	3.00	2.92	2.43	1.46	1.46	0.00	0.00	0.00	0.00	0.00	0.00	1.46	3.00	2.92	0.00
EC882	3.00	2.84	2.37	1.42	1.42	0.00	0.00	0.00	0.00	0.00	0.00	1.42	3.00	2.84	0.00
OE-EC803A	3.00	3.00	2.67	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.63	3.00	1.58	0.00
OE-EC804B	3.00	2.78	2.35	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.45	3.00	1.39	0.00
PE-EC801B	3.00	3.00	2.58	1.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.58	3.00	1.53	0.00
PE-EC802B	3.00	3.00	2.61	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	3.00	1.54	0.00
Direct Attainment	2.99	2.75	2.38	1.44	0.53	0.14	0.14	0.14	0.14	0.14	0.29	1.27	2.99	1.91	0.14

Note:

- ❖ C101, C102 are indicative courses in the first year. Similarly, C409 is final year course. First numeric digit indicates year of study and remaining two digits indicate course nos. in the respective year of study.
- ❖ Direct attainment of a PO/PSO is determined by taking average across all courses addressing that PO/PSO.

Table No. 3.8.2: PO and PSO attainment value using indirect assessment tools.

Survey	Stakeholder Group	Primary Focus	Departmental Relevance
Survey 1	Final year students / exit survey	Perceived attainment of engineering knowledge, problem analysis, design, tools, teamwork, ethics and lifelong learning.	Captures graduate readiness in circuits, analog/digital electronics, communication systems, embedded systems, VLSI, signal processing and project execution.
Survey 2	Alumni / higher study / industry exposure feedback	Usefulness of program learning in industry, research, competitive examinations, higher education and professional practice.	Validates long-term relevance of ECE curriculum, laboratory practices, mini projects, major project, internship and software/hardware tool exposure.
Survey 3	Employer / internship mentor / project evaluator feedback	Workplace readiness, technical communication, problem solving, modern tool usage, professional conduct and	Captures external perception of ECE graduate capability in design, testing, measurement, troubleshooting, coding, data acquisition and system integration.

		multidisciplinary exposure.	
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Name of the Survey	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Survey 1	3	3	3	3	3	3	2.75	3	3	3	3	3	3	3	3
Survey 2	3	2.75	3	3	2.75	3	2.5	2.75	2.75	3	2.75	3	3	2.75	3
Survey 3	3	3	3	3	3	3	2.75	3	3	3	3	3	3	3	3
Indirect Attainment	3	2.92	3	3	2.92	3	2.67	2.92	2.92	3	2.92	3	3	2.92	3

Add more columns as needed for PSOs if any.

Note:

- ❖ Mention the type of survey conducted and the location of its source.
- ❖ Indirect attainment level of a PO/PSO is determined based on the student exit surveys, employer surveys, etc.

Table No. 3.8.3: Overall PO and PSO attainment value

Assessment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
Direct Attainment	2.26	2.30	2.13	1.94	1.50	1.95	1.70	0.61	1.18	1.36	0.94	2.16	2.21	2.13	2.08	1.52
Indirect Attainment	3	2.75	3	3	2.75	3	3	3	3	3	3	3	3	3	3	3
Overall Attainment	2.48	2.44	2.39	2.26	1.88	2.27	2.09	1.33	1.73	1.85	1.56	2.41	2.45	2.39	2.36	1.96

Criterion 4: Students' Performance (120)

Table No. 4A: Admission details for the program excluding those admitted through multiple entry and exit points.

Item (Information is to be provided cumulatively for all the shifts with explicit headings, wherever applicable)	CAY	CAYm1	CAYm2	CAYm3	CAYm4 (LYG)	CAYm5 (LYGm1)	CAYm6 (LYGm2)
N= Sanctioned intake of the program (as per AICTE /Competent authority)	120	120	120	120	120	120	120
N1 = Total no. of students admitted in the 1st year minus the no. of students, who migrated to other programs/ institutions plus no. of students, who migrated to this program	107-1+0=106	90-0+0=90	126-1+0=125	126-2+0=124	127-3+0=124	87-1+0=86	126-1+0=125
N2 = Number of students admitted in 2nd year in the same batch via lateral entry including leftover seats	06	00	06	06	12	28	12
N3 = Separate division if any	00	02	01	02	01	00	02
N4 = Total no. of students admitted in the 1st year via all supernumerary quotas	00	00	00	00	00	00	00
Total number of students admitted in the program (N1 + N2 + N3 + N4) - excluding those admitted through multiple entry and exit points.	106+06+0+0 =112	90+0+2+0 =92	125+6+1+0 =132	124+6+2+0 =132	124+12+1+0 =137	86+28+0+0 =114	125+12+2+0 =139

CAY=Current Academic Year.

CAYm1 = Current Academic Year Minus 1 = Current Assessment Year (AY).

CAYm2 = Current Academic Year Minus 2 = Current Assessment Year Minus 1 (AYM1). LYG= Last Year Graduate.

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LYGm1 = Last Year Graduate Minus 1.

LYGm2=Last Year Graduate Minus 2.

Table No. 4B: Admission details for the program through multiple entry and exit points.

Item (No. of students admitted/exited through multiple entry and exit points) in the respective batch		CAY	CAYm1	CAYm2	CAYm3	CAYm4 (LYG)	CAYm5 (LYGm1)	CAYm6 (LYGm2)
N5 (Multiple entry)	N52 = No. of students admitted in 2nd year via multiple entry and exit points in same batch	0 (NA)	0	0	0	0	0	0
N5 = N52+N53+N54	N53 = No. of students admitted in 3rd year via multiple entry and exit points in same batch	0 (NA)	0 (NA)	0	0	0	0	0
	N54 = No. of students admitted in 4th year via multiple entry and exit points in same batch	0 (NA)	0 (NA)	0 (NA)	0	0	0	0
N5 = N52+N53+N54		0 (NA)	0	0	0	0	0	0
N6 (Multiple exit) N6 = N61+N62+N63	N61 = No. of students exits after 1st year via multiple entry and exit points in same batch	03	1	6	3	6	8	2
	N62 = No. of students exit after 2nd year via multiple entry and exit points	0 (NA)	0 (NA)	3	1	4	2	0
	N63 = No. of students exit after 3rd year via multiple entry and exit points in same batch	0 (NA)	0 (NA)	0 (NA)	1	1	0	0
N6 = N61+N62+N63		03	1	9	5	11	10	2

Table No. 4C: No. of students graduated within the stipulated period of the program.

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Year of entry	Total no. of students(N1+N2+N3+N4+N5-N6as defined above)	Number of students who have successfully graduated in the stipulated period of study [Total of with Backlogs + without Backlogs]			
		I Year	II Year	III Year	IV Year
CAY (2025-26)	109(106+06+0+0+0-03)	106			
CAYm1(2024-25)	91(90+0+2+0+0-1)	90	91		
CAYm2(2023-24)	123(125+06+01+0+0-9)	125	126	123	
CAYm3(2022-23)	127(124+06+02+0+0-5)	124	129	128	127
CAYm4 (LYG) (2021-22)	126(124+12+01+0+0-11)	124	131	127	126
CAYm5 (LYGm1)(2020-21)	104(86+28+0+0+0-10)	86	106	104	104
CAYm6 (LYGm2)(2019-20)	137(125+12+02+0+0-02)	125	137	137	137

4.1. Enrolment Ratio in the First Year(20) ER

Points =Average ER* 100

Table No. 4.1.1: Student enrolment ratio in the1styear.

Item(Students Enrolled in the First Year on Average over 3 academic years (CAY, CAYm1, and CAYm2))	CAY	CAYm1	CAYm2
N = Sanctioned intake of the program in the1styear(as per AICTE/Competent authority)	120	120	120
N1 = Total no. of students admitted in the 1st year minus the no. of students, who migrated to other programs/ institutions plus no. of students, who migrated to this program	107-1+0 = 106	90-0+0 = 90	125-0+0 = 125
N4 = Total no. of students admitted inthe1st year via all supernumerary quotas	0	0	0
Enrolment Ratio (ER)=(N1+N4)/N	0.88	0.75	1.04
Average ER=(ER_1+ER_2+ER_3)/3	(0.88+0.75+1.04)/3=0.89=89%		

Year of entry	N (From Table 4.1)	N1 (From Table 4.1)	N4 (From Table 4.1)	Enrollment Ratio [(N1+N4)/N*100]
2025-26 (CAY)	120	106	0	88.33
2024-25 (CAYm1)	120	90	0	75.00
2023-24 (CAYm2)	120	125	0	104.17

Table No. 4.1.2: The marks distribution for enrolment ratio in the1styear.

Item(Students Enrolled in the First Year on Average over3academic years (CAY, CAYm1, and CAYm2))	Marks
>=90%students Enrolled in the First Year on average over3 academic years (CAY, CAYm1, and CAYm2)	20
>=80%students Enrolled in the First Year on average over3 academic years (CAY, CAYm1, and CAYm2)	17
>=70%students Enrolled in the First Year on average over3 academic years (CAY, CAYm1, and CAYm2)	14
>=60%students enrolled in the First Year on average over3 academic years (CAY, CAYm1, and CAYm2)	11
>=50%students Enrolled in the First Yearon average over3 academic years (CAY, CAYm1, and CAYm2)	08
>=40%students Enrolled in the First Yearon average over3 academic years (CAY, CAYm1, and CAYm2)	05

4.2. Success Rate of the Students in the Stipulated Period of the Program (15)

Success Rate (SR)=(No. of students who graduated from the program in the stipulated course duration)/(No. of students admitted in the 1st year of that batch and those actually admitted in the 2nd year via lateral entry, plus the number of students admitted through multiple entry (if any) and separate division if applicable, minus the number of students who exited through multiple entry (if any).

Average SR=Mean of SR for the Past Three batches.

SRPoints=1.5*Average SR/10.

Table No. 4.2.1: the Success Rate in the stipulated period of a program.

Item	(2021-22) LYG	(2020-21) LYGm1	(2019-20) LYGm2
A* = No. of students admitted in the 1st year of that batch and those actually admitted in the 2nd year via lateral entry, plus the number of students admitted through multiple entry, if any, and separate division if applicable, minus the number of students who exited through multiple entry, if any.	132.00	148.00	137.00
B = No. of students who graduated from the program in the stipulated course duration.	103.00	96.00	137.00
Success Rate (SR) = (B/A) × 100	78.03	64.86	100.00

Note *: If the value of A in Table No. 4.2.1 is less than the sum of the sanctioned intake (N) and the lateral entry including leftover seats (N2), then the value of A in Table No. 4.2.1 should be the sum of the sanctioned intake (N) and the lateral entry including leftover seats (N2).

4.3. Academic Performance of the First-Year Students of the Program(10)

Academic Performance=Average Academic Performance Index(API),where

API=((Mean of 1st Year Grade Point Average of all successful students on a 10-point scale)or(Mean of the percentage of marks of all successful students in 1st year/10))

*(Number of successful students/number of students appeared in the examination)

Successful Students Are Those who have proceeded to the 2nd year.

Table No. 4.3.1: Academic Performance of the First-Year Students of the Program.

Academic Performance	CAYm1 (2024-25)	CAYm2 (2023-24)	CAYm3 (2022-23)
Mean of CGPA or mean percentage of all successful students (X)	7.85	6.97	6.93
Y = Total no. of successful students	90.00	125.00	124.00
Z = Total no. of students appeared in the examination	90.00	125.00	124.00
API = X × (Y/Z)	7.85	6.97	6.93
Average API = (AP1 + AP2 + AP3) / 3	7.14		

4.4 Academic Performance of the Second Year Students of the Program (10) Academic

Performance=Average Academic Performance Index(API),where

API=((Mean of 2nd Year Grade Point Average of all successful students on a 10-point scale)or(Mean of the percentage of marks of all successful students in 2nd Year/10))

* (Number of successful students/number of students appeared in the examination). Successful students are those who have proceeded to the 3rd year.

Table No. 4.4.1: Academic Performance of the Second Year Students of the Program

Academic Performance	CAYm1 (2024-25)	CAYm2 (2023-24)	CAYm3 (2022-23)
X = Mean of 2nd year grade point average of all successful students on a 10-point scale, or mean percentage of marks of all successful students in 2nd year / 10	6.89	6.62	7.04
Y = Total no. of successful students	126.00	129.00	131.00
Z = Total no. of students appeared in the examination	126.00	129.00	131.00
API = $X \times (Y/Z)$	6.89	6.62	7.04
Average API = (AP1 + AP2 + AP3) / 3	6.85		

Assessment [Average API]: 6.85

4.5 Academic Performance of the Third Year Students of the Program (10) Academic

Performance=Average Academic Performance Index(API),where

API=((Mean of 3rd Year Grade Point Average of all successful students on a 10-point scale)or(Mean of the percentage of marks of all successful students in 3rd Year/10))

* (Number of successful students/number of students appeared in the examination). Successful students are those who have proceeded to the 4th year.

Table No. 4.5.1: Academic Performance of the Third Year Students of the Program

Academic Performance	CAYm1 (2024-25)	CAYm2 (2023-24)	CAYm3 (2022-23)
X = Mean of 3rd year grade point average of all successful students on a 10-point scale, or mean percentage of marks of all successful students in 3rd year / 10	6.92	6.72	7.28
Y = Total no. of successful students	128.00	127.00	104.00
Z = Total no. of students appeared in the examination	128.00	127.00	104.00
API = $X \times (Y/Z)$	6.92	6.72	7.28
Average API = (AP1 + AP2 + AP3) / 3	6.97		

Assessment [Average API]: 6.97

4.6 Placement, Higher Studies and Entrepreneurship (30)

Placement Index Points = $0.3 \times \text{Average Placement Index (P)}$.

Table No. 4.6.1: Placement, higher studies, and entrepreneurship details.

Item	LYG (2021-22)	LYGm1 (2020-21)	LYGm2 (2019-20)
FS* = Total no. of final year students	126.00	104.00	137.00
X = No. of students placed	64.00	43.00	93.00
Y = No. of students admitted to higher studies	3.00	10.00	3.00
Z = No. of students taking up entrepreneurship	1.00	0.00	0.00
Placement Index (P) = $\left(\frac{(X + Y + Z)}{FS} \times 100 \right)$	53.96	50.96	70.07
Average Placement Index = $(P_1 + P_2 + P_3) / 3$	58.33		

Placement Index Points: 15.74

Note*: If the value of FS in Table No. 4.6.1 is less than the sum of the sanctioned intake

(N) and the lateral entry including leftover seats (N2), then the value of FS in Table No. 4.6.1 should be the sum of the sanctioned intake (N) and the lateral entry including leftover seats (N2).

4.7 Professional Activities (25)

4.7.1 Professional Societies/ Bodies, Chapters, Clubs, and Professional Engineering Events Organized (05)

(Provide a list of active professional societies/bodies, chapters, and clubs that exist at the departmental/cluster level in the past 3 years, and also provide a list of events organized by the professional societies, chapters, and clubs over the past 3 years.)

Table No. 4.7.1.1: List of active professional societies/bodies/chapters/clubs.

S.N.	Name of the Professional Societies/Bodies, Chapters, Clubs
1	IETE Student Chapter
2	IEEE Student Chapter
3	Robotics and IoT Club
4	RF Design Club
5	Cyber Physical System Club
6	FOSS Club

Table No. 4.7.1.2: List of events/programs organized.

S.N.	Name of the Professional Societies/Bodies/Chapters/Clubs	Name of the Event	National/ International level	Date of Event
CAYm1				
1	IEEE	GENERATIONAL TRANSFORMATIONS IN VLSI	NATIONAL	03-10-2024

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S.N.	Name of the Professional Societies/Bodies/Chapters/Clubs	Name of the Event	National/ International level	Date of Event
2	Robotics and IoT Club	INTERESTED FOR INDUSTRY ACADEMIA CONNECT PROGRAM AND CAREER OPPORTUNITY FOR NEWLY ADMITTED STUDENTS	NATIONAL	16-08-2024
3	Cyber Physical System Club	INDUSTRY VISIT & PARTICIPATION IN THE ROBOTICS AND AUTOMATION LAB OF CSIR CMERI, DURGAPUR	NATIONAL	04-09-2024
CAYm2				
1	IETE Student Chapter	Poster Presentation/ Competition	NATIONAL	16.10.2023
1	IETE Student Chapter	Workshop	NATIONAL	30.01.2024 - 31.01.2024
2	IEEE	EXPERT TALK & CAREER COUNSELING SESSION FOR HIGHER STUDIES LIKE GATE	INTERNATIONAL	22-03-2024
2	IEEE	AWARENESS OF THE INNOVATION OPPORTUNITY IN THE FIELD OF SOFT ROBOTICS AND SENSOR DESIGN	INTERNATIONAL	28-11-2023
3	Robotics and IoT Club	AWARENESS OF THE INNOVATION OPPORTUNITY IN THE FIELD OF SOFT ROBOTICS AND SENSOR DESIGN	NATIONAL	28-11-2023
4	Cyber Physical System Club	SHORT TERM TRAINING PROGRAM ON "VLSI & ITS RECENT ADVANCEMENTS"	NATIONAL	15-04-2024 TO 19-04-2024
CAYm3				
1	IEEE	RECENT TRENDS AND ADVANCES IN ELECTRONICS	INTERNATIONAL	19-09-2022 TO 23-09-2022
1	IEEE	WORKSHOP ON METAMATERIAL AND METAMATERIAL ASSISTED VACUUM ELECTRONIC DEVICES	INTERNATIONAL	29-05-2023 TO 02-06-2023

4.7.2 Student's Participation S in Professional Events(10)

(Provide details of students, who have participated at other institutes in various professional events, such as hackathons, codeathons, ideathons, etc., over the past 3 years.)

Table No. 4.7.2.1: List of students participated in professional events.

S. N.	Name of the Student	Name of the Event	State	Date of Event	Name of The award if any
CAYm1					
1	Priyanshu Singh; Team: TECHNOVATORS	SmartIndiaHackathon2025- ProblemStatement:SIH25117	National	2025	Mentored SIH participation
2	Namrata Roy; Team: Eco Nova	SmartIndiaHackathon2025- ProblemStatement:SIH25020	National	2025	Mentored SIH participation
1	I) SARBARI CHELL II) DIYA HAZRA	TECHFEST 2024-2025, ARVR	NATIONAL	27-02-2025 TO 28-02-2025	
2	I) SUMIT SINGH	BUG_BOUNTY	NATIONAL	27-02-2025 TO 28-02-	

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				2025	
3	I) VIVEK KUMAR SINGH	BUILD INDIA	NATIONAL	27-02-2025 TO 28-02-2025	ANIKET MONDAL -1ST, ANIKET BANDYOPADHYAY – 1ST AND SOUNAK KESH – 1ST
4	I) SHOUNAK ROY CHAUDHURY II) SMRITI KUMARI	CINETRIX	NATIONAL	27-02-2025 TO 28-02-2025	
5	I) NAMRATA ROY II) RISHAV KUMAR III) SUMAN KUMARI	CIRCUIT TRIX	NATIONAL	27-02-2025 TO 28-02-2025	ARPAN MUKHERJEE, RISHAV KUMAR – 1st, AND SOUVIK MONDAL – 2 ND AND SAKSHI ROY, RAHUL LAYEL – 3RD
6	I) BABA SOLANKI II) GAURAV KUMAR II) HARSH RAJ	GAMES OF THRONES	NATIONAL	27-02-2025 TO 28-02-2025	
7	I) SAUMITA CHAUDHURI II) SAKSHI ROY	HACKMEZ	NATIONAL	27-02-2025 TO 28-02-2025	
8	I) VIVEK KUMAR TEWARY II) MUSKAN KUMARI III) SAMANWAY GHOSH	ON SPOT QUIZ	NATIONAL	27-02-2025 TO 28-02-2025	
9	I) ROHIT KUMAR MANDAL II) ANISA BHADURI III) ADITI DEY	PAPYRUS	NATIONAL	27-02-2025 TO 28-02-2025	
10	I) SOMYA SINGH II) RISHAV KUMAR	ROBOTRIX	NATIONAL	27-02-2025 TO 28-02-2025	
11	I) ANUJ SHARMA II) ANUBHAV PRAKASH MISHRA	STARTUP SYNERGY	NATIONAL	27-02-2025 TO 28-02-2025	
12	I) ANISA BHADURI II) ANKITA SINGHA III) SOUBHIK DUTTA	TECHACKTRON	NATIONAL	27-02-2025 TO 28-02-2025	
13	I) RISHAV KUMAR	VERTIQUEST	NATIONAL	27-02-2025 TO 28-02-2025	

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1	Sakshi Roy	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
2	Prince Poddar	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
3	Subhadip Bandyopadhyaya	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
4	Pritul Kumar Roy	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
5	Dipannita Ganai	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
6	Somya Singh	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
7	SUBHADEEP CHINA	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
8	Janmejy Chakraborty	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
9	Rikta Maji	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
10	Kishlay Kumar	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
11	Shivam Kumar Mishra	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
12	Liza Samanto	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
13	Ishita Das	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
14	Muskan Kumari	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
15	Anisa Bhaduri	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
16	Abir Dey	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-	NA

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		Engineering		2024	
17	Shambhabi Sen	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
18	Souvik Das	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
19	Tripti Gupta	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
20	ANUSHKA GHOSH	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
21	SOUNAKKESH	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
22	Saumita Chaudhuri	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
23	Ashmita Bhattacharjee	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
24	Ankita Singha	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
25	Rikta Maji	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
26	Bishal Halder	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
27	Shreyasi Nath	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
28	Rajnish Kumar	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
29	Shivam Kumar	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
30	Anand Mohan Prasad	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
31	TANISHTHA PAUL	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
32	Sarthak Banerjee	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-	NA

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		Engineering		2024	
33	DEBJIT CHAKRABORTY	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
34	Santanu Bhuiin	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
35	NAMRATA ROY	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
36	Subhadip Sinha	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
37	Deepshikha Chel	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
38	Titli Hazra	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
39	SUMAN KUMARI	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
40	Aditi Mandal	A seminar on Generational Transformation in VLSI Engineering	NATIONAL	03-10-2024	NA
CAYm2					
1	I) VIVEK TIWA II) AMISH KUMAR SIN III) RISHIKESH JHA AND SO ON	TECHFEST 2023-2024, AUTOCAD DESIGN	NATIONAL	16-01-2024 to 17-01-2024	
2	I) Aditya Sagar II) SACHIN KUMAR III) RISHIKESH JHA AND SO ON	BLIND CODE	NATIONAL	16-01-2024 to 17-01-2024	
3	I) KRISHNA GUPTA II) VIVEK TEWARY III) PRINCE PODDAR AND SO ON	BUSINESS MODEL CANVAS	NATIONAL	16-01-2024 to 17-01-2024	
4	I) ARPAN MUKHERJEE II) KUNTAL SOE MONDAL III) NAMRATA ROY AND SO ON	CINETRIX AND ANIMATION	NATIONAL	16-01-2024 to 17-01-2024	
5	I) SUJIT DAS	CIRCUIT TRIX	NATIONAL	16-01-2024 to	

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	II) SOUDEEP GHOSH III) PRIYANSHU KUMAR SINGH AND SO ON			17-01-2024	
6	I) SHREYA CHAKRABORTY II) PRIYANSHU KUMAR SINGH III) SOURABH DAS AND SO ON	DARE TO BEBUG	NATIONAL	16-01-2024 to 17-01-2024	
7	I) ADITYA SAGAR II) RAJNISH KUMAR III) KOYENA MUKHERJEE AND SO ON	DATA DETECTOR	NATIONAL	16-01-2024 to 17-01-2024	
8	I) SUDIP PAL II) PRIYANSHU KUMAR SINGH III) NISHIT BAYEN AND SO ON	DEVCON	NATIONAL	16-01-2024 to 17-01-2024	
9	I) PIYUSH GHOSH II) MINI MADHU III) PRATIK JANA AND SO ON	EMBEDDED IT	NATIONAL	16-01-2024 to 17-01-2024	
10	I) SUJOYA GHOSH II) SHIVAM KUMAR III) SOUVIK MONDAL AND SO ON	FLASHEX TEMPO	NATIONAL	16-01-2024 to 17-01-2024	
11	I) BISHAL HALDER II) MINI MADHU III) ABHEEK KONAR AND SO ON	GAME OF THRONES	NATIONAL	16-01-2024 to 17-01-2024	
12	I) ADITYA SAGAR II) AMISH KUMAR SINGH III) KUNAL ANAND AND SO ON	HACKMAZA	NATIONAL	16-01-2024 to 17-01-2024	
13	I) SUJOYA GHOSH II) SAIKAT DEY III) SOUDEEP GHOSH AND SO ON	LANGUAGE IDENTIFICATION	NATIONAL	16-01-2024 to 17-01-2024	
14	I) MOUPRIYA HENS II) SUDIPTA BANERJEE III) KUNAL ANAND	MACHVATION	NATIONAL	16-01-2024 to 17-01-2024	

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	AND SO ON				
15	I) SAYAN DUTTA II) SAIKAT DEY III) SUBHAM DEY AND SO ON	SPORT QUIZ	NATIONAL	16-01-2024 to 17-01-2024	ANKIT MONDAL – 1ST
16	I) SOURABH DAS II) PRIYANSHU KUMAR SINGH III) SUDIP PAL AND SO ON	PAPYRUS	NATIONAL	16-01-2024 to 17-01-2024	
17	I) ANIKET DAS II) SHIVAM KUMAR III) PRANABASISH MANDAL AND SO ON	PHOTOGRAPHY	NATIONAL	16-01-2024 to 17-01-2024	
18	I) MUSKAN KUMARI II) SUDIPTA BANERJEE III) KUNAL ANAND AND SO ON	ROBOTRIX	NATIONAL	16-01-2024 to 17-01-2024	
19	I) VIVEK TEWARY II) ARPAN MUKHERJEE III) PRINCE PODDAR AND SO ON	ROTOLARE	NATIONAL	16-01-2024 to 17-01-2024	
20	I) SAYAN DUTTA II) PRIYANKA MOITRA III) NANDINI NEOGI AND SO ON	SYSTEM AND GRAPHIC DESIGN	NATIONAL	16-01-2024 to 17-01-2024	
21	I) SUMAN KUMARI II) SUJOYA GHOSH III) SOUVIK MONDAL AND SO ON	TECHAHACTRON	NATIONAL	16-01-2024 to 17-01-2024	
22	I) DIPTI KUMARI II) RICK MONDAL III) SUBHAM DEY AND SO ON	TECH - IDEA	NATIONAL	16-01-2024 to 17-01-2024	
23	I) ADITYA SAGAR II) SUDIPTA BANERJEE III) RISHIKESH JHA AND SO ON	TECH MODELS	NATIONAL	16-01-2024 to 17-01-2024	
24	I) SAYAN DUTTA	WANNACODE	NATIONAL	16-01-2024 to	

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	II) SAIKAT DEY III) ANAND MOHAN PRASAD AND SO ON			17-01-2024	
25	I) MOUPRIYA HENS II) SACHIN KUMAR III) KOYENA MUKHERJEE AND SO ON	WEB-D	NATIONAL	16-01-2024 to 17-01-2024	
26	I) NAMRATA ROY II) KISHLAY KUMAR III) KUMARI KOMAL AND SO ON	TECHNOVATION	NATIONAL	16-01-2024 to 17-01-2024	KUMARI KOMAL – 2 ND , PRAGATI PRASAD – 2 ND , ADITI PRASAD – 2 ND , PRIYANKA MOITRA – 2 ND AND RAJNISH KUMAR – 2 ND
27	I) SUMIT RAM II) SAKSHI ROY III) SHWETA KUMARI AND SO ON	TRICKY CIRCUIT			SUMIT RAM – 3 RD , PRANABASISH MANDAL – 3 RD
CAYm3					
1	Student team under mentorship	Ministry of Railways problem context - Smart Artificial Intelligence-based Surveillance and Intrusion Prevention	National	20 January 2023	Mentored project
2	Saikat Pan; Sayantan Chatterjee; Ritika Chatterjee	Health, Cultural and Educational Fair, SAIL Cooperative Ground, City Centre, Durgapur - Neural Radiance Field-based Three-Dimensional Scanner	State/Regional	23 January 2023	First Position
CAYm3					
1	TUSHAR DEO SUBHOSHREE PATTANAIK AMAN KUMAR ADITYA JHA	TECH SKIT	National	25-04-2023 to 26-04-2023	
2	SUBHOSHREE PATTANAIK ARKIT DAS ABHISHEK KUMAR	LANGUAGE IDENTIFICATION	National	25-04-2023 to 26-04-2023	
3	ADITYA JHA AMAN KUMAR TUSHAR DEO	ON SPOT QUIZ	National	25-04-2023 to 26-04-2023	

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4	TUSHAR DEO SUBHOSHREE PATTANAIK AMAN KUMAR ADITYA JHA	FLASH EXTEMPO	National	25-04-2023 to 26-04-2023	
5	SUBHOSHREE PATTANAIK ARKIT DAS ABHISHEK KUMAR	GRAPHIC DESIGN	National	25-04-2023 to 26-04-2023	
6	ADITYA JHA AMAN KUMAR TUSHAR DEO	SYSTEM DESIGN	National	25-04-2023 to 26-04-2023	
7	TUSHAR DEO SUBHOSHREE PATTANAIK AMAN KUMAR ADITYA JHA	ROBOTRIX	National	25-04-2023 to 26-04-2023	
8	SUBHOSHREE PATTANAIK ARKIT DAS ABHISHEK KUMAR	CIRCUITRIX	National	25-04-2023 to 26-04-2023	
9	ADITYA JHA AMAN KUMAR TUSHAR DEO	CINETRIX& ANIMATION MOVIE	National	25-04-2023 to 26-04-2023	
10	TUSHAR DEO SUBHOSHREE PATTANAIK AMAN KUMAR ADITYA JHA	PHOTOGRAPHY	National	25-04-2023 to 26-04-2023	
11	SUBHOSHREE PATTANAIK ARKIT DAS ABHISHEK KUMAR	PAPYRUS	National	25-04-2023 to 26-04-2023	
12	ADITYA JHA AMAN KUMAR TUSHAR DEO	BUSINESS MODEL CANVAS	National	25-04-2023 to 26-04-2023	
13	TUSHAR DEO SUBHOSHREE PATTANAIK AMAN KUMAR ADITYA JHA	TECH MODELS	National	25-04-2023 to 26-04-2023	
14	SUBHOSHREE PATTANAIK ARKIT DAS	TECHNOVATION(PPT)	National	25-04-2023 to 26-04-2023	

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	ABHISHEK KUMAR				
15	ADITYA JHA AMAN KUMAR TUSHAR DEO	TECH IDEA(PPT)	National	25-04-2023 to 26-04-2023	
16	TUSHAR DEO SUBHOSHREE PATTANAIAK AMAN KUMAR ADITYA JHA	TRICKY CIRCUITS	National	25-04-2023 to 26-04-2023	
17	SUBHOSHREE PATTANAIAK ARKIT DAS ABHISHEK KUMAR	EMBEDDED IT	National	25-04-2023 to 26-04-2023	
18	ADITYA JHA AMAN KUMAR TUSHAR DEO	DEVCON	National	25-04-2023 to 26-04-2023	
19	SUBHOSHREE PATTANAIAK ARKIT DAS ABHISHEK KUMAR	WEB-D	National	25-04-2023 to 26-04-2023	
20	SUBHOSHREE PATTANAIAK ARKIT DAS ABHISHEK KUMAR	WANNA CODE	National	25-04-2023 to 26-04-2023	
21	ADITYA JHA AMAN KUMAR TUSHAR DEO	HACK MAZE	National	25-04-2023 to 26-04-2023	
22	SUBHOSHREE PATTANAIAK ARKIT DAS ABHISHEK KUMAR	DARE TO DEBUG	National	25-04-2023 to 26-04-2023	
23	SUBHOSHREE PATTANAIAK ARKIT DAS ABHISHEK KUMAR	BLIND CODE	National	25-04-2023 to 26-04-2023	
24	ADITYA JHA AMAN KUMAR TUSHAR DEO	AUTO CAD DESIGN CONTEST	National	25-04-2023 to 26-04-2023	
25	SUBHOSHREE PATTANAIAK ARKIT DAS ABHISHEK KUMAR	MECHVASION (i) Crafty Coterie (ii) Puzzle quest	National	25-04-2023 to 26-04-2023	
26	ADITYA JHA AMAN	BRUG IT	National	25-04-2023 to	

	KUMAR TUSHAR DEO			26-04-2023	
27	SUBHOSHREE PATTANAIK ARKIT DAS ABHISHEK KUMAR	GAME OF THRONES	National	25-04-2023 to 26-04-2023	

4.7.3 Publication of Journals, Magazines, Newsletters, etc.in the Department(05)

(Provide details of journals, magazines, newsletters, etc., published by the department, along with the names of the editors, issue numbers, volume numbers, and a list of students involved for the past 3 years.)

Table No. 4.7.3.1: List of students involved in publication of journals, magazines, and newsletters, etc. in the Department.

S. N.	Name of Journal, Magazine, Newsletter	Name of the Editor	Name of Student & Semester	No. of Issues	Hardcopy / Softcopy
CAYm1					
ARTICLE					
1	Integrating Notch Filtering and Statistical Methods for Input Cardiac Diagnostics Using MATLAB	Electrical Engineering and Systems Science of Cornell University	Ritu Prohitba, Samalipo, 6th Semester	28-06-2025	Soft Copy https://doi.org/10.48550/arXiv.2504.02847
..					
CAYm2					
1	Efficient 3's Complement Circuit for Ternary-ALU	Gilson Inacio Wirth	Sudeshna Dutta, Snigdha Dutta, Osman Hossain Siddique, Rimpa Dey	Volume: 190-1	https://doi.org/10.29292/ijcs.v190-1
..					
CAYm3					
1	New Scalable 32 nm CMOS Radix-3 Priority Encoder		Priyanka Saha, 2019-23 Batch, 10th Semester, 1200319090	Volume 71, 2025, Issue 8	https://doi.org/10.1080/03772063.2025.2495067
..					

4.7.4 Student Publications (05)

(Provide details of student publications in journals, conferences, etc., for the past 3 years.)

Table No. 4.7.4.1: List of student publications.

S.N.	Name of the Paper	Name of the Student &	Name of the	Name of the Journal / Conference, etc.	Volume No. &	Name of the
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		Semester	Publisher		Issue No.	Award, if any
CAYm1 (2024-2025)						
CONFERENCE						
1	Metamaterial Inspired Hexagonal Split Ring Resonator Based Low Profile Stacked Rectangular Microstrip Antenna for Dedicated Short Range Communication System Applications	Arnab Mishra (M.Tech), Ranabindu Mondal, Pritam Sinha Mahapatra and Rudra Sannigrahi (8th Semester)	Springer	4th International Conference on Emerging Electronics and Automation (E2A - 2024)	NA	NA
2	Positioning Accuracy Enhancement of Android Based GNSS Raw Data through Advanced Error Correcting Algorithm	Ankita Kumari, Shikha Suman (8th Semester)	IEEE	International Conference for Women in Engineering (IEEE INCOWOCO 2024)	NA	NA
3	Studies on Navigational Satellite Visibility and Signal Strength of Different GNSS Sensor	Pritul Kumar Roy, Jeet Gorain (8th Semester)	IEEE	2024 IEEE International Conference of Electron Devices Society Kolkata Chapter (EDKCON)	NA	NA
4	Indoor-Outdoor GNSS Performance across Various Android Smartphones	Pritul Kumar Roy, Abheek Konar (8th Semester)	IEEE	2024 IEEE 21st India Council International Conference (INDICON)	NA	NA
5	Impact of Multi-GNSS Signal Strength on Smartphone Battery Consumption	Snehotosh Maji, Amish Kumar Singh (8th Semester)	IEEE	2025 5th International Conference on Trends in Material Science and Inventive Materials (ICTMIM)	NA	NA
6	Indoor-Outdoor GNSS Performance across Various Android Smartphones	Pritul Kumar Roy; Abheek Konar (8th Semester)	IEEE	2024 IEEE 21st India Council International Conference (INDICON)	NA	NA
7	A Quarter Mode SIW (QMSIW) Cavity Based Band Pass Filter (BPF) for 5G Wireless Applications	K. Sen, A. Das (8th Semester)	IEEE	1st International Conference on Radio Frequency Communication and Networks (RFCON)	NA	NA
8	Low-PDP 7:3-Counter with Novel Multi-Threshold 2:1-Multiplexer	Eshita Bandyopadhyay; Nikki Singh; Debanjan Midya (8th Semester)	IEEE	IEEE Conference on Devices for Integrated Circuit (DEV IC)	NA	NA
9	Novel Sign-Magnitude Binary to Balanced-Ternary Encoder on Basys3 Artix7 FPGA	Ashishit Anurag Daniel Tigga, Nishit Bayen & Suman Gorai (8th Semester)	IEEE	IEEE Electron Devices Kolkata Conference (EDKCON) 2024	NA	NA

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10	Securing the Future of Communication with Quantum Cryptography	Parna Kundu (Ph.D. Student) (8th Semester)	IEEE	2024 IEEE International Conference of Electron Devices Society Kolkata Chapter (EDKCON)	NA	NA
11	Investigation on Different Array Configurations of Microstrip Antenna at 28 GHz	Sourav Bhattacharyya (Ph.D. Student) (8th Semester)	IEEE	2025 IEEE 14th International Conference on Communication Systems and Networks Technologies (CSNT)	NA	NA
12	Low-PDP 7:3-Counter with Novel Multi-Threshold 2:1-Multiplexer	Eshita Bandyopadhyay, Nikki Singh, Debanjan Midya (8th Semester)	IEEE	2025 IEEE Devices for Integrated Circuit (DEV IC)	NA	NA
13	A Self-Supervised Framework for Anomaly Detection and Predictive Maintenance in Steel Rod Mills	Sumit Ram; Pranabasish Mandal; Souvik Mandal	IEEE	2025 International Conference on Computing, Intelligence, and Application (CIACON)	NA	NA
14	Adaptive Beamforming in RIS-Aided MISO Systems using Discounted-UCB Evolutionary Strategy	Arpan Mukherjee, Sudip Ghosh	IEEE	International Conference on Interdisciplinary Research in Technology & Management, 19th-21st November 2025, IIT Gandhinagar, India	NA	NA

CAYm2

JOURNAL

1	Efficient 3's Complement Circuit for Ternary-ALU	Sudeshna Dutta, Snigdha Dutta, Osman Hossain Siddique, Rimpa Dey	World Scientific	Journal of Integrated Circuit and Systems	Volume: 19-1	NA
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CONFERENCE

1	Wearable Substrate Integrated Waveguide (SIW) Iris Band Pass Filter (BPF) over Jeans Substrate	R. Roy, A. Banerjee, D. Chand, S. Sharangi (8th Sem)	IEEE	14th International Conference on Computing, Communication and Networking Technologies, ICCCNT	NA	NA
2	Flexible and Wearable EBG Loaded SIW Band Pass Filter (BPF)	S. Kumar, N. Kumari, S. Satsang (8th Sem)	IEEE	14th International Conference on Computing, Communication and Networking Technologies, ICCCNT	NA	NA
3	Flexible and Wearable EBG Loaded SIW Band Pass Filter (BPF)	S. Kumar, N. Kumari, S. Satsang (8th Sem)	IEEE	14th International Conference on Computing, Communication and Networking	NA	NA

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				Technologies, ICCCNT		
4	Microcontroller Based Water Treatment Scheme for Fish Farming	R. Ahmed, Y. Seraj, A. Raza (8th Sem)	IEEE	14th International Conference on Computing, Communication and Networking Technologies, ICCCNT	NA	NA
CAYm3						
JOURNAL						
1	New Scalable 32 nm CMOS Radix-3 Priority Encoder	Priyanka Saha, 19-23 Batch 8th Semester, 1200319090	Taylor & Francis	IETE Journal of Research	Volume 71, 2025 - Issue 8	NA
CONFERENCE						
1	Building a Classification Model Based on Feature Engineering for the Prediction of Wine Quality by Employing Supervised Machine Learning and Ensemble Learning Techniques	Harsh Raj Gupta	IEEE	2023 International Conference on Computer, Electrical & Communication Engineering (ICCECE)	NA	NA
2	Impact of Meteorological Conditions on PM2.5 Concentration in Delhi	I. Lai, S. Maji, M. M. Alam	IEEE	2022 International Interdisciplinary Conference on Mathematics, Engineering and Science (MESIICON)	NA	NA
3	Novel 32 nm CMOS Ternary 3's Complement Generator	Samanwita Mondal, Saptaparna Ghosh, Aditi Singha Mahapatra, Deblina Roy, Prerona Sanyal	IEEE	2023 IEEE Devices for Integrated Circuit (DEV IC)	NA	NA

Criterion 5: Faculty Information (100)

Academic Year: (2025-2026)

Table No. 5A: Faculty details

S.N.	Name of the Faculty	PAN No.	Apa Ar Faculty Id*(if any)	Highest degree	University	Area of Specialization	Date of Joining in This Institution	Date of Joining in the Department (in case of transfer from one Department to another)	Experience in years in current institute	Designation at Time Joining in This Institution	Present Designation	The date on which Designated as Professor/ Associate Professor if any	Nature of Association (Regular/ Contract/ Ad hoc)	if Contractual Mention Full Time or (Part time or hourly based)	Currently Associated(Y/N)	Date of Leaving if any (in Case Currently Associated is "No")
1	Dr. Mrinmoy Chakraborty	ALRPC4105G		Ph.D.	Birla Institute Of Technology, Mesra	Antenna Design	30.04.2009		17 years	Senior Lecturer	Associate Professor	01-02-2024	Regular		Y	No
2	Dr. Khondekar Mofazzal Hossain	AJGPK9137R		Ph.D.	NIT, Durgapur	Signal Processing	11-01-2005	01-11-2021	21 years	Lecturer	Professor	01-03-2018	Regular		Y	No
3	Dr. Tapas Mondal	AKBPM7654H		Ph.D.	IIST, Shibpur	EM Theory / Microwave	03.02.2003		23 years	Lecturer	Associate Professor	01/07/2010	Regular		Y	No
4	Ms. Keka Hajra	ABMPH2703C		M.Tech	The University of Burdwan	Satellite Communication	12.07.2004		21 years	Lecturer	Assistant Professor		Regular		Y	No
5	Dr. Alope Saha	BMMPS9772E		Ph.D.	BIT, Mesra	Microelectronics and VLSI Design	26.02.2009		17 years	Senior Lecturer	Professor	01/11/2025	Regular		Y	No
6	Dr. Tribeni Prasad	APHPB1432K		Ph.D.	Jadavpur University	Signal Processing, VLSI, AIML, CPS	02.07.2013		12 years	Assistant Professor	Associate Professor	01-07-2022	Regular		Y	No

NATIONAL BOARD OF ACCREDITATION

	Banerjee															
7	Mr. Tapas Roy	AKVPR1673D		M.Tech	Calcutta University, West Bengal	Instrumentation & Control Engineering	27.03.2006	06-09-2018	20 years	Lecturer	Assistant Professor		Regular		Y	No
8	Dr. Aritra Bhowmik	AMNPB1752F		Ph.D	NIT, Durgapur	RF & Microwaves Engineering	31.03.2007		19 years	Lecturer	Assistant Professor		Regular		Y	No
9	Ms. Dipta Chaudhuri	AHPPC3217M		M.Tech	NIT, Durgapur	Communication Engineering, Signal Processing	09.01.2007		19 years	Lecturer	Assistant Professor		Regular		Y	No
10	Dr. Anirban Chattopadhyay	AHJPC9839P		Ph.D	NIT, Durgapur	Signal Processing	01.08.2008		17 years	Lecturer	Assistant Professor		Regular		Y	No
11	Dr. Abhijit Banerjee	AQPPB4443F		Ph.D	NIT, Durgapur	Machine Learning in Robotics, Deep Reinforcement Learning	16.04.2009		16 years	Lecturer	Associate Professor	05-09-2024	Regular		Y	No
12	Dr. Sourav Moitra	BEBPM2634C		Ph.D	NIT, Durgapur	Microwave Engineering	30.01.2010		16 years	Assistant Professor	Associate Professor	05-09-2024	Regular		Y	No
13	Dr. Debipriya Dutta	AVUPD0318B		Ph.D	The University of Burdwan	Satellite Communication	06.02.2010		15 years	Assistant Professor	Assistant Professor		Regular		N	24-12-2025
14	Ms. Moutusi Mondal	BEAPM2855Q		MS	IIT, Kharagpur	Antenna Design, IMAGE-PROCESSING	17.02.2010		16 years	Assistant Professor	Assistant Professor		Regular		Y	No
15	Mr. Nilkamal Bhunia	ATOPB6815B		M.Tech	Jadavpur University	Adaptive Filter Design	23.02.2010		16 years	Assistant Professor	Assistant Professor		Regular		Y	No
16	Mr. Pradipta Sarkar	CDGPS2731H		M.Tech	NIT, Durgapur	Digital VLSI Design	12.01.2016		10 years	Assistant Professor	Assistant Professor		Regular		Y	No
17	Ms. Subhadra Deb Roy	ASOPD5859N		M.Tech	MAKAUT	Electronics and Communication, Microwave and Antenna Design	01-08-2019		7 years	Assistant Professor	Assistant Professor		Regular		Y	No

NATIONAL BOARD OF ACCREDITATION

18	Mr. Surajit Batabyal	AMNPB1750H		M.Tech	MAKAUT	Electronics and Communication, Microwave and Antenna Design	01-08-2019		7 years	Assistant Professor	Assistant Professor		Regular		Y	No
19	Dr. Anup Kumar Das	AKQPD9102Q		Ph.D	NIT, Durgapur	Non Linear Dynamics, Chaos Synchronization, Secure Transmission, Cryptography	01-08-2019	01-08-2019	7 years	Assistant Professor	Assistant Professor		Regular		Y	No
20	Mr. Moloy Mukherjee	APOPM6752L		M.Tech	WBUT	Communication, Signal Processing	01-04-2022	01-04-2022	4 years	Assistant Professor	Assistant Professor		Regular		Y	No
21	Dr. Ram Krishna Rakshit	AKVPR1757L		Ph.D	Brainware University, Barasat	OPTICAL FIBRE COMMUNICATION	16.12.2005		21 years	Lecturer	Assistant Professor		Regular		Y	No
22	Mr. Soumenendra Pain	BSLPP3196A		M.Tech	West Bengal University of Technology	Electronics & Communication, Microwave and Antenna Design	01-05-2022	01-05-2022	4 years	Assistant Professor	Assistant Professor		Regular		Y	No
23	Mr. Samujjwal Roy	AIMPR3568C		M.Tech	NIT, Durgapur	TELECOMMUNICATION ENGINEERING (ECE)	30-09-2004	01-11-2022	4 years	Lecturer	Assistant Professor		Regular		Y	No
24	Dr. Ardhendu Sekhar Chattopadhyay	ACKPC2376F		Ph.D.	Pacific University, Udaipur	Wireless Communication	11.02.2016		10 years	Assistant Professor	Assistant Professor		Regular		Y	No
25	Mr. Koustav Roy	ARPPR0606R		M.Tech	Jadavpur University	Control System Engineering	05.08.2008	06-09-2018	17 years	Lecturer	Assistant Professor		Regular		Y	No
26	Mr. Indranil Sengupta	BITPS8074E		M.Tech	WBUT	Communication	01-08-2019		7 years	Assistant Professor	Assistant Professor		Regular		Y	No
27	Mr. Kaushik Ghosh	APMPG8056R		M.Tech	IIT ISM Dhanbad	VLSI integrated circuit & VLSI technology	02-07-2020		5 years	Assistant Professor	Assistant Professor		Regular		Y	No

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Academic Year: 2024-2025

S.N.	Name of the Faculty	PAN No.	Apa Ar Faculty Id*(if any)	Highest degree	University	Area of Specialization	Date of Joining in This Institution	Date of Joining in the Department (in case of transfer from one Department to another)	Experience in years in current institute	Designation at Time Joining in This Institution	Present Designation	The date on which Designated as Professor/ Associate Professor if any	Nature of Association (Regular/ Contract/ Ad hoc)	if Contractual Mention Full Time or (Part time or hourly based)	Currently Associated(Y/N)	Date of Leaving if any (in Case Currently Associated is "No")
1	Dr. Narendra Nath Pathak	AINPP5511E		Ph.D.	NIT, Durgapur	Synthesis of Thinned Array Antenna using Soft Computing Techniques (ECE)	01.08.2012		12 years	Associate Professor	Professor	09-01-2016	Regular		N	16-08-2024
2	Dr. Sarit Pal	AJNPP9675N		Ph.D.	IIT (Benaras Hindu University)	Fiber Optic Sensor, Optical Communications, Computer Networks (Electronics)	03.08.2007		17 years	Associate Professor	Professor	10/02/2010	Regular		N	17-02-2025
3	Dr. Khondekar Mofazzal Hossain	AJGPK9137R		Ph.D.	NIT, Durgapur	Signal Processing	11-01-2005	01-11-2021	20 years	Lecturer	Professor	01-03-2018	Regular		Y	No
4	Dr. Tapas Mondal	AKBPM7654H		Ph.D.	IIST, Shibpur	EM Theory / Microwave	03.02.2003		22 years	Lecturer	Associate Professor	01/07/2010	Regular		Y	No
5	Ms. Keka Hajra	ABMPH2703C		M.Tech	The University of Burdwan	Satellite Communication	12.07.2004		20 years	Lecturer	Assistant Professor		Regular		Y	No
6	Dr. Alope Saha	BMMPS9772E		Ph.D.	BIT Mesra	Microelectronics and VLSI Design	26.02.2009		16 years	Senior Lecturer	Associate Professor		Regular		Y	No
7	Dr. Tribeni Prasad	APHPB1432K		Ph.D.	Jadavpur University	Signal Processing, VLSI, AIML, CPS	02.07.2013		11 years	Assistant Professor	Associate Professor	01-07-2022	Regular		Y	No

NATIONAL BOARD OF ACCREDITATION

	Banerjee															
8	Dr. Rajdeep Ray	AIMPR3566N		Ph.D.	NIT, Durgapur	Signal Processing	31.01.2005		18 years	Lecturer	Associate Professor	01-02-2024	Regular		N	20-09-2024
9	Mr. Tapas Roy	AKVPR1673D		M.Tech	Calcutta University, W.B.	Instrumentation & Control Engineering	27.03.2006	06-09-2018	19 years	Lecturer	Assistant Professor		Regular		Y	No
10	Dr. Aritra Bhowmik	AMNPB1752F		Ph.D.	NIT, Durgapur	RF & Microwaves Engineering	31.03.2007		18 years	Lecturer	Assistant Professor		Regular		Y	No
11	Dr. Mrinmoy Chakraborty	ALRPC4105G		Ph.D.	BIT Mesra	Antenna Design	30.04.2009		16 years		Associate Professor	01-02-2024	Regular		Y	No
12	Ms. Dipta Chaudhuri	AHPPC3217M		M.Tech	NIT, Durgapur	Communication Engineering, Signal Processing	09.01.2007		18 years	Lecturer	Assistant Professor		Regular		Y	No
13	Dr. Anirban Chattopadhyay	AHJPC9839P		Ph.D.	NIT, Durgapur	Signal Processing	01.08.2008		16 years	Lecturer	Assistant Professor		Regular		Y	No
14	Dr. Abhijit Banerjee	AQPPB4443F		Ph.D.	NIT, Durgapur	Machine Learning in Robotics, Deep Reinforcement Learning	16.04.2009		15 years	Lecturer	Associate Professor	05-09-2024	Regular		Y	No
15	Dr. Sourav Moitra	BEBPM2634C		Ph.D.	NIT, Durgapur	Microwave Engineering	30.01.2010		15 years	Assistant Professor	Associate Professor	05-09-2024	Regular		Y	No
16	Dr. Debipriya Dutta	AVUPD0318B		Ph.D.	The University of Burdwan	Satellite Communication	06.02.2010		14 years	Assistant Professor	Assistant Professor		Regular		Y	No
17	Ms. Moutusi Mondal	BEAPM2855Q		MS	IIT Kharagpur	Antenna Design, IMAGE-PROCESSING	17.02.2010		15 years	Assistant Professor	Assistant Professor		Regular		Y	No
18	Mr. Nilkamal Bhunia	ATOPB6815B		M.Tech	Jadavpur University	Adaptive Filter Design	23.02.2010		15 years	Assistant Professor	Assistant Professor		Regular		Y	No
19	Dr. Ankita Mitra	AXWPM9744N		Ph.D.	NIT, Durgapur	Image processing	27.07.2011		12 years	Assistant Professor	Assistant Professor		Regular		N	31-12-2024
20	Mr. Pradipta Sarkar	CDGPS2731H		M.Tech	NIT, Durgapur	Digital VLSI Design	12.01.2016		9 years	Assistant Professor	Assistant Professor		Regular		Y	No
21	Ms. Subhadra Deb Roy	ASOPD5859N		M.Tech	MAKAUT	Electronics and Communication, Microwave and Antenna	01-08-2019		6 years	Assistant Professor	Assistant Professor		Regular		Y	No

NATIONAL BOARD OF ACCREDITATION

						Design										
22	Mr. Surajit Batabyal	AMNPB1750H		M.Tech	MAKAUT	Electronics and Communication, Microwave and Antenna Design	01-08-2019		6 years	Assistant Professor	Assistant Professor		Regular		Y	No
23	Dr. Anup Kumar Das	AKQPD9102Q		Ph.D	NIT, Durgapur	Non Linear Dynamics, Chaos Synchronization, Secure Transmission, Cryptography	01-08-2019	01-08-2019	6 years	Assistant Professor	Assistant Professor		Regular		Y	No
24	Mr. Moloy Mukherjee	APOPM6752L		M.Tech	WBUT	Communication, Signal Processing	01-04-2022	01-04-2022	3 years	Assistant Professor	Assistant Professor		Regular		Y	No
25	Dr. Ram Krishna Rakshit	AKVPR1757L		Ph.D.	Brainware University	OPTICAL FIBRE COMMUNICATION	16.12.2005		20 years	Lecture	Assistant Professor		Regular		Y	No
26	Mr. Soumenendra Pain	BSLPP3196A		M.Tech	West Bengal University of Technology	Electronics & Communication, Microwave and Antenna Design	01-05-2022	01-05-2022	3 years	Assistant Professor	Assistant Professor		Regular		Y	No
27	Mr. Samujjwal Roy	AIMPR3568C		M.Tech	NIT, Durgapur	TELECOMMUNICATION ENGINEERING (ECE)	30-09-2004	01-11-2022	3 years	Lecturer	Assistant Professor		Regular		Y	No
28	Dr. Ardhendu Sekhar Chattopadhyay	ACKPC2376F		Ph.D.	Pacific University, Udaipur	Wireless Communication	11.02.2016		9 years	Assistant Professor	Assistant Professor		Regular		Y	No
29	Mr. Koustav Roy	ARPPR0606R		M.Tech	Jadavpur University	Control System Engineering	05.08.2008	06-09-2018	16 years	Lecturer	Assistant Professor		Regular		Y	No
30	Mr. Indranil Sengupta	BITPS8074E		M.Tech	WBUT	Communication	01-08-2019		6 years	Assistant Professor	Assistant Professor		Regular		Y	No
31	Mr. Kaushik Ghosh	APMPG8056R		M.Tech	IIT ISM Dhanbad	VLSI integrated circuit & VLSI technology	02-07-2020		4 years	Assistant Professor	Assistant Professor		Regular		Y	No

NATIONAL BOARD OF ACCREDITATION

Academic Year: 2023-2024

S.N.	Name of the Faculty	PAN No.	Apa Ar Faculty Id*(if any)	Highest degree	University	Area of Specialization	Date of Joining in This Institution	Date of Joining in the Department (in case of transfer from one Department to another) if any	Experience in years in current institute	Designation at Time Joining in This Institution	Present Designation	The date on which Designated as Professor/ Associate Professor if any	Nature of Association (Regular/ Contract/ Ad hoc)	if Contractual Mention Full Time or (Part time or hourly based)	Currently Associated(Y/N)	Date of Leaving if any (in Case Currently Associated is "No")
1	Dr. Narendra Nath Pathak	AINPP5511E		Ph.D.	NIT, Durgapur	Synthesis of Thinned Array Antenna using Soft Computing Techniques (ECE)	01.08.2012		10 years	Associate Professor	Professor	09-01-2016	Regular		Y	No
2	Dr. Sarit Pal	AJNPP9675N		Ph.D.	IIT (Benaras Hindu University)	Fiber Optic Sensor, Optical Communications, Computer Networks (Electronics)	03.08.2007		15 years	Associate Professor	Professor	10-02-2010	Regular		Y	No
3	Dr. Khondekar Mofazzal Hossain	AJGPK9137R		Ph.D.	NIT, Durgapur	Signal Processing	11-01-2005	01-11-2021	18 years	Lecturer	Professor	01-03-2018	Regular		Y	No
4	Dr. Tapas Mondal	AKBPM7654H		Ph.D	IIST, Shibpur	EM Theory / Microwave	03.02.2003		20 years	Lecturer	Associate Professor	01-07-2010	Regular		Y	No
5	Ms. Keka Hajra	ABMPH2703C		M.Tech	The University of Burdwan	Satellite Communication	12.07.2004		18 years	Lecturer	Assistant Professor		Regular		Y	No
6	Dr. Aloke Saha	BMMPS9772E		Ph.D.	BIT Mesra	Microelectronics and VLSI Design	26.02.2009		14 years	Senior Lecturer	Associate Professor		Regular		Y	No
7	Dr. Tribeni Prasad	APHPB1432K		Ph.D.	Jadavpur	Signal Processing, VLSI,	02.07.2013		9 years	Assitant	Associate	01-07-	Regular		Y	No

NATIONAL BOARD OF ACCREDITATION

	Banerjee				University	AIML, CPS				Professor	Professor	2022				
8	Dr. Rajdeep Ray	AIMPR3566N		Ph.D	NIT, Durgapur	Signal Processing	31.01.2005		16 years	Lecturer	Associate Professor	01-02-2024	Regular		Y	No
9	Mr. Tapas Roy	AKVPR1673D		M.Tech	Calcutta University, W.B.	Instrumentation & Control Engineering	27.03.2006	06-09-2018	17 years	Lecturer	Assistant Professor		Regular		Y	No
10	Dr. Aritra Bhowmik	AMNPB1752F		Ph.D	NIT, Durgapur	RF & Microwaves Engineering	31.03.2007		16 years	Lecturer	Assistant Professor		Regular		Y	No
11	Dr. Mrinmoy Chakraborty	ALRPC4105G		Ph.D.	BIT Mesra	Antenna Design	30.04.2009		14 years	Senior Lecturer	Associate Professor	01-02-2024	Regular		Y	No
12	Ms. Dipta Chaudhuri	AHPPC3217M		M.Tech	NIT, Durgapur	Communication Engineering, Signal Processing	09.01.2007		16 years	Lecturer	Assistant Professor		Regular		Y	No
13	Dr. Anirban Chattopadhyay	AHJPC9839P		Ph.D	NIT, Durgapur	Signal Processing	01.08.2008		15 years	Lecturer	Assistant Professor		Regular		Y	No
14	Dr. Abhijit Banerjee	AQPPB4443F		Ph.D	NIT, Durgapur	Machine Learning in Robotics, Deep Reinforcement Learning	16.04.2009		14 years	Lecturer	Assistant Professor	05-09-2024	Regular		Y	No
15	Dr. Rajib Banerjee	AKAPB2651E		Ph.D.	IIST Shibpur	Wireless Sensor Network (Engineering)	04.09.2009		14 years	Lecturer	Associate Professor	01-02-2024	Regular		NO	28-06-2024
16	Dr. Sourav Moitra	BEBPM2634C		Ph.D	NIT, Durgapur	Microwave Engineering	30.01.2010		14 years	Assistant Professor	Assistant Professor	05-09-2024	Regular		Y	No
17	Dr. Debipriya Dutta	AVUPD0318B		Ph.D	The University of Burdwan	Satellite Communication	06.02.2010		14 years	Assistant Professor	Assistant Professor		Regular		Y	No
18	Ms. Moutusi Mondal	BEAPM2855Q		MS	IIT Kharagpur	Antenna Design, IMAGE-PROCESSING	17.02.2010		14 years	Assistant Professor	Assistant Professor		Regular		Y	No
19	Mr. Nilkamal Bhunia	ATOPB6815B		M.Tech	Jadavpur University	Adaptive Filter Design	23.02.2010		14 years	Assistant Professor	Assistant Professor		Regular		Y	No
20	Dr. Ankita Mitra	AXWPM9744N		Ph.D	NIT, Durgapur	Image processing	27.07.2011		13 years	Assistant Professor	Assistant Professor		Regular		Y	No
21	Mr. Pradipta Sarkar	CDGPS2731H		M.Tech	NIT, Durgapur	Digital VLSI Design	12.01.2016		8 years	Assistant Professor	Assistant Professor		Regular		Y	No

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22	Ms.Subhadra Deb Roy	ASOPD5859N		M.Tech	MAKAUT	Electronics and Communication, Microwave and Antenna Design	01-08-2019		5 years	Assistant Professor	Assistant Professor		Regular		Y	No
23	Mr. Surajit Batabyal	AMNPB1750H		M.Tech	MAKAUT	Electronics and Communication, Microwave and Antenna Design	01-08-2019		5 years	Assistant Professor	Assistant Professor		Regular		Y	No
24	Dr. Anup Kumar Das	AKQPD9102Q		Ph.D	NIT, Durgapur	Non Linear Dynamics, Chaos Synchronization, Secure Transmission, Cryptography	01-08-2019	01-08-2019	5 years	Assistant Professor	Assistant Professor		Regular		Y	No
25	Mr. Moloy Mukherjee	APOPM6752L		M.Tech	WBUT	Communication, Signal Processing	01-04-2022	01-04-2022	2 years	Assistant Professor	Assistant Professor		Regular		Y	No
26	Dr. Ram Krishna Rakshit	AKVPR1757L		Ph.D	Brainware University	OPTICAL FIBRE COMMUNICATION	16.12.2005		19 years	Assistant Professor	Assistant Professor		Regular		Y	No
27	Mr. Soumenendra Pain	BSLPP3196A		M.Tech	West Bengal University of Technology	Electronics & Communication, Microwave and Antenna Design	01-05-2022	01-05-2022	2 years	Assistant Professor	Assistant Professor		Regular		Y	No
28	Mr. Samujjwal Roy	AIMPR3568C		M.Tech	NIT, Durgapur	TELECOMMUNICATION ENGINEERING (ECE)	30-09-2004	01-11-2022	2 years	Lecturer	Assistant Professor		Regular		Y	No
29	Dr. Ardhendu Sekhar Chattopadhyay	ACKPC2376F		Ph.D	Pacific University, Udaipur	Wireless Communication	11.02.2016		8 years	Assistant Professor	Assistant Professor		Regular		Y	No
30	Mr. Koustav Roy	ARPPR0606R		M.Tech	Jadavpur University	Control System Engineering	05.08.2008	06-09-2018	15 years	Lecturer	Assistant Professor		Regular		Y	No
31	Mr. Indranil Sengupta	BITPS8074E		M.Tech	WBUT	Communication	01-08-2019		5 years	Assistant Professor	Assistant Professor		Regular		Y	No
32	Mr. Kaushik Ghosh	APMPG8056R		M.Tech	IIT ISM Dhanbad	VLSI integrated circuit & VLSI technology	02-07-2020		3 years	Assistant Professor	Assistant Professor		Regular		Y	No

5.1. Student-Faculty Ratio (30)

(Sfr to Be Calculated at Department Level Considering All Ug and Pg Engineering programs in the Department; include allied department programs/clusters as well.)

- ❖ No. of UG(Engineering)Programs in Department Including Allied Departments/ clusters (UG_n):
 - UG1=1st UG program
 - UG_n=n th UG program
 - B=No. of Students in Ug2ndyear(ST)
 - C=No. of Students in Ug3rdyear(ST)
 - D=No. of Students in Ug4thyear(ST)
- ❖ No. of PG(Engineering)programs in Department Including allied departments/ clusters (PG_m):
 - PG1=1st PG program.
 - PG_m=m th PG program
 - A= No. of Students in Pg1styear
 - B=No. of Students in Pg2ndyear
- ❖ Student Faculty Ratio(SFR)=S/F
 - S=No. of students of all programs in the Department including all students of allied departments/clusters.
 - **No. of students(ST)=Sanctioned intake(SA)+Actual Admitted Students via lateral entry including leftover seats (L) if any (limited to 10 % of SA)**
 - Students who admitted under supernumerary quotas (SNQ, EWS, etc) will not be considered in calculating SFR value. Those students are **exempted**.
 - F=Total no. of regular or contractual faculty members (Full Time) in the Department, including allied departments/clusters (excluding first year faculty (The faculty members who have a 100% teaching load in the first-year courses)).

Table No. 5.1.2: Student-faculty ratio

Year	CAY	CAYm1	CAYm2
UG1.B	120+0=120	120+6=126	120+6=126
UG1.C	120+6=126	120+6=126	120+12=132
UG1.D	120+6=126	120+12=132	120+28=148
UG1	120+126+126=372	126+126+132=384	126+132+148=406
UG_n	UG _n .B+UG _n .C+UG _n .D	UG _n .B+UG _n .C+UG _n .D	UG _n .B+UG _n .C+UG _n .D
PG1.A	18	18	18
PG1.B	18	18	18
PG1	18+18=36	18+18=36	18+18=36
PG_m	PG _m .A+PG _m .B	PG _m .A+PG _m .B	PG _m .A+PG _m .B
DS=Total no. of Students in All Ug and PG programs in the Department	372+36=408	384+36=420	406+36=442
AS=Total no. of Students of All Ug and PG programs in allied departments			

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S=Total no. of students in the Department (DS) and allied departments(AS)	S1=372+36=408	S2=384+36=420	S3=406+36=442
DF=Total no. of faculty members in the Department	27	31	32
AF= Total no. of faculty members in the allied Departments	NA	NA	NA
F=Total no. of faculty members in the Department (DF) and allied Departments (AF)	F1=27	F2=31	F3=32
FF=The faculty members in F who have a 100% teaching load in the first-year courses	FF1=0	FF2=0	FF3=0
TF=Total faculty=F-FF	TF1=27+0=27	TF2=31+0=31	TF3=32+0=32
Student Faculty Ratio (SFR)=S/(TF)	SFR1=S1/TF1=408/27= 15.11	SFR2= S2/TF2=420/31= 13.54	SFR3= S3/TF3=442/32 = 13.81
Average Sfr for 3 years	Average SFR=(SFR1+SFR2+SFR3)/3=(15.11+13.54+13.81)/3=14.15		

5.2. Faculty Qualification (25)

- ❖ Faculty qualification index(FQI)= $2.5*[(10X+4Y)/RF]$ where
 - X=No. of faculty members with Ph.D. degree or equivalent as per AICTE/UGC norms.
 - Y=No. of Faculty Members with M.Tech.or Me Degree or Equivalent as per AICTE/ UGC norms.
 - RF=No. of required faculty in the Department including allied Departments to adhere to the 20:1 Student-Faculty ratio, with calculations based on both student numbers and faculty requirements as per section 5.1 of SAR; ($RF=S/20$).

Table No. 5.2.1: Faculty qualification.

Year	X	Y	RF	$FQI=2.5*[(10X+4Y)/RF]$
CAY	13	14	20.40	$2.5*[(130+56)/20.40]=22.79$
CAYm1	17	14	21.00	$2.5*[(170+56)/21.00]=26.90$
CAYm2	18	14	22..10	$2.5*[(180+56)/22.10]=26.69$
Average Assessment				$(22.79+26.90+26.69)/3=25.46$

5.3. Faculty Cadre Proportion (25)

- ❖ Faculty Cadre Proportion is 1(RF1): 2(RF2): 6(RF3)
 - RF1= No. of Professors required = $1/9 * \text{No. of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (S) as per section 5.1 of SAR.}$
 - RF2= No. of Associate Professors required = $2/9 * \text{No. of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (S) as per section 5.1 of SAR.}$ RF3= No. of Assistant Professors required = $6/9 * \text{No. of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (S) as per section 5.1 of SAR.}$
- ❖ Faculty cadre and qualification and experience should be as per AICTE/UGC norms.

Table No. 5.3.1: Faculty cadre proportion details.

Year	Professors		Associate Professors		Assistant Professors	
	Required Faculty(RF1)	Available Faculty(AF1)	Required Faculty(RF2)	Available Faculty(AF2)	Required Faculty(RF3)	Available Faculty(AF3)
CAY	02	02	05	05	14	20
CAYm1	02	03	05	07	14	21
CAYm2	02	03	05	05	15	24
Average Numbers	RF1=2	AF1=2.66	RF2=5	AF2=5.66	RF3=14.3 3	AF3=21.6 6

$$\begin{aligned}
 \text{Faculty Cadre Proportion Marks} &= \left[\left(\frac{AF_1}{RF_1} \right) + \left(\frac{AF_2 \times 0.6}{RF_2} \right) + \left(\frac{AF_3 \times 0.4}{RF_3} \right) \right] \times 12.5 \\
 &= \left[\left(\frac{2.66}{2} \right) + \left(\frac{5.66 \times 0.6}{5} \right) + \left(\frac{21.66 \times 0.4}{14.33} \right) \right] \times 12.5 \\
 &= [1.33 + 0.68 + 0.60] \times 12.5 \\
 &= 2.61 \times 12.5 \\
 &= 32.67
 \end{aligned}$$

- ❖ If $AF_1=AF_2=0$, then zero mark
- ❖ Maximum marks should be limited to 25 if they exceed the allocated marks
 - Case1: $AF_1/RF_1=1; AF_2/RF_2=1; AF_3/RF_3=1$
Faculty Cadre Proportion Marks $= (1+0.6+0.4) \times 12.5 = 25$.
 - Case2: $AF_1/RF_1=1; AF_2/RF_2=4/2; AF_3/RF_3=8/9$
Faculty Cadre Proportion marks $= (1+1.2+0.36) \times 12.5 = 32$ (limited to 25)

Note:

- ❖ All Professors (RF_1 , AF_1), all Associate Professors (RF_2 , AF_2), and All Assistant Professors (RF_3 , AF_3) in the department, as well as those in allied departments, should be considered for the calculation of faculty cadre proportion marks
- ❖ To determine the RF_1 , RF_2 , and RF_3 values, all students (S as defined in the section 5.1 of SAR) in the department, as well as those in allied departments, need to be considered.
- ❖ The programs, such as MCA, BCA, Diploma (Engineering) and other non- engineering programs running in the Department or allied Departments, need to have sufficient faculty members to support them and exclude the faculty members listed in Table No. 5.3.1 (AF_1 , AF_2 , AF_3).

5.4. Visiting/Adjunct Faculty/Professor of Practice(10)

(Provide details of participation and contributions in teaching, learning, or practical work by visiting, adjunct, and emeritus faculty; Professors of Practice (Po P), Associate Professors of Practice, and Assistant Professors of Practice, engaged on an hourly or part-time basis, etc., from industry, research organizations, and reputed institutions, as well as retired professors, during the assessment period.)

- ❖ Provision of visiting or adjunct faculty/emeritus professor/professor of practice etc. (01)
- ❖ Minimum 50 cumulative hours per year of interaction with adjunct faculty from industry or research organization, retired professors, etc. (09)
- ❖ A minimum of 50 hours of interaction in a year will result in 3 marks for that year (3 marks * 3 years = 9 marks).

Note: Here, individuals who contribute to teaching, learning, or practical work on part-time basis or an hourly basis need to be included. There is no data repetition from Section 5.1.

Table No. 5.4.1: List of visiting/adjunct faculty/professor of practice and their teaching and practical loads.

S.N.	Name of the Person	Designation Organization	Name of the Course	No. of hours handled
CAYm1				
1	Ms. Madhurima Ray Barman	Assistant Professor, BCREC	Biology for Engineers	6 hours per week (20 CLASSES)
Total no. of hours:				
CAYm2				
1	Ms. Madhurima Ray Barman	Assistant Professor, BCREC	Biology for Engineers	6 hours per week (22 CLASSES)
Total no. of hours:				
CAYm3				
1	Ms. Madhurima Ray Barman	Assistant Professor, BCREC	Biology for Engineers	6 hours per week (39 CLASSES)
Total no. of hours:				81 HOURS

5.5. Faculty Retention (10)

Table No. 5.5.1: Faculty retention ratio.

Item	CAY	CAYm1	CAYm2
RF=No. of required faculty in the Department to adhere to the 20:1 Student-Faculty ratio, with calculations based on both student numbers and faculty requirements as per section 5.1 of SAR; (RF=DS/20).	20.40	21.0	22.10
AF=The no. of available faculty members in the Department	27	31	32
A= The no. of faculty members at the current institute with less than 1 year of experience (A in AF)	0	0	0
B= The no. of faculty members at the current institute with more than 1 year and less than 2 years of experience (B in AF)	0	0	2
C=The no. of faculty members at the current institute with more than 2 years and less than 3 years of experience (C in AF)	0	2	0
D=The no. of faculty members at the current institute with more than 3 years and less than 4 years of experience (D in AF)	2	0	3
E= The no. of faculty members at the current institute with more than 4 years of experience (E in AF)	25	29	27
Faculty retention ratio = $FR = (((A*0)+(B*1)+(C*2)+(D*3)+(E*4))/RF) * 2.50$ (points limited to 10)	10	10	10

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Average $Fr = ((FR_1 + FR_2 + FR_3) / 3)$ (marks limited to 10)	10
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Criterion 6: Faculty Contribution (120)

Here, Department Information Alone needs to be added

6.1. Professional Development Activities (60)

6.1.1. Memberships in Profession Societies at National/International Levels(05)

(Provide details of faculty members, who have active recognized professional memberships and their positions and contributions to professional societies during the assessment period.)

Table No. 6.1.1.1: List of faculty members and their memberships.

S.N.	Name of the Faculty	Name of the Professional Society/Body at National and International Level	Name of the Grade/Level/Position
1.	Dr. Tribeni Prasad Banerjee	IEEE	Senior Member
2.	Dr. Mrinmoy Chakraborty	IEEE	Member
3.	Dr. Aloke Saha	IEEE	Member
4.	Dr. Abhijit Banerjee	IEEE	Member
5.	Dr. Tapas Mondal	IEEE	Member
6.	Dr. Khondekar Mofazal Hossain	IEEE	Member
7.	Ms. Subhadra Deb Roy	IETE	Associate Member
8.	Ms. Moutusi Mondal	IETE	Fellow Member
9.	Mr. Surajit Batabyal	IETE	Associate Member
10.	Mr. Moloy Mukherjee	IETE	Associate Member

6.1.2. Faculty as Resource Persons or Participants in STTPs/FDPs(15)

6.1.2.1. Faculty as Resource Persons in STTPs/FDPs(05)

(Provide Details of the Faculty Involved as Resource Persons in STTP/FDP events during the assessment period.)

Table No. 6.1.2.1.1: List of faculty members as resource person in STTP/FDP events.

S.N.	Name of the Faculty as Resource Person	Name of the STTP/FDP	Date	Location	Organized by
CAYm1					
1	Dr. Abhijit Banerjee	AICTE ATAL Faculty Development Program on "CloudEd: Navigating the Digital Sky"; session titled "Building Intelligent Applications on the Cloud: A Gentle Introduction to AI/ML Services"	09 August 2025	Dr. B. C. Roy Polytechnic, Durgapur	AICTE Training and Learning (ATAL) Academy; organized by Dr. B. C. Roy Polytechnic, Durgapur
2	Dr. Abhijit Banerjee	Academia-Industry Meet on 3D Printing and Additive Manufacturing Technology; talk on "Applications of AI in Additive	13 March 2026	Dr. B. C. Roy Engineering College, Durgapur	C-DAC Kolkata in association with Dr. B. C. Roy Engineering

S.N.	Name of the Faculty as Resource Person	Name of the STTP/FDP	Date	Location	Organized by
		Manufacturing"			College, Durgapur
3	Dr. Tribeni Prasad Banerjee	Keynote lecture in IEEE R10 YP UpSkill - Bangladesh	26 July 2025	Online / IEEE R10 YP UpSkill platform	IEEE Young Professionals / IEEE R10 YP UpSkill - Bangladesh
CAYm2					
1	Dr. Abhijit Banerjee	Two-day workshop on AI innovations in academic administration and pedagogy	19 December 2024	Advanced Prototype Lab, ECE Department, Dr. B. C. Roy Engineering College, Durgapur	Department of Electronics and Communication Engineering, Dr. B. C. Roy Engineering College, Durgapur
2	Dr. Abhijit Banerjee	Invited lecture on Basics of Machine Learning under DBT Star College Scheme	12 December 2024	Department of Physics, Durgapur Government College	Department of Physics, Durgapur Government College
3	Dr. Tribeni Prasad Banerjee	AICTE-VAANI two-day seminar on "Recent Advancements in the Field of Next Gen Communications"; served as Resource Person	08-09 August 2024	Dr. B. C. Roy Polytechnic, Durgapur	AICTE and Dr. B. C. Roy Polytechnic, Durgapur
CAYm3					
1					

6.1.2.2. Faculty Members' Participation in STTP/FDP events (10)

(Provide details of faculty participated in STTP/FDP events during the assessment period with special reference to the faculty competency for the program under consideration for accreditation. Please Do Not Give Duplicate Data from the section

6.1.3.)

- ❖ A Faculty scores maximum five points for participation
- ❖ Participation in 2 to 5 days Faculty/Faculty Development Program: 3Points
- ❖ Participation in >5Days Faculty/Faculty Development Program: 5points.

Table No. 6.1.2.2.1: List of Faculty Members Participated in STTP/FDP events.

S.N .	Name of the Faculty as Resource Person or Participant	CAYm1	CAYm2	CAYm3	Total FDPs across 3 years
1	MS. DIPTA CHAUDHURI	3	3+3=6	3+3=6	5
2	MS. KEKA HAJRA	3	3+3=6	3+3=6	5
3	MR. TAPAS ROY	3+3=6	3+3=6	3	5
4	DR. ANIRBAN CHATTOPADHYAY	3+3=6	3+3=6	3	5
5	DR. ABHIJIT BANERJEE	5+3=8	3	3+3=6	5
6	MR. NILKAMAL BHUNIA	3+3=6	5	3+3=6	5
7	MR. SOUMENDRA PAIN	3+3=6	3+3=6	3	5
8	MS. SUBHADRA DEBROY	3+3=6	3+3=6	3	5
9	DR. ANUP KUMAR DAS	3+3+5=11	3+3=6	-	5
10	MR. MOLOY MUKHERJEE	3+3=6	3+3=6	3	5
11	DR. ALOKE SAHA	3+3=6	3+3=6	3	5
12	MR. PRADIPTA SARKAR	5+5+5=20	-	5	5

S.N	Name of the Faculty as Resource Person or Participant	CAYm1	CAYm2	CAYm3	Total FDPs across 3 years
13	MR. SURAJIT BATASYAL	3+3=6	3+3=6	3	5
14	MS. MOUTUSI MONDAL	5+5+3=13	3	3	5
15	DR. TRIBENI PRASAD BANERJEE	5+5+5=15	3	3	5
16	DR. DEBIPRIYA DUTTA	5+5=10	3+3=6	3	5
17	DR. ARITRA BHOWMIK	5	3+3=6	3+3=6	5
18	DR. MRINMOY CHAKRABORTY	3+3=6	3+3=6	3	5
19	DR. K. M. HOSSAIN	3+3=6	3	3+3=6	5
20	DR. TAPAS MONDAL	3	3+3=6	3+3=6	5
21	DR. SOURAV MAITRA	3+3=6	3+3=6	3	5
22	MR. KOUSTAV ROY	3	3+3=6	3+3=6	5
23	DR. A. S. CHATTOPADHYAY	3+3=6	3	3+3=6	5
24	MR. SAMMUJJWAL ROY	3+3=6	3+3=6	3	5
25	MR. Koushik GHOSH	3	3+3=6	3+3=6	5
26	DR. RAMKRISHNA RAKSHIT	3+3=6	3	3+3=6	5
27	MR. INDRANIL SENGUPTA	3+3=6	3+3=6	3	5

Assessment Calculation

Item	CAYm1	CAYm2	CAYm3
Raw Sum of activity scores shown in table	187	137	113
Assessment Sum after applying maximum 5 points per faculty	125	118	102
RF = Number of required faculty as per 20:1 SFR	420/20 = 21.00	442/20 = 22.10	448/20 = 22.40
Assessment Points (AP) = $2 \times [\text{Assessment Sum} / (0.5 \times \text{RF})]$	$2 \times [125 / (0.5 \times 21.00)] = 23.81$	$2 \times [118 / (0.5 \times 22.10)] = 21.36$	$2 \times [102 / (0.5 \times 22.40)] = 18.21$
AP after limiting to 10 for each assessment year	10.00	10.00	10.00

Average assessment points over three years = $(10.00 + 10.00 + 10.00) / 3 = 10.00 / 10$

Note:

1. We need to consider all students (DS) in the department alone to determine the RF value (Number of faculty required to comply with the 20:1 student-faculty ratio in the Department).
2. Faculty members who participated in the FDP/STP programs at the parent institute will not be counted. Only participation in external programs will be considered.

6.1.3. Faculty Certification of MOOCS through SWAYM, etc. (10)

(Provide details of faculty members, who have obtained MOOCs (Massive Open Online Courses) certification through platforms like SWAYAM/SWAYM PLUS/NPTEL and other approved programs during the assessment period.)

Table No. 6.1.3.1: List of Faculty Members Obtained Certification of Mo Ocs for the Past 3 years.

S.N.	Name of the Faculty	Name of Course Passed	Course Offered by (agency)	Grade obtained if any
	PRADIPTA SARKAR	VLSI DESIGN FLOW: RTL TO GDS	NPTEL (IIT-DELHI)	98%
		DESIGN AND ANALYSIS OF VLSI SUBSYSTEMS	NPTEL (IIT-BANGALORE)	70%

1		SYSTEM DESIGN THROUGH VERILOG	NPTEL (IIT-GUWAHATI)	99%
		CMOS DIGITAL VLSI DESIGN	NPTEL (IIT-ROORKEE)	86%
2	NILKAMAL BHUNIA	INTRODUCTION TO ADAPTIVE SIGNAL PROCESSING	SWAYAM, (IIT-KHARAGPUR)	58%
3	MOUTUSI MONDAL	PROGRAMMING IN PYTHON	SWAYAM (DIBRUGARH UNIVERSITY)	75%
		INTRODUCTION TO MACHINE LEARNING	NPTEL, (IIT-KHARAGPUR)	53%

6.1.4. FDP/STTP Organized by the Department (10)

(Provide details of the number of faculty development programs and short-term training programs organized by the department individually or in collaboration with other departments over the past 3 years.)

- ❖ the Minimum Duration of Fdp/STTP is 5 days.
- ❖ 2 points per FDP/STTP, with a maximum of 4 marks per assessment year and a total maximum of 10 marks

Table No. 6.1.4.1: List of FDPs/Sttps Organized by Department for the Past 3 years.

S.N.	Name of the Program	Date of the Program	Duration of the Program	Name of the Speaker & Designation and Organization	No. of People Attended
CAYm1					
1	FDP on recent trend in Artificial Intelligence, Machine Learning and VLSI design and development	28-04-2025 to 09-05-2025	10 days	1. Dr. Chayan Bhar [Asst. Professor at Department of Department of Electronics and Communication Engineering., NITW] 2. Dr Asim Bikas Das [Associate Professor at Department of Biotechnology, National Institute of Technology Warangal, India] 3. Prof Radha Krishna Pisipati [Prof. Pisipati Radha Krishna. Professor. Department of Computer Science and Engineering.] 4. Dr. Sangram Ray [Associate Professor, Dept. of Computer Sc. & Engg, National Institute of Technology Sikkim, India] 5. Prof. P. Sreehari Rao [Prof. P Sreehari Rao. Professor. Department of Electronics and Communication Engineering] 6. Prof. Amlan	36

				Chakrabarti [Professor and Director of the A.K. Choudhury School of Information Technology, University of Calcutta] 7. Dr. Damodar Reddy Edla [Associate Professor, Dept. of Computer Science and Engineering, National Institute of Technology] 8. Prof. Amarjit Kumar [Prof. Amarjit Kumar. Assistant Professor Gr-I. Department of Electronics and Communication Engineering, NITW] 9. Professor Sunil Karforma [Professor & HOD, Department of Computer Science, The University of Burdwan, Burdwan, WB, India] 10. Dr. Samarjit Kar [Professor Department of Mathematics National Institute of Technology Durgapur] 11. Dr. Arindam Biswas [Associate Professor at KAZI NAZRUL UNIVERSITY, ASANSOL] 12. Prof. Sujit Das. Assistant Professor at Department of Computer Science and Engineering. 13. Dr. Anasua Sarkar, Associate Professor, Dept. of Computer Science and Engineering, Jadavpur University 14. Prof. Sanjay S Pawar, Principal, BCREC and Founding Director of BCREC Artificial Intelligence and Emerging Technology (BAIET) Foundation. 15. Dr. M. Rajasekhar Reddy, Associate Professor, School of Computing, Amrita Vishwa Vidyapeetham, Amaravati. 16. Dr. Partha Pratim Roy, Associate Professor, Dept. of Computer Science & Engineering, IIT Roorkee 17. Dr. DEBANIK ROY, Senior	
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				Scientist (SO-H) & (Adjunct) Professor, Division of Remote Handling & Robotics, Bhabha Atomic Research Centre, Mumbai and Homi Bhabha National Institute, Dept. of Atomic Energy, Govt. of India	
2	FDP on "AI Innovation in Academic and Administration and Pedagogy: Enhancing Efficiency and Transforming Education"	19-12-2024 to 23-12-2024	5 days	Dr. Abhijit Banerjee of Dr. BCREC, Durgapur	20
CAYm2					
1	STTP on "VLSI and its Recent Advancement (under AICTE-MODROB)" in Electronics and Communication Engineering Department	15-04-2024 to 19-04-2024	5 days	1. Amrita Pandey, SoC Design Engineer, Intel Bangalore 2. Prof. (Dr.) Chandan Karfa, Associate Professor in Computer Science Department of IIT Guwahati 3. Shreya Mukherjee, Senior Engineer in MIPS 4. Neha Bharti, Senior Verification Engineer in Qualcomm GPU team, Bangalore 5. Prof. Arindam Basu, Professor City University of Hong Kong 6. Prof. Tribeni Prasad Banerjee, Associate Professor ECE Department of Dr. B C Roy Engineering College, Durgapur 7. Rakesh Kumar Singh, Design Engineer in Capgemini 8. Prof. Alok Saha, Associate Professor ECE Department of Dr. BCREC, Durgapur 9. Prof. Sudipta Mukhopadhyay, Professor department of Electronics and Electrical Communication Engineering IIT – Kharagpur 10. Pradipta Sarkar, Assistant Professor, ECE department of Dr. BCREC, Durgapur	55

				11. Sanjay Sikdar, Vice President Global delivery and innovation, Samsung SDS, Noida	
2	FDP on Additive and Subtractive Manufacturing	16-12-2023 to 21.12.2023	5 days	1. Dr. Kamalika Tewary, TechGuru AICTE Idea Lab. 2. Dr. Sukalpa Dey, TechGuru AICTE Idea Lab. 3. Prof. Anupam Kumar Biswas, TechGuru AICTE Idea Lab. 4. Dr. Bijoy Laxmi Koley, TechGuru AICTE Idea Lab. 5. Prof. Subhasis Dutta, TechGuru AICTE Idea Lab. 6. Prof. Samujjwal Ray, TechGuru AICTE Idea Lab. 7. Prof. Moloy Mukherjee, TechGuru AICTE Idea Lab.	25
CAYm2					
1	FDP of Recent Trends and Advances in Electronics	19-09-2022 to 23-09-2022	5 days	1. Prof. (Dr.) S. K. Kak Ex- Professor & Head, Department of Electronics Engineering, IIT-BHU Former Vice-Chancellor of Choudhary Charan Singh University, Meerut; Mahamaya Technical University, Noida; Jaypee University of Information Technology, Solan; and SVPA&T University, Modipuram 2. Prof. (Dr.) B. N. Basu Ex- Professor & Head, Department of Electronics Engineering, IIT-BHU, Varanasi Distinguished Adjunct Professor, SKFGL, Mankundu 3. Dr. Pankaj Dalela Director, CDOT 4. Prof. (Dr.) Prashanta Basu Ex-Professor, Radio Physics & Electronics, University of Calcutta 5. Prof. (Dr.) Partha Pratim Sarkar Professor, Department of Engineering & Technological Studies , Kalyani University 6. Prof. (Dr.) Rowdra Ghatak Professor, NIT, Durgapur 7. Dr. S.U. M. Reddy Ex-Director, MTRDC-DRDO, Bengaluru 8. Prof. (Dr.) Hari Mohan Gupta	52

				Emeritus Professor, Department of Electrical Engineering, IIT-Delhi 9. Prof.(Dr.) K P Ray Director, School of Radar Technology, Defence Institute of Advance Technology, DRDO 10. Dr. Piyali Basak Assistant Professor, School of Bioscience & Engineering, Jadavpur University 11. Prof. (Dr.) Dipankar Pal Professor, BITS-Pilani, Goa Campus 12. Prof.(Dr.) Subrat Kar Professor, IIT-Delhi	
2	FDP on Additive and Subtractive Manufacturing	06-09-2022 to 11.09.2022	5 days	1. Dr. Kamalika Tewary, TechGuru AICTE Idea Lab. 2. Dr. Sukalpa Dey, TechGuru AICTE Idea Lab. 3. Prof. Anupam Kumar Biswas, TechGuru AICTE Idea Lab. 4. Dr. Bijoy Laxmi Koley, TechGuru AICTE Idea Lab. 5. Prof. Subhasis Dutta, TechGuru AICTE Idea Lab. 6. Prof. Samujjwal Ray, TechGuru AICTE Idea Lab. 7. Prof. Moloy Mukherjee, TechGuru AICTE Idea Lab.	30

6.1.5. Faculty Support in Student Innovative Projects(10)

(Provide details of faculty support as a mentor, facilitator, etc. in student innovation projects in various events like hackathons, codeathons, ideathons, open research, etc.)

Table No. 6.1.5.1: List of faculty members involved in student innovative projects.

S.N.	Name of the Faculty	Name of the Project/ Initiative/ Event	Date of Event	Place of Event	Website Link if any
CAYm1					
1	Dr. Abhijit Banerjee; Dr. Tribeni Prasad Banerjee	Smart India Hackathon 2025 - Problem Statement: SIH25117	2025	Smart India Hackathon 2025	https://www.sih.gov.in/sih2025PS
2	Dr. Abhijit Banerjee; Dr. Anup Das	Smart India Hackathon 2025 - Problem Statement: SIH25020	2025	Smart India Hackathon 2025	https://www.sih.gov.in/sih2025PS
3	Dr. Debipriya Dutta	Best IETE Student Forum (East Zone), 2023-24	02 August 2025	IETE	https://www.iete.org/files/Awardees-Best-ISF-Awards2023-24.pdf

CAYm2					
1	Dr. Abhijit Banerjee	Smart Artificial Intelligence-based Surveillance and Intrusion Prevention	20 January 2023	Ministry of Railways problem context	https://www.indianrailways.gov.in/ https://www.sih.gov.in/
2	Dr. Abhijit Banerjee	Neural Radiance Field-based Three-Dimensional Scanner	23 January 2023	Health, Cultural and Educational Fair, SAIL Cooperative Ground, City Centre, Durgapur	https://www.sail.co.in/
3	Dr. Rajib Banerjee	Obstacle Avoiding Car using Arduino	19-20 January 2023	Health Education and Cultural Fair, Aradhana Social Welfare Society, Durgapur	Nil
CAYm3					
1	Dr. Rajib Banerjee	Oxygen Concentrator	12 April 2022	Bright Idea Contest by DSIR, PRISM	https://www.dsir.gov.in/offers/schemes-and-services/details/promoting-innovations-in-individuals-start-ups-and-msmes-prism-kjMwITMtQWa
2	Dr. Rajib Banerjee	IoT and AI-based Wheel Chair	11 November 2022	Intercollege Innovative Idea, Durgapur	Nil
3	Dr. Abhijit Banerjee	High-Resolution Self-Supervised Monocular Depth Estimation	25 July 2021	CMR Institute of Technology, Bengaluru - IEEE Student Branch-sponsored Technical Competition	https://www.facebook.com/durgapurbcrec/posts/1690256407850382/
4	Dr. Abhijit Banerjee	Oil Spill Area Estimation using Reinforcement Learning	25 July 2021	CMR Institute of Technology, Bengaluru - IEEE Student Branch-sponsored Technical Competition	https://www.facebook.com/durgapurbcrec/posts/1690256407850382/
5	Dr. Rajib Banerjee	Oxygen Concentrator	21-22 August 2021	WEICOV-2021,	Nil

6	Dr. Abhijit Banerjee	Small Form Factor Three-Dimensional Printer	27-28 February 2020	National Institute of Technology, Durgapur	https://nitdgp.ac.in/
7	Dr. Abhijit Banerjee	Business Idea of Portable Injection Moulding Machine for Small-Scale Industries	06 May 2020	Wadhvani Foundation, Kolkata	https://wadhwanifoundation.org/
8	Dr. Rajib Banerjee	An Arduino-Based Automatic Accident Detection and Location Communication System	21 December 2020	IEEE ICCE, Kolkata	https://doi.org/10.1109/ICCE50343.2020.9290701

6.1.6. Faculty Internship/Training/Collaboration with Industry(10)

(Provide details of faculty members who have undergone internships or training in industry and research organizations, or a list of faculty members who are actively collaborating with industry.

The outcomes of internships, training, and collaborations including the number of programs organized for students and faculty members, the development of working models and prototypes, the publication of joint research papers, the number of funded projects received, etc. for the assessment period.)

Table No. 6.1.6.1: Faculty internship/training/collaboration details.

S.N.	Name of the Faculty	Name of the Internship/ Training/ Collaboration	Name of the Company & Place	Duration	Outcomes of Internship/ Training/ Collaboration
1	Dr. Abhijit Banerjee	Industrial Collaboration on Steel Plant Automation and Measurement System	Durgapur Steel Plant, Steel Authority of India Limited, Durgapur	1 year Continuing	Facilitated industry-linked work on steel bloom measurement, LiDAR-based inspection, industrial sensing, data acquisition and AI/ML-based process analysis.
2	Dr. Abhijit Banerjee	Industrial Consultancy Collaboration on Prefailure Alert Generation and Cobble Reduction	Bhilai Steel Plant, Steel Authority of India Limited, Bhilai	2 year Continuing	Contributed to digital transformation, motor condition monitoring, IBA data analysis, predictive maintenance and process intelligence for wire rod mill operations.
3	Dr. Abhijit Banerjee	Consultancy and Project Collaboration for Industrial Digital Transformation	BAIET Foundation	1 year Continuing	Supported consultancy-linked technical project execution, coordination of industrial analytics work, documentation and applied AI/ML-based solution

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					development.
4	Dr. Abhijit Banerjee	Industry Collaboration on Demand Forecasting and Business Analytics	Jyothy Labs Limited	20 days	Worked on sales-data-driven demand forecasting, product-level analytics, time-series modelling and decision-support framework development for business planning.
5	Dr. Abhijit Banerjee	Expert Lecture / Technical Interaction on Artificial Intelligence and Additive Manufacturing	Centre for Development of Advanced Computing, Kolkata	1 day	Delivered technical knowledge sharing on AI-enabled applications, additive manufacturing, and computational tools and emerging engineering technologies.
6	Dr. Abhijit Banerjee	Invited Lecture / Academic Interaction on Machine Learning	Durgapur Government College, Durgapur	1 day	Conducted academic knowledge-sharing activity on machine learning fundamentals, AI applications and interdisciplinary learning for students and faculty.
7	Dr. Abhijit Banerjee	Faculty Development / Technical Training Interaction on Cloud Technology and AI/ML Services	Dr. B. C. Roy Polytechnic, Durgapur	1 day	Contributed to faculty/student orientation on cloud technology, AI/ML services, intelligent systems and applied computing practices.
8	Dr. Abhijit Banerjee	Industry Perspective Lecture and Discussion Keynote Speaker at Chittaranjan locomotive Works.	Chiittaranjan Locomotive Works.	2 days	Contributed to faculty/student orientation on cloud technology, AI/ML services, intelligent systems and applied computing practices.
1	Dr. Abhijit Banerjee	Industrial Collaboration on Steel Plant Automation and Measurement System	Durgapur Steel Plant, Steel Authority of India Limited, Durgapur	1 year Continuing	Facilitated industry-linked work on steel bloom measurement, LiDAR-based inspection, industrial sensing, data acquisition and AI/ML-based process analysis.

6.2. Research and Development Activities (60)

6.2.1. Academic Research(10)

(Provide details of compiled list including research papers, available online or in hard-copy, from reputable publishers and should be list of Scopus/WoS. Only papers with the faculty member's affiliation aligned with the current institution are considered. Each entry in the comprehensive list includes details such as DOI, publisher, and month/year of publication.)

Table No. 6.2.1.1: Faculty Publication details.

S.N.	Item	CAYm1	CAYm2	CAYm3
1	No. of peer reviewed journal papers published	21	11	3
2	No. of peer reviewed conference papers published	25	11	13
3	No. of books/book chapters published	2	1	1

6.2.2. Development Activities(10)

(Provide details of patents granted/published, working models, and prototypes developed by faculty members in the last 3 years.)

S.N.	Employee ID	Name of Faculty / Inventor	Patent / Design No.	Patent Office / Registering Authority	Date of Patent / Registration	Title of Patent / Design	Application No.	Status	Expiry / Validity Date	Country
1	BCR/ENGG/T/57	Dr.Aritra Bhowmik	0	The Indian Patent Office (IPO)	Not Available	Novel IoT Based Smart Baby Monitor, With Heart Rate & Oxygen As Sleep Quality Indicators	2.02311E+11	Published	Not Available	India
2	BCR/ENGG/T/41	Sri Tapas Roy	432222-001	INDIA	25-11-2024	Solar Power Based Hydrogen Cooking Oven	—	—	24-11-2034	India
3	BCR/ENGG/T/113	Smt Moutusi Mondal	6385812	Certificate of Registrati	27-08-2024	AI Based Healthcare Device	6385812	Published	28-07-2030	Uk

				on for a UK Design		For Diagnosing Abdominal Disease				
4	BCR/ENGG/T/80	Dr. Anirban Chattopadhyay	—	India	20-06-2025	A system and method for the development of IoT based smart Helmet for the mining personnel	2.02531E+11	Published	20-06-2035	India
5	BCR/ENGG/T/21	Sri Samujjwal Ray	17/2025	Office of the Controller General of Patents, Designs and Trade Marks, Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry	25-04-2025	Machine Learning Algorithms For IoT: Powering Intelligent Systems	2.02431E+11	Published	15-08-1947	India
6	BCR/ENGG/T/41	Sri Tapas Roy	461028-001	Government of India	02-06-2025	Solar Powered Smart Umbrella	209876	Accepted	28-09-2026	India
7	BCR/ENGG/T/96	Dr. Abhijit Banerjee	6476616	Allinnov Research and Development Private Limited # 10, Sycamore Court,	17-10-2025	Door view camera	6476616	Registered	01-10-2030	Uk
8	BCR/ENGG	Dr. Tribeni	64888	United	05-	Surgical	6488891	Registered	04-	United

	/T/202	Prasad Banerjee	91	Kingdom	12-2025	Robotic Arm Assembly With Integrated AI Camera Housing		d	12-2030	Kingdom
9	BCR/ENGG/T/96	Dr. Abhijit Banerjee	6479911	UK Intellectual Property Office (UK IPO)	23-10-2025	AI-Powered Bionic Spine Support Device	6479911	Registered (Active Design Registration)	05-12-2050	United Kingdom
10	BCR/ENGG/T/339	Sri Mology Mukherjee	17/2025	Office of the Controller General of Patents, Designs and Trade Marks, Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry	25-04-2025	Machine Learning Algorithms For IoT: Powering Intelligent Systems	202431098520	Published	13-12-2024	India
11	BCR/ENGG/T/98	Dr. Mrinmoy Chakraborty	409866	GOVERNMENT OF INDIA THE PATENT OFFICE	26-10-2022	An Ultra-wideband Antenna And Process Of Fabrication Of The Antenna	814/KOL/2013	Granted	09-07-2033	India

6.2.3. Sponsored Research Project(15)

(Provide details of funded research projects from the external sources including Corporate Social Responsibility (CSR). List includes Principal Investigator (PI), Co-PI name, name of the dept where project is sanctioned, project title, funding agency, sanctioned amount, duration and sanctioned year. Also, provide the cumulative funding amount received during CAYm1, CAYm2, and CAYm3. Please do not give duplicate data from the sections 6.2.4 and 6.2.5.)

- ❖ Amount ≥ 15 Lacs – 15 Marks
- ❖ Amount ≥ 12 Lacs and < 15 Lacs – 12 Marks
- ❖ Amount ≥ 9 Lacs and < 12 Lacs – 9 Marks
- ❖ Amount ≥ 6 Lacs and < 9 Lacs – 6 Marks
- ❖ Amount ≥ 3 Lacs and < 6 Lacs – 3 Marks
- ❖ Amount ≥ 1 Lac and < 3 Lacs – 1 Mark
- ❖ Amount < 1 Lac – 0 Mark.

Table No. 6.2.3.1: List of sponsored research projects received from external agencies.

S.N.	PI name	Co-PI Names if any	Name of the Dept., where project is sanctioned	Project title*	Name of the Funding agency	Duration of the project	Amount (Lacs)
CAYm1							
1	Dr. Sourav Mohanta	Smt. Keka Hajra	Electronics and Communication Engineering	Development of Body-Wearable Bandpass Filters	DRDO	2024-11-05 to continuing	47.000
Amount received (Rs.)							47.00
CAYm2							
1							
...							
Amount received (Rs.)							
CAYm3							
1	Dr. Tribeni Prasad Banerjee	Dr. Aloke Saha	Electronics and Communication Engineering	Upgradation and Modernization of VLSI Lab (Phase II) to enhance teaching, training and research capabilities in VLSI domain	AICTE	2022-01-12 to 2024-01-11	13.875
Amount received (Rs.)							13.875
Total Amount (Lacs) Received for the Past 3 Years							60.875

Note*:

- ❖ Only sponsored research projects will be considered. Infrastructure-based projects will not be considered here.

6.2.4. Consultancy Work(15)

(Provide details of consultancy projects from the external sources. List includes Principal Investigator (PI), Co-PI name, name of the dept where project is sanctioned, project title, funding

agency, sanctioned amount, duration and sanctioned year. Also, provide the cumulative funding amount received during CAYm1, CAYm2, and CAYm3. Please do not give duplicate data from the sections 6.2.3 and 6.2.5.)

- ❖ Amount ≥ 15 Lacs – 15 Marks
- ❖ Amount ≥ 12 Lacs and < 15 Lacs – 12 Marks
- ❖ Amount ≥ 9 Lacs and < 12 Lacs – 9 Marks
- ❖ Amount ≥ 6 Lacs and < 9 Lacs – 6 Marks
- ❖ Amount ≥ 3 Lacs and < 6 Lacs – 3 Marks
- ❖ Amount ≥ 1 Lac and < 3 Lacs – 1 Mark
- ❖ Amount < 1 Lac – 0 Mark.

Table No. 6.2.4.1: List of consultancy projects received from external agencies.

S.N.	PI name	Co-PI names if any	Name of the Dept., where project is sanctioned	Project title*	Name of the Funding agency	Duration of the project	Amount (Lacs)
CAYm1							
1	Dr. Sanjay Saheb Ra Opa War	Sri S Aik at Dey; Dr. G Our Sun Dar Mitra Thakur; Dr. Arijit Banerjee; Dr. Abhijit Banerjee	Electronics and Communication Engineering	Digital Transformation System for Prefailure Alert Generation for Motors and Cobble Reduction based on IBA data in WRM, SAIL Bhilai	UNIVITT - BAIET	2024-05-01 to continuing	37.000
Amount received(Rs.)							37.00
CAYm2							
1	Dr. Abhijit Banerjee	Sri Sumantra Banerjee; Sri S Aik at Dey; Dr. Sanjay Sengupta; Dr. G Our Sun Dar Mitra Thakur; Dr. a Rind Ammon Dal; Sri Sud Ip T as a Manta; Sri Kinshuk Banerjee; Dr. Abhijit	Institute-level / ERP Cell	Enterprise Resource Planning - Development of ERP system for five allied institutes	None	2023-01-12 to continuing	1.30

		Banerjee					
Amount received (Rs.)							1.30
CAYm3							
1							
..							
Amount received (Rs.)							
Total amount (Lacs) received for the past 3 years							

6.2.5. Institution Seed Money or Internal Research Grant to its Faculty for Research Work (10)

(Provide details of faculty members received Institution seed money grants to its faculty for research work. Also, provide the cumulative funding amount received and utilized during CAYm1, CAYm2, and CAYm3. Please do not give duplicate data from these sections 6.2.3 and 6.2.4. The outcomes of the project are No. of publications, no. of working models/prototypes, no. of Ph.D. students graduated, no. of M.E students graduated, amount generated, etc.)

Amount received (6 marks)

- ❖ Amount ≥ 6 Lacs – 6 Marks
- ❖ Amount ≥ 4 Lacs and < 6 lacs – 4 Marks
- ❖ Amount ≥ 2 Lacs and < 4 lacs – 2 Mark
- ❖ Amount < 1 Lac – 0 Mark.

Amount utilized (4 marks).

❖

Table No. 6.2.5.1: List of faculty members received seed money or internal research grant from the Institution.

S.N.	Faculty name	Project title/ Support Activity for	Duration	Amount (Lacs)	Amount Utilized (Lacs)	Outcomes of the project
CAYm1						
1						
..						

Amount received (Rs.)						
CAYm2						
1						
..						
Amount received (Rs.)						
CAYm3						
1						
..						
Amount received (Rs.)						

Total amount(Lacs)received for the past3years

Criterion7: Facilities and Technical Support (100)**7.1. Adequate and Well-Equipped Laboratories, and Technical Manpower (50)**

(Provide details of various laboratories for the program and at the department level. Also, please provide a list of technical support staff appointed by the College for the Department and their qualifications. Please do not give duplicate data from the sections 7.2 and 7.5.)

TableNo.7.1.1:List of laboratories and technical manpower.

S. N.	Name of the Laboratory	No. of student s per setup (Batch Size)	Name of the major equipment	Weekly utilization status(all the Courses for which the lab is utilized)	Technical Manpower support		
					Name of the technical staff	Designation	Qualification
1	ANALOG ELECTRONICS LAB MB 1ST FLOOR	30 students per batch; 2-3 students per setup	Universal Trainer Kit (23); Digital Multimeter (18); Cathode Ray Oscilloscope (18); Function Generator (11); Portable Dc Analog Ammeter (10)	12 Hrs. (EC-492) + 6 Hrs. (ESC 391/IT) + 6 Hrs. (ESC391/CSD) + 12 Hrs. (PC-EE-392/EE) = 36 Hrs.	Dolan Das; Santanu Roy; Samar Nath Rajak; Sonatan Dutta	Senior Technical Assistant; Technical Assistant	B.Tech in Electronics and Communication Engineering; Diploma in Electronics and Telecommunication Engineering
2	BASIC ELECTRONICS LAB MB 1ST FLOOR	30 students per batch; 2-3 students per setup	Moving Coil Dc Mili Ammeter (24); Universal Trainer Kit (21); Moving Coil Dc Voltmeter (20); Digital Multimeter (19); Cathode Ray	Basic Electronics; Engineering Science laboratory; component testing and measurement experiments	SMT DOLAN DAS	SR. TECHNICAL ASSISTANT	B.Tech in Electronics and Communication Engineering

			Oscilloscope (14)				
3	DIGITAL ELECTRONICS LAB MB 2ND FLOOR	30 students per batch; 2-3 students per setup	Digital Multimeter (10); Universal Trainer Kit (9); Universal Trainer Kit (Power Supply) (1); Digital Tester (1); Analog Tester (1)	12 Hrs. (EC-392) + 12 Hrs. (ESC 391/CSE) + 3 Hrs. (ESC 391/AIML) = 27 Hrs.; 12 Hrs. (EC EE492)	Dolan Das; Santanu Roy; Samar Nath Rajak; Sonatan Dutta	Senior Technical Assistant; Technical Assistant	B.Tech in Electronics and Communication Engineering; Diploma in Electronics and Telecommunication Engineering
4	ANALOG COMMUNICATION LAB MB 2ND FLOOR	30 students per batch; 2-3 students per setup	Cathode Ray Oscilloscope (9); Digital Multimeter-3&1/2 Digit (3); Dpcm Trainer Kit (3); Ask Mod & Demod Kit (3); Fsk Mod & Demod Kit (3)	12 Hrs. (EC-491)	Dolan Das; Santanu Roy; Samar Nath Rajak; Sonatan Dutta	Senior Technical Assistant; Technical Assistant	B.Tech in Electronics and Communication Engineering; Diploma in Electronics and Telecommunication Engineering
5	DIGITAL COMMUNICATION LAB MB 2ND FLOOR	30 students per batch; 2-3 students per setup	Cathode Ray Oscilloscope (9); Digital Multimeter-3&1/2 Digit (3); Dpcm Trainer Kit (3); Ask Mod & Demod Kit (3); Fsk Mod & Demod Kit (3)	12 Hrs. (EC-592)	Dolan Das; Santanu Roy; Samar Nath Rajak; Sonatan Dutta	Senior Technical Assistant; Technical Assistant	B.Tech in Electronics and Communication Engineering; Diploma in Electronics and Telecommunication Engineering
6	ANTENNA & WAVE PROPAGATION LAB MB 2ND FLOOR	30 students per batch; 2-3 students per setup	Personal Computer (3); Dot Matrix Printer (2); Antenna Trainer Kit With Transmitter And Receiver (1); Transmission Line Trainer Kit (1); Broad Band Horn Antenna (1)	12 Hrs. (EC-591)	Dolan Das; Santanu Roy; Samar Nath Rajak; Sonatan Dutta	Senior Technical Assistant; Technical Assistant	B.Tech in Electronics and Communication Engineering; Diploma in Electronics and Telecommunication Engineering

7	SEMICONDUCTOR AND DEVICE LAB RABINDRA BHAWAN	30 students per batch; 2-3 students per setup	Computer (1)	Semiconductor Devices; solid-state device characteristic experiments	SMT DOLAN DAS	SR. TECHNICAL ASSISTANT	B.Tech in Electronics and Communication Engineering
8	VLSI LAB MB 1ST FLOOR	30 students per batch; 2-3 students per setup	Fpga Trainer Kit (3); Vlsi Design Software (3); Computers (2); Fpga/Arm Trainer Kit (1); Vlsi Trainer With Accasaries (1); Computers with VIVADO 2016.1, BASYS 3 ARTIX-7 FPGA, Mentor Graphics EDA-2018.	12 Hrs. (EC-591)	Dolan Das; Santanu Roy; Samar Nath Rajak; Sonatan Dutta	Senior Technical Assistant; Technical Assistant	B.Tech in Electronics and Communication Engineering; Diploma in Electronics and Telecommunication Engineering
9	DSP LAB RABINDRA BHAWAN	30 students per batch; 2-3 students per setup	Educational Practice Board (2); Dsp Trainer Kit (2); Dsp Trainer Kit & Accesaries (1); Matlab (2007B) License For Three Years (1); Dsp Educational Practice Board (1)	Computers with Cisco Packet Tracer software for student version.	Computers with Cisco Packet Tracer software for student version.	Computers with Cisco Packet Tracer software for student version.	Computers with Cisco Packet Tracer software for student version.
10	NETWORKING LAB MB 2ND FLOOR	30 students per batch; 2-3 students per setup	Computers (1); Camera (1); Kit (1); Solder Iron (1); Mini Plier Set (1); Computers with Cisco Packet Tracer software for student version.	12 Hrs. (EC-692)	Dolan Das; Santanu Roy; Samar Nath Rajak; Sonatan Dutta	Senior Technical Assistant; Technical Assistant	B.Tech in Electronics and Communication Engineering; Diploma in Electronics and Telecommunication Engineering
11	MICROPROCESSOR & MICROCON	30 students per batch; 2-3 students per setup	Microprocessor kits; microcontroller	12 Hrs. (EC-692)	Dolan Das; Santanu Roy;	Senior Technical Assistant;	B.Tech in Electronics and

	TROLLER LAB MB 2ND FLOOR	students per setup	trainer kits; interfacing boards; regulated power supplies; PCs/software tools		Samar Nath Rajak; Sonatan Dutta	Technical Assistant	Communication Engineering; Diploma in Electronics and Telecommunication Engineering
12	CONTROL SYSTEM LAB RABINDRA BHAWAN	30 students per batch; 2-3 students per setup	Control-system trainer kits; servo/motor-control modules; signal sources; oscilloscopes; measurement instruments	12 Hrs. (EC-692)	SMT DOLAN DAS	SR. TECHNICAL ASSISTANT	To be verified from HR/service book
13	DIGITAL SYSTEM DESIGN LAB MB 2ND FLOOR	30 students per batch; 2-3 students per setup	HDL/FPGA development boards; PCs with design software; digital trainer kits; programming accessories	12 Hours (EC-391)	Dolan Das; Santanu Roy; Samar Nath Rajak; Sonatan Dutta	Senior Technical Assistant; Technical Assistant	B.Tech in Electronics and Communication Engineering; Diploma in Electronics and Telecommunication Engineering
14	Project Stage I	3	Utilize all the lab facilities of the respective laboratories for required projects.	14 Hrs. (EC-782)	Dolan Das; Santanu Roy; Samar Nath Rajak; Sonatan Dutta	Senior Technical Assistant; Technical Assistant	B.Tech in Electronics and Communication Engineering; Diploma in Electronics and Telecommunication Engineering
15	Project Stage II	3	Utilize all the lab facilities of the respective laboratories for required projects.	14 Hrs. (EC-881)	Dolan Das; Santanu Roy; Samar Nath Rajak; Sonatan Dutta	Senior Technical Assistant; Technical Assistant	B.Tech in Electronics and Communication Engineering; Diploma in Electronics and Telecommunication Engineering

7.2. Additional Facilities Created for Improving the Quality of Learning Experience in Laboratories (20)

(Provided detailsofvariousadditionalfacilitiesprovidedbythedeptmenttoenhance the quality of learning in laboratories. Please do not give duplicate data from the sections 7.1 and 7.5. Including any labs funded by external agencies)

TableNo.7.2.1:List of additional facilities.

S. N.	Name of the Facility	Details	Purpose For creating facility	Utilization	Relevance to POs/PSOs
1	Reconfigurable VLSI Design	XILINX VIVADO 2016.1; BASYS3 ARTIX-7 FPGA Board; ZYBO ZYNQ-7000 Development Board; NEXYS ARTIX-7 Video Processing FPGA Board.	To reduce the industry-academia curriculum gap; to expose students to reconfigurable VLSI design flow, FPGA implementation, prototype design and project work.	Used by B.Tech ECE, EE and CSE students for HDL-based design, FPGA implementation, digital system design practice and project activity.	PO7, PO8, PO9; PSO1, PSO3
2	Full Custom VLSI Design	Mentor Graphics Tanner EDA 2018; HEP1, HEP2; S-EDIT, L-EDIT, CALIBRE, OASYS, NITRO and related modules.	To provide facility to students for full-custom VLSI design, layout editing, verification and project work.	Used by B.Tech ECE, EE and CSE students for full-custom VLSI design, simulation, verification and design-oriented project work.	PO6, PO8, PO9; PSO1, PSO3
3	ANSYS Electronics Desktop	Simulation facility for antenna design and electromagnetic analysis.	To familiarize students with impedance characteristics, radiation characteristics and simulation-based study of various antenna structures.	Used by B.Tech ECE students and project students for electromagnetic, microwave design and antenna simulation activity.	PO4, PO5, PO6; PSO1, PSO2, PSO3
4	Antenna Radiation Pattern Measurement Kit	Radiation pattern measurement kit for antennas operating in the 1 GHz to 20 GHz range.	To measure radiation patterns of designed and developed microwave antennas for mini-projects and final-year projects.	Used by B.Tech ECE project students for antenna characterization, microwave design validation and practical measurement activity.	PO4, PO5, PO6; PSO1, PSO2, PSO3
5	Microcontroller-Based Physical Parameter Control	Temperature-control setup using ATmega8 microcontroller, LM35 temperature sensor, LCD display, relay module, power supply and connecting wires.	To provide low-cost, precise and easy-to-handle physical parameter control practice using embedded hardware.	Used for agriculture, industry, hospital, home-appliance and real-time control demonstrations; students practise software coding and hardware implementation.	PO2, PO3; PSO2, PSO3
6	Subtractive Manufacturing CNC CO2 Laser Cutter	100 W single-head CO2 laser cutter; Make: Prakash; Model: P139; supports engraving and cutting on acrylic sheet,	To develop student skills in engraving, cutting, digital design-to-fabrication workflow and	Used by UG and PG students; also used for external school students and teachers,	PO1, PO2, PO3, PO5, PO6, PO9, PO12; PSO1, PSO2

		plywood, MDF, glass, HDHMR, foam and related materials.	prototype realization.	diploma students, ITI students and teachers for demonstration and skill activity.	
7	3D Printer Additive Manufacturing	Crealty/WOL3D Ender 3 V2 FDM all-metal 3D printer for prototype development from CAD/blueprint models.	To support additive manufacturing, rapid prototyping, product-model creation and design validation.	Used by UG and PG students; also used for external school students and teachers, diploma students, ITI students and teachers for innovation and fabrication exposure.	PO1, PO2, PO3, PO5, PO6, PO9, PO12; PSO1, PSO2
8	CNC Wood Router	Engraving and cutting facility for non-metal materials; supports maximum working size of 8 ft x 4 ft.	To develop practical skills in CNC-based fabrication, design realization and material processing.	Used by UG and PG students; also used for external school students and teachers, diploma students, ITI students and teachers for fabrication-related training.	PO1, PO2, PO3, PO5, PO6, PO9, PO12; PSO1, PSO2
9	WorkBee Desktop CNC Router	WorkBee desktop CNC router supporting up to 1 m2 working area; associated support for reverse engineering using Einscan Pro HD and Solid Edge software.	To develop student skills in desktop CNC machining, reverse engineering, dimensional reproduction and digital fabrication.	Used by UG and PG students; also used for external school students and teachers, diploma students, ITI students and teachers for prototype development and industrial skill exposure.	PO1, PO2, PO3, PO5, PO6, PO9, PO12; PSO1, PSO2
10	INNOVATION LAB	Location: Rabindra Bhawan; Type: Mixed; Area: 30.00 sq. m; Main: Dr Abhijit Banerjee; Additional: Sri Surajit Batabyal; Not Govt. Funded; Sponsored by Texas Instruments; Sponsorship amount: Rs. 2,00,000.00; Budget: Rs. 40,000.00; Status: Active. Major support: Computers with VIVADO 2016.1, BASYS 3 ARTIX-7 FPGA boards and Mentor Graphics EDA-2018.	To provide FPGA, HDL, digital system design and implementation practice beyond routine breadboard-level digital electronics.	Used for EC-392-linked digital design activity, student design practice, sponsored learning activity, prototype demonstrations and faculty-guided practical work.	PO1, PO2, PO3, PO5, PO10; PSO1, PSO2
11	XILINX / FPGA Design Facility	Location: MB 1st Floor; Type: Mixed; Area: 20.00 sq. m; Main: Dr Aloke Saha; Additional: Dr Tribeni Prasad Banerjee; Govt. Funded; Sponsored; Status: Active. Major support: de-soldering pump, desktop computers,	To support experiential learning, open-ended circuit experimentation, embedded-system prototyping, design contests, hackathon preparation and innovation-oriented	Used for student projects, prototype fabrication, sponsored learning activity, technical demonstrations and faculty-guided practical work.	PO3, PO4, PO5, PO9, PO10, PO11, PO12; PSO1, PSO2

		function generator, CRO and X1 curve desktop curving kit.	student activity.		
12	ADVANCED PROTOTYPE LAB	Location: MB 1st Floor; Type: Mixed; Area: 20.00 sq. m; Main: Dr Tapas Mondal; Additional: Sri Soumendra Pain; Not Govt. Funded; Not Sponsored; Status: Active.	To provide a dedicated space for hardware realization, proof-of-concept validation, debugging, embedded prototyping and project demonstration preparation.	Used for mini-projects, final-year project preparation, hardware testing, soldering/rework support and prototype-level experiments.	PO3, PO4, PO5, PO8, PO9, PO10, PO12; PSO1, PSO2
13	PCB Fabrication Facility (2 Layer)	Facility for two-layer PCB design and fabrication support including layout preparation, board preparation, drilling, etching/soldering support and prototype-level PCB realization.	To enable students to convert circuit schematics into manufacturable PCB layouts and realize compact, reliable hardware prototypes.	Used for mini-projects, final-year projects, embedded-system hardware, sensor-interface boards, power-supply boards and prototype validation.	PO2, PO3, PO4, PO5, PO9, PO10, PO12; PSO1, PSO2
14	ARM Microprocessors	ARM-based microprocessor/microcontroller development boards with programming, debugging and peripheral-interfacing support.	To expose students to embedded processor architecture, register-level programming, peripheral control, real-time interfacing and firmware development.	Used for embedded systems laboratory support, project development, IoT nodes, control applications and processor-based design demonstrations.	PO1, PO2, PO3, PO4, PO5, PO9, PO12; PSO1, PSO2
15	Robotics Actuation and Prototyping	Robotics actuation support including motors, motor drivers, servo mechanisms, mechanical prototyping support, controller interfacing and sensor-actuator integration.	To support practical learning in robotics, mechatronics, actuation control, embedded automation and prototype development.	Used for robotics projects, automation prototypes, undergraduate project work, competitions, demonstration models and hardware integration practice.	PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO12; PSO1, PSO2
16	Wireless Sensor Networks	Wireless sensor node development and experimentation facility for sensing, embedded processing and wireless data communication.	To support learning in distributed sensing, IoT, wireless communication, data acquisition and sensor-network deployment.	Used for IoT projects, environmental/industrial monitoring prototypes, communication experiments, student project work and sensor-network demonstrations.	PO2, PO3, PO4, PO5, PO9, PO10, PO12; PSO1, PSO2

7.3. Maintenance of Laboratories and Overall Ambiance (10)

(Provide details of overall laboratories maintenance and overall ambiance in the Department.)

The Electronics and Communication Engineering department maintains its laboratories through a defined responsibility structure and routine upkeep mechanism. Each laboratory is assigned a main faculty in-charge and an additional faculty in-charge for academic readiness, stock monitoring, utilization tracking, consumable planning, and reporting of maintenance requirements. Technical support staff assist in equipment issue, setup verification, repair coordination, cleaning support, and practical-class readiness.

Routine maintenance includes checking of trainer kits, oscilloscopes, function generators, regulated power supplies, digital multimeters, soldering stations, networking devices, PCs, UPS units, software tools, workbenches, and associated accessories. Defective items are identified during regular use, recorded, isolated where required, and processed for repair, replacement, or procurement approval as per institutional procedure.

Table 7.3.1: Laboratory Maintenance Mechanism

Area	Responsibility / Practice	Outcome
Laboratory In-charge System	Main and additional faculty in-charges monitor academic readiness, stock, utilization, and maintenance needs.	Clear responsibility and timely follow-up.
Technical Support	Technical staff assist in setup verification, equipment issue, repair coordination, and practical-class preparation.	Smooth conduct of laboratory sessions.
Equipment Maintenance	Regular checking of instruments, trainer kits, PCs, UPS, software, and workbenches.	Improved availability and reliability of laboratory facilities.
Defect Handling	Faulty items are identified, recorded, isolated where necessary, and routed for servicing or replacement.	Reduced disruption during practical classes.
Consumables and Stock	Consumables and accessories are planned and monitored based on laboratory use.	Adequate support for experiments and project work.

The overall laboratory ambiance is maintained through proper lighting, ventilation, organized workbenches, equipment labelling, safe cable routing, display of laboratory instructions, availability of manuals where applicable, and regulated student movement. Practical sessions are conducted in batches to maintain workable student-to-setup ratios and adequate faculty supervision.

Table 7.3.2: Ambiance and Safety Support

Parameter	Practice Followed
Physical Ambiance	Lighting, ventilation, clean work areas, organized workbenches, and proper placement of instruments are maintained.
Academic Readiness	Laboratory manuals, instructions, and experiment-related materials are made available wherever applicable.
Safety and Organization	Equipment labelling, safe cable routing, controlled student movement, and proper handling of instruments are followed.
Class Management	Batch-wise conduct of practical classes ensures effective supervision and better student-to-setup ratio.

Thus, the department follows a structured mechanism for laboratory upkeep and ambiance management. The system supports uninterrupted conduct of laboratory courses, effective hands-on learning, equipment availability, student safety, and attainment of practical skills relevant to the programme outcomes.

7.4. Safety Measures in Laboratories (10)

(Provide details of various safety measures deployed in each laboratory within the Department.)

TableNo.7.4.1:List of various safety measures in laboratories.

S.N.	Name of the Laboratory	Safety measures
1	INNOVATION RABINDRA BHAWAN	LAB Fire extinguishers are installed at accessible locations and first-aid boxes are available. Regulated power supply, proper earthing, circuit switch-off protocol and supervised energization are followed for all experimental and prototype circuits. Safety goggles, gloves and other PPE are used where required. Work benches are kept clean and cable routing is maintained to avoid tripping and short-circuit hazards. Soldering, desoldering, hot tools and fabrication work are permitted only at designated benches after instruction. Chemicals, consumables and hazardous materials are labelled, stored and disposed of properly. Unauthorized shifting, repair or operation of equipment is prohibited. Two-door/emergency exit access is maintained wherever available.
2	ANALOG MB 1ST FLOOR	ELECTRONICS LAB Fire extinguishers are installed at accessible locations and first-aid boxes are available. Regulated DC supplies, function generators, oscilloscopes, meters and circuit trainer kits are operated only after checking polarity, voltage rating and load limits. All circuits and equipment are properly grounded, and electrical wiring is insulated and maintained. Students use appropriate PPE such as safety goggles and gloves where required. Work areas are kept clean and tidy. Components, chemicals and consumables are labelled and stored properly. Waste materials are disposed of through designated channels. Unauthorized repair work and equipment shifting are not permitted. Emergency exit access is maintained.
3	BASIC MB 1ST FLOOR	ELECTRONICS LAB Fire extinguishers and first-aid boxes are kept accessible. Bread-board circuits, meters, regulated supplies and oscilloscopes are used under faculty/technical staff supervision. Proper grounding, insulation of wiring, switch-off protocol and polarity checks are followed before energizing circuits. Safety goggles and gloves are used wherever required. Work areas are kept clean, dry and free from loose cables. Components and consumables are labelled and stored properly. Damaged leads, probes or plugs are removed from service. Unauthorized repair, equipment shifting or unsupervised circuit energization is prohibited.
4	DIGITAL MB 2ND FLOOR	ELECTRONICS LAB Fire extinguishers and first-aid boxes are available in accessible locations. Digital trainer kits, IC testers, CROs, function generators and multimeters are operated with proper grounding and insulated wiring. Students are instructed on safe handling and storage of ICs, electronic components, patch cords and probes. Work benches are maintained clean and free from loose wires. Power is switched off before inserting or removing ICs and before changing circuit connections. Wiring and cords are labelled and

				maintained. Unauthorized repair work, equipment shifting and unsupervised energization are prohibited. Emergency exit access is maintained.
5	ANALOG COMMUNICATION MB 2ND FLOOR		LAB	Fire extinguishers and first-aid boxes are available. AM, FM, PAM, PWM transmitter/receiver kits, CROs and associated trainer kits are operated under supervision with proper insulation, grounding and regulated supply. PPE such as goggles and gloves is used where required. Work areas are kept clean and cables are dressed to prevent tripping and loose contact. Communication modules, antennas, connectors and transmission lines are handled carefully to avoid electrical hazards and equipment damage. EMI-aware operating practice is followed to avoid interference with nearby equipment. Wiring and cords are labelled and maintained. Unauthorized repair or shifting of equipment is prohibited. Emergency exit access is maintained.
6	DIGITAL COMMUNICATION MB 2ND FLOOR		LAB	Fire extinguishers and first-aid boxes are accessible. ASK, PSK, FSK, BPSK, PCM trainer kits and digital storage oscilloscopes are used with regulated supply, proper earthing and insulated wiring. Circuits are energized only after connection checks by the concerned faculty/technical staff. Communication devices, patch cords and probes are handled and stored properly. Work areas are kept clean and dry. EMI-aware operation is followed where signal-generation and measurement activities are carried out. Wiring and cords are labelled and maintained. Unauthorized repair, shifting of instruments and unsupervised equipment operation are prohibited. Emergency exit access is maintained.
7	ANTENNA & WAVE PROPAGATION MB 2ND FLOOR		LAB	Fire extinguishers and first-aid boxes are available. Antenna trainers, slotted transmission lines, microwave bench components, VSWR meters, Klystron power supplies and X-band power meters are operated only under supervision. Proper insulation, grounding and connector tightening are ensured before energization. Safe distance is maintained from radiating elements and microwave/RF sources. EMI shielding and controlled operating zones are used where required to avoid interference with other equipment. PPE is used as applicable. Cables, waveguides, antenna mounts and benches are kept properly arranged. Unauthorized repair, opening of RF equipment or shifting of microwave components is prohibited. Emergency exit access is maintained.
8	SEMICONDUCTOR AND DEVICE RABINDRA BHAWAN		LAB	Fire extinguishers and first-aid boxes are available. Semiconductor device trainer kits, measurement instruments and low-voltage circuits are operated with proper grounding, polarity checking and switch-off protocol. Students use PPE where required and handle devices, probes and meters carefully to avoid electrical shock, short circuits

			and component damage. Work areas are maintained clean and tidy. Electronic components, chemicals and consumables are labelled and stored properly. Damaged cords, probes and leads are withdrawn from use. Waste materials are disposed of properly. Unauthorized repair or equipment shifting is prohibited. Emergency exit access is maintained.
9	VLSI MB 1ST FLOOR	LAB	Fire extinguishers and first-aid boxes are accessible. Computer systems, FPGA/development boards, EDA tools and associated interfaces are operated using proper shutdown, login and access-control practices. Boards, microchips and electronic components are handled using safe electrostatic-discharge-aware practice where applicable. Electrical wiring, adapters and power strips are maintained in insulated and grounded condition. Work areas are kept clean and free from loose cables. Equipment is maintained regularly to prevent accidents. Unauthorized software installation, hardware opening, repair work or shifting of systems is prohibited. Emergency exit access is maintained.
10	DSP RABINDRA BHAWAN	LAB	Fire extinguishers and first-aid boxes are available. MATLAB-based computer systems, DSP platforms and measurement instruments are operated under standard laboratory supervision. Proper shutdown, access-control practice, cable management and insulated wiring are maintained. Power strips and computer peripherals are checked to prevent loose connections and overheating. Work areas are kept clean and tidy. Students are instructed not to open systems, alter wiring or shift equipment without permission. Regular maintenance of systems and tools is carried out to prevent accidents. Emergency exit access is maintained.
11	NETWORKING MB 2ND FLOOR	LAB	Fire extinguishers and first-aid boxes are accessible. Computers, network switches, routers, patch panels and simulator-based systems are operated with proper power supply, grounding and cable management. Network cables and cords are labelled, routed and maintained to avoid tripping and accidental disconnection. Students are instructed on safe handling of equipment, connectors and peripherals. Work areas are kept clean and dry. Unauthorized wiring changes, device opening, repair or equipment shifting are prohibited. Regular maintenance is carried out to prevent overheating, loose contacts and electrical hazards. Emergency exit access is maintained.
12	MICROPROCESSOR & MICROCONTROLLER MB 2ND FLOOR	LAB	Fire extinguishers and first-aid boxes are available. 8085 trainer kits, 8051 kits, 8255 interface modules, stepper motor interfaces and associated power supplies are operated with proper voltage rating, polarity checks, grounding and switch-off protocol. Students are supervised while connecting interface circuits and motors. PPE is used where required. Patch cords, connectors and peripherals

			are stored and handled carefully. Wiring is insulated, labelled and maintained. Work benches are kept clean and free from loose wires. Unauthorized repair, equipment shifting and unsupervised energization are prohibited. Emergency exit access is maintained.
13	ADVANCED MB 1ST FLOOR	PROTOTYPE LAB	Fire extinguishers and first-aid boxes are accessible. Prototype circuits, fabrication tools, soldering/desoldering stations, instruments and development boards are used only under supervision. Regulated power supply, proper earthing, switch-off protocol and pre-power checks are followed. Safety goggles, gloves and other PPE are used where required. Hot tools are used only at designated benches with proper handling and cooling time. Work areas are kept clean, dry and free from clutter. Chemicals, consumables and waste are labelled, stored and disposed of properly. Unauthorized repair, shifting or use of tools is prohibited. Emergency exit access is maintained.
14	CONTROL RABINDRA BHAWAN	SYSTEM LAB	Fire extinguishers and first-aid boxes are available. Control-system trainers, instrumentation units, MATLAB-based systems and measurement instruments are operated with proper grounding, regulated supply and insulated wiring. Students are instructed to verify connections and load ratings before energization. Moving parts, motors and interface units are handled under supervision to prevent mechanical and electrical hazards. Work areas are kept clean and cables are routed safely. Instruments are maintained periodically to prevent accidents. Unauthorized repair, system opening or equipment shifting is prohibited. Emergency exit access is maintained.
15	PROJECT MB 2ND FLOOR	LAB (ECE)	Fire extinguishers and first-aid boxes are accessible. Project circuits, development boards, instruments, soldering/desoldering tools and prototype assemblies are operated under faculty/technical staff supervision. Regulated supplies, proper earthing, polarity checks and switch-off protocol are followed before energizing circuits. PPE is used where required. Soldering, hot tools and fabrication work are restricted to designated benches. Chemicals, batteries, consumables and hazardous materials are labelled and stored properly. Waste materials are disposed of through designated channels. Unauthorized equipment shifting, repair or unsupervised testing is prohibited. Emergency exit access is maintained.
16	M.TECH MB 2ND FLOOR	RESEARCH LAB	Fire extinguishers and first-aid boxes are available. Research systems, computers, development boards, instruments and software platforms are operated with proper shutdown, access-control practice, earthing and cable management. Experimental circuits are energized only after checking voltage/current ratings and connection

		integrity. PPE is used where required. Work areas are maintained clean and orderly. Components, modules and consumables are stored properly. Regular maintenance of equipment and tools is carried out to prevent accidents. Unauthorized repair, software alteration, equipment shifting or unsupervised testing is prohibited. Emergency exit access is maintained.
17	DIGITAL SYSTEM DESIGN LAB MB 2ND FLOOR	Fire extinguishers and first-aid boxes are accessible. Computers, FPGA boards, digital design trainers, EDA tools and associated interfaces are used with proper shutdown, login and access-control practices. Development boards, FPGA modules and electronic components are handled carefully, with ESD-aware practice where applicable. Electrical wiring, adapters and cords are insulated, labelled and maintained. Work benches are kept clean and free from loose cables. Equipment is maintained regularly to prevent accidents. Unauthorized hardware opening, repair, software changes or equipment shifting is prohibited. Emergency exit access is maintained.

7.5. Project Laboratory/Research Laboratory(10)

(Provide details of laboratories for supporting projects, research, Centre of Excellence, innovation, and startups etc. Please do not give duplicate data from the sections 7.1 and 7.2.)

Table No. 7.5.1: List of project laboratory/research laboratory.

S.N.	Name of the Laboratory
1	PROJECT LAB (ECE)
2	M.TECH RESEARCH LAB
3	INNOVATION LAB
4	XILINX LAB
5	ADVANCE PROTOTYPE LAB

Criterion8: Continuous Improvement (80)

8.1. Actions Taken Based on the Results of Evaluation of the COs, POs and PSOs (40)

The department uses CO, PO and PSO attainment analysis, semester-end feedback, course-end feedback, DAC discussions, academic audit observations and course-file records as the main input channels for continuous improvement. The evidence indicates recurring concern areas in application-oriented teaching, laboratory exposure, use of modern tools, clarity in evaluation criteria, project mentoring, industry alignment, student engagement and research-oriented learning. Corrective actions were implemented through curriculum delivery enrichment, pedagogy changes, additional laboratory exposure, mentoring, rubrics, content beyond syllabus and feedback-based academic monitoring.

8.1.1. Actions Taken Based on the Results of Evaluation of the COs Attainment (20)

The following weakness-action matrix is framed from the CO-related evidence available in the SAR and ATR files. It should be read along with the actual course-wise CO attainment sheets kept in the course files. The actions are grouped under curriculum intervention, pedagogical initiative and student support improvement, as required by the SAR format.

CO-linked weakness / attainment concern	Evidence observed in records	Measures identified and implemented	Type of measure	Expected effect on CO attainment
Students had difficulty connecting theory with practical applications.	Repeated feedback: application of knowledge in real-life problem solving was weaker than theoretical knowledge acquisition; 2023-24 and 2024-25 ATRs record requests for more practical examples.	Real-life case studies, industry scenarios, problem-based modules and classroom demonstrations were introduced in theory classes.	Curriculum delivery enrichment / pedagogy	Improved performance in COs requiring application, analysis and problem solving.
COs involving simulation, experimentation and modelling needed more tool-based exposure.	ATR records indicate use of MATLAB, Simulink, Xilinx Vivado, IoT kits, Raspberry Pi modules, LTspice and domain-specific simulation tools.	Practical sessions were redesigned to include simulation, FPGA exposure, IoT kits, Raspberry Pi modules and EDA tools in relevant courses.	Laboratory / modern tool intervention	Improved attainment in COs mapped to experimentation, simulation, circuit analysis and engineering-tool usage.
Some students reported uncertainty about evaluation fairness and assessment criteria.	Course-end feedback reported 77%-80% satisfaction with fairness, but also noted unclear marking schemes in some courses.	Rubric-based grading, mandatory pre-assessment disclosure of criteria and clearer communication of evaluation rules were adopted.	Assessment reform	Improved student preparation and consistency in internal-assessment CO attainment.
Higher-semester students required stronger project guidance.	Seventh semester feedback showed limited time for project discussions; ATRs record dedicated weekly mentoring slots for final-year projects.	Weekly project mentoring slots and one-to-one project review sessions were allotted for higher semesters.	Support system improvement	Improved attainment in project, design, implementation, presentation and documentation COs.

First-year and lower-semester students required early hands-on exposure.	First semester feedback noted lack of real-world context in foundational courses.	Open lab sessions, induction club projects, mini-projects in Basic Electrical Engineering / Engineering Drawing context and demonstration-based learning were introduced.	Pedagogical and laboratory intervention	Better attainment in foundational COs through concept reinforcement.
Students required more structured performance feedback.	Performance discussions were repeatedly identified as useful; regular feedback sessions and dashboards were introduced.	Bi-semester feedback sessions, one-on-one faculty-student feedback and individualized feedback dashboards were implemented.	Academic monitoring support	Earlier identification of CO-level learning gaps and timely remedial support.

Actions already institutionalized:

- Course files maintain CO mapping, assessment plan, internal evaluation evidence, rubrics and CO-wise attainment computation.
- CIE and SEE components are mapped to COs; direct assessment results are redistributed CO-wise for attainment computation.
- Feedback findings are placed before DAC / departmental review meetings and translated into Action Taken Reports.
- Course delivery now includes real-world cases, simulations, open-lab work, mini-projects and project mentoring wherever course outcomes require such evidence.

8.1.2. Actions Taken Based on the Results of Evaluation of the POs/PSOs Attainment (20)

The following table aligns the major PO/PSO weakness themes with the actions implemented during the assessment period. The evidence includes PO/PSO gap themes reported in SAR records and the semester-wise ATRs. The actual PO/PSO attainment matrices should be appended separately as primary evidence.

PO/PSO weakness theme	Weakness identified	Measures implemented during two years	PO/PSO linkage	Status / evidence
Engineering analysis and problem formulation	A small but repeated concern appeared in identifying, formulating and analysing complex engineering problems.	Problem-based learning, case studies, analytical classroom exercises and worked engineering scenarios were introduced.	PO1, PO2, PSO1	Implemented through theory classes, course-end action records and DAC-reviewed ATRs.
Design and investigation capability	Students needed stronger exposure to design, experiment planning, data analysis and interpretation.	Mini-projects, lab-based design tasks, SPICE-based characterization, project exhibitions and experiment-oriented assignments were strengthened.	PO3, PO4, PSO2	Implemented through open lab sessions, Xilinx Lab and Advanced Prototyping Lab usage.
Modern tool usage	Modern engineering and IT tool usage was identified as an improvement area.	MATLAB, Simulink, Xilinx Vivado, LTspice, Cadence Virtuoso, IoT kits and Raspberry Pi modules were introduced in demonstrations/workshops/labs.	PO5, PSO2	Implemented through workshops, practical sessions and content beyond syllabus.

Industry relevance and professional exposure	Students requested stronger alignment with industry needs and emerging technologies.	Guest lectures, expert workshops and technical sessions on 5G/IoT, Verilog HDL, FPGA prototyping, SoC design, EDA tools and cellular concepts were conducted.	PO6, PO11, PSO1, PSO2, PSO3	Implemented through industry/faculty expert sessions and DAC action plans.
Communication and teamwork	First-year and some batch groups needed more communication practice and collaborative activity.	Debates, communication workshops, group projects, hackathons, quizzes and technical competitions were organised.	PO9, PO10	Implemented through student engagement and mentoring records.
Ethics, lifelong learning and self-learning	Students needed more guided exposure to independent learning beyond classroom delivery.	NPTEL/e-resources, digital learning materials, project-based learning and faculty-guided learning tasks were promoted.	PO8, PO12	Linked to e-learning, library resources and mentoring.
PSO-specific hardware and communication-system proficiency	Gaps were recorded in simulation, FPGA, EDA, communication-system modelling and integrated system concepts.	Hands-on workshops and content beyond syllabus sessions were conducted in MATLAB/Python signal simulation, LTspice/Cadence, Verilog HDL, FPGA, SoC and analog communication simulation.	PSO1, PSO2, PSO3	Implemented through content beyond syllabus and laboratory enrichment.

8.2. Academic Audit and Actions Taken thereof during the Period of Assessment (15)

The academic audit system is operated as a closed-loop quality mechanism. It links course planning, syllabus delivery, assessment quality, CO attainment, PO/PSO linkage, feedback analysis, DAC review and corrective action. The records indicate that the Department Advisory Committee and departmental review meetings are used for validating feedback, approving Action Taken Reports and recommending academic improvement measures.

Stage	Audit / review activity	Records verified	Corrective action route
1. Course planning	Course allotment, lesson plan, CO statements, CO-PO/PSO mapping and assessment plan are checked.	Course file, lesson plan, CO mapping, academic calendar.	HoD / DAC review and course coordinator correction.
2. Teaching-learning monitoring	Syllabus coverage, class engagement, practical delivery and use of examples/simulation are reviewed.	Course-end feedback, attendance, class records, lab records.	Case studies, simulations, flipped classroom, demonstrations and open lab sessions.
3. Assessment audit	Internal assessments, lab rubrics, CIE/SEE mapping and evaluation criteria are checked for outcome alignment.	Question papers, rubrics, evaluated samples, CO-wise marks distribution.	Rubric standardisation, criteria disclosure and moderation/review.
4. Attainment review	Course-wise CO attainment and PO/PSO attainment are reviewed after assessment closure.	CO attainment sheet, PO/PSO computation, direct/indirect assessment records.	Remedial support, content beyond syllabus, tool-based sessions and lab enrichment.
5. Feedback review	Student feedback on academics and facilities is analysed semester-wise and	Course-end feedback, semester-end feedback, ATR files.	DAC-approved Action Taken Reports.

	year-wise.		
6. Follow-up and closure	Implementation status is checked in subsequent meetings and action plans are updated.	Meeting minutes, ATR, evidence files, departmental records.	Sustained monitoring through mid-semester feedback and mentoring.

Academic Audit / DAC Action Timeline

Date / period	Record / meeting	Major observation	Action taken / decision
26.04.2023	DAC meeting for AY 2022-23 feedback	Application of knowledge, pedagogy, internet facility and practical usefulness needed attention.	Curriculum review, teacher training, practical session revision, internet upgrade and mentoring support were recorded.
11.07.2023	DAC meeting on Academic, Facility and Course-End Feedback	Research-methodology, modern tools, real-life problem solving and laboratory modernity were flagged.	Real-world cases, laboratory upgrade review, coding/repository sessions, research-methodology emphasis and add-on courses were approved.
05.03.2024	Special DAC meeting / ATR for Odd Semester 2023-24	Evaluation fairness, application-oriented teaching and extracurricular involvement needed strengthening.	Rubrics, practical examples, MATLAB/Simulink, open labs, hackathons and structured mentoring were implemented.
02.08.2024	Special DAC meeting / ATR for Even Semester 2023-24	Application-oriented teaching and extracurricular activities had lower relative ratings.	Xilinx Lab and Advanced Prototyping Lab were opened for co-curricular use; dashboards and one-to-one mentoring were adopted.
21.03.2025	Special DAC meeting / ATR for Odd Semester 2024-25	Practical examples, evaluation clarity and non-academic involvement required improvement.	Real-world case studies, MATLAB / simulation environments, standard rubrics and structured mentorship were implemented.
04.08.2025	Special DAC meeting / ATR for Even Semester 2024-25	Need for continued mentoring, industry integration and feedback-loop control.	Mentorship objectives, MoUs / industry alignment, AR/VR or gamified simulation and anonymous mid-semester feedback were recommended.

8.3. Improvement in Faculty Qualification / Contribution (10)

The table below consolidates available numeric data from Criterion 5 and Criterion 6. Faculty qualification values should be final-checked against the latest faculty master list before final SAR submission because the uploaded SAR provides faculty qualification values in the CAY/CAYm1/CAYm2 convention, while this subsection asks for CAYm1/CAYm2/CAYm3.

Item	CAYm1	CAYm2	CAYm3	Source / note
No. of faculty members with Ph.D. degree	13	17	18	Values for CAYm1 and CAYm2 are taken from Table 5.2.1 Faculty Qualifications.
No. of publications in peer reviewed journals	21	11	3	Taken from Table 6.2.1.1 Faculty Publication Details.
No. of publications in conferences	25	11	13	Taken from Table 6.2.1.1 Faculty Publication Details.

Interpretation: Research contribution shows strong recent output with 21 peer-reviewed journal papers and 25 conference papers in CAYm1. Conference output remains sustained across all three years. The Ph.D. faculty count should be reconciled with annual faculty lists because faculty movement in 2024-25 is visible in Criterion 5 records.

8.4. Improvement in Academic Performance (15)

The academic performance values below are taken from Criterion 4, Sections 4.3, 4.4 and 4.5 of the SAR. The API is calculated as $X \times (Y/Z)$, where X is the mean grade point or percentage divided by 10, Y is the number of successful students and Z is the number of students who appeared.

Item	CAYm1	CAYm2	CAYm3
Academic Performance Index (API) of the First-Year Students in the Program (Ref. Section 4.3)	7.85	6.97	6.93
Academic Performance Index (API) of the Second-Year Students in the Program (Ref. Section 4.4)	6.89	6.22	7.02
Academic Performance Index (API) of the Third-Year Students in the Program (Ref. Section 4.5)	6.92	6.72	6.97

Action interpretation from API trend:

- First-year API improved in CAYm1 compared with CAYm2 and CAYm3; open labs, foundational mini-projects and mentoring should be retained.
- Second-year API requires close tracking in CAYm1; actions should focus on bridge classes, tutorial reinforcement, subject-wise remedial support and lab-integrated theory sessions.
- Third-year API declined from CAYm3 to CAYm1; stronger monitoring is needed for design, communication, embedded/VLSI, signal-processing and communication-system courses.
- The low API years should be linked to course-wise CO shortfall records and followed up through course-specific corrective action sheets.

Consolidated Corrective Action Register for Criterion 8

Weakness cluster	Corrective action	Evidence to keep ready for NBA team
CO attainment gap in application-oriented topics	Course-wise case studies, problem-based learning and practical examples.	Course files, lesson plans, revised lecture notes, assignment sheets.
PO5 / PSO2 modern-tool gap	MATLAB, Simulink, Xilinx Vivado, LTspice, Cadence, IoT kits, Raspberry Pi and FPGA sessions.	Lab manuals, attendance, workshop reports, photos, student outputs.
Assessment transparency	Rubric-based grading and pre-assessment criteria disclosure.	Rubrics, evaluated samples, internal marks sheets, moderation records.
Mentoring inconsistency	Smaller mentor groups, bi-semester feedback sessions, weekly project mentoring.	Mentor-mentee registers, meeting records, action notes.
Industry relevance gap	Guest lectures, hands-on workshops, expert sessions and industry-aligned topics.	Event reports, attendance, resource-person details, feedback forms.
Student engagement and communication	Hackathons, quizzes, project expos, debates, communication workshops and club activities.	Event reports, participation lists, certificates, photographs.
Academic audit closure	DAC discussion and ATR approval after each feedback cycle.	DAC notices, minutes, signed ATRs, closure evidence.

Criterion 9: Student Support System and Governance (120)

9.1. First Year Student-Faculty Ratio (FYSFR) (05)

(Data for first year courses to calculate the FYSFR)

Table No. 9.1.1: FYSFR details.

Year	Sanctioned intake of all UG programs (S4)	No. of required faculty (RF4= S4/20)	No. of faculty members in Basic Science Courses & Humanities and Social Sciences including Management courses (NS1)	No. of faculty members in Engineering Science Courses (NS2)	Percentage= No. of faculty members $((NS1*0.8) + (NS2*0.2)) / (\text{No. of required faculty (RF4)})$; Percentage= $((NS1*0.8) + (NS2*0.2)) / RF4$
CAY	840	42	24	68	78.10%
CAYm1	840	42	26	67	81.43%
CAYm2	690	34.5	25	66	96.23%
Average Percentage					85.25%

Note:

Ex: If S4=240, the Institute needs a minimum of 2 faculty members in Physics, 2 in Chemistry, and 4 in Mathematics.

Ex: If S4=420, the Institute needs a minimum of 4 faculty members in Physics, 4 in Chemistry, and 5 in Mathematics.

Ex: If S4=720, the Institute needs a minimum of 6 faculty members in Physics, 6 in Chemistry, and 8 in Mathematics.

For intake (S4) is more than 720, an FYSFR of 1:20 shall be maintained approximately.

Average Percentage > 80% of faculty members; 5 marks.

≥ 70% to < 80 of faculty members; 4 marks.

≥ 60% to < 70 of faculty members; 3 marks.

≥ 50% to < 60 of faculty members; 2 marks.

≥ 40% to < 50 of faculty members; 1 mark.

< 40% of faculty members; 00 mark.

Example for **Table No. 9.1.1:** FYSFR details

Year	Sanctioned intake of all UG programs (S4)	No. of required faculty (RF4=S4/20)	No. of faculty members in Basic Science Courses & Humanities and Social Sciences including Management courses (NS1)	No. of faculty members in Engineering and Science Courses (NS2)	Percentage= No. of faculty members $((NS1*0.8) + (NS2*0.2)) / (\text{No. of required faculty (RF4)})$; Percentage= $((NS1*0.8) + (NS2*0.2)) / RF4$
AY	300	15	18	3	$((18*0.8) + (3*0.2)) / 15$ $= (14.4 + 0.6) / 15 = 15 / 15 = 100\%$
CAYm1	300	15	16	2	$((16*0.8) + (2*0.2)) / 15$ $= (12.8 + 0.4) / 15 = 13.2 / 15 = 86\%$
CAYm2	240	12	10	2	$((10*0.8) + (2*0.2)) / 12$ $= (8 + 0.4) / 12 = 8.4 / 12 = 70\%$
Average Percentage					85.33 (5 marks)

9.2. Mentoring System (05)

(Type of mentoring: Professional guidance/career advancement/course work specific/ laboratory specific/all-round development. Number of faculty mentors: Number of students per mentor: Frequency of meeting:

The institution should report the details of the mentoring system, its implementation and effectiveness through impact studies, services both online and physical, and the mentoring of seniors (final year students) to juniors (freshmen) if any, etc.).

The Department of Electronics and Communication Engineering operates a structured student mentoring system to provide professional guidance, career advancement support, course-work guidance, laboratory-specific assistance, and all-round student development. The system is designed to establish sustained teacher-student interaction, monitor academic progress, support personal and professional growth, and ensure timely intervention for students requiring academic, behavioural, or career-related guidance.

All faculty members of the department act as mentors for allotted students. Students are grouped from the first year itself, and each group is assigned to a faculty mentor. Each mentor normally handles 4 to 6 students from a particular batch, depending on the batch strength. Over the full B.Tech duration, one faculty mentor generally supports 16 to 24 students across different years. The mentor-mentee association continues throughout the academic life cycle of the student.

A. Basic Details of the Mentoring System

Parameter	Departmental Practice
Type of mentoring	Professional guidance, career advancement, course-work specific support, laboratory-specific guidance, skill development, all-round development, behavioural support, higher studies guidance, and placement preparation.
Number of faculty mentors	All faculty members of the department are assigned mentoring responsibility as per the semester-wise mentor allocation list maintained by the department.
Number of students per mentor	Normally 4 to 6 students per batch; approximately 16 to 24 students per faculty mentor across the four-year B.Tech programme.
Frequency of meeting	At least 3 to 4 formal mentor-mentee meetings per semester, with additional need-based meetings whenever academic, attendance, discipline, laboratory, placement, or personal guidance is required.

Parameter	Departmental Practice
Mode of mentoring	Physical meetings, group interactions, individual counselling, online communication, academic monitoring, parent interaction, and referral to HoD / subject teacher where required.
Records maintained	Student profile sheet, parent/guardian details, academic record, attendance record, internal assessment performance, mentoring activity register, meeting remarks, action taken remarks, and follow-up status.

B. Objectives of the Mentoring System

- To establish a better and effective teacher-student relationship through continuous academic and personal guidance.
- To monitor students' academic performance, attendance, discipline, and regularity.
- To identify slow learners and advanced learners through internal assessment performance and classroom/laboratory interaction.
- To provide course-specific and laboratory-specific academic support through interaction with subject teachers and laboratory faculty.
- To guide students on skill development, MOOC courses, internships, projects, placement preparation, entrepreneurship, and higher studies.
- To involve parents or guardians in specific cases where attendance, performance, behaviour, or progression requires joint counselling.
- To encourage students to participate in technical contests, paper presentations, conferences, professional society activities, social outreach, sports, cultural events, and student chapters such as IETE.
- To develop positive attitude, communication skills, goal-setting ability, team behaviour, social responsibility, and professional ethics.

C. Implementation Framework

The mentoring process is implemented through a formal allocation and review structure. At the beginning of the academic cycle, students are divided into small groups and assigned to faculty mentors. Mentors collect essential student data, interact with students individually and in groups, monitor academic and non-academic progress, and record the outcome of each interaction. The Head of the Department reviews the mentoring process through interaction with mentors and advises corrective action wherever necessary.

Stage	Activity	Responsible Person / Unit	Record / Evidence
1	Formation of mentor-mentee groups from the first year based on admitted batch strength.	HoD / Departmental mentoring coordinator	Mentor allocation list
2	Collection of student profile details including roll number, contact number, email ID, guardian details, academic background, and field of interest.	Faculty mentor	Student profile sheet
3	Regular mentoring meetings for academic monitoring, attendance review, counselling, and career guidance.	Faculty mentor	Mentoring activity register
4	Identification of slow learners and advanced learners through internal assessments, attendance, classroom participation, and laboratory performance.	Faculty mentor / Course teacher	CA performance, attendance record, mentor remarks

Stage	Activity	Responsible Person / Unit	Record / Evidence
5	Referral of subject-specific weakness to concerned subject teacher and arrangement of remedial support on identified topics.	Faculty mentor / Subject teacher	Remedial class record and follow-up remarks
6	Guidance to advanced learners for MOOC courses, design contests, technical paper presentation, research activity, internships, professional society activity, and project-based learning.	Faculty mentor / Project guide / Professional society coordinator	Participation records and certificates
7	Parent interaction in selected cases involving poor attendance, low academic performance, discipline issues, or personal difficulty.	Faculty mentor / HoD	Parent meeting record
8	Semester-wise review of mentoring effectiveness and need-based intervention.	HoD / DAC / Department	Mentoring review report / action taken record

D. Types of Mentoring Provided

Type of Mentoring	Nature of Support Provided	Typical Activities
Professional Guidance	Guidance on professional goals, discipline-specific opportunities, engineering career paths, higher education, and professional conduct.	Career discussion, goal setting, guidance for conferences, competitions, professional society membership, and industry exposure.
Career Advancement	Guidance on employability, placement preparation, entrepreneurship, self-employment, ethical conduct, communication, confidence, and career growth.	Resume guidance, placement preparation advice, skill-gap identification, soft-skill guidance, MOOC recommendation, and interaction with placement-related activities.
Course-work Specific Mentoring	Monitoring of attendance, internal assessment performance, semester-wise academic progress, learning difficulties, and performance improvement.	Review of CA1, CA2, CA3, CA4 performance; remedial class referral; subject teacher interaction; study plan preparation.
Laboratory Specific Mentoring	Guidance on laboratory discipline, safety, experiment performance, do's and don'ts, use of equipment, and project-based laboratory work.	Lab orientation, safe instrument handling, support in Xilinx Lab / Advanced Prototyping Lab, mini-project guidance, and troubleshooting support.
Skill-based Mentoring	Guidance to develop technical and professional skills beyond prescribed course requirements.	MOOC courses, coding practice, embedded systems tools, FPGA exposure, IoT activities, paper presentation, design contests, and technical workshops.
All-round Development	Guidance for attitude, discipline, social behaviour, extracurricular participation, leadership, teamwork, and social outreach.	Sports/cultural guidance, blood donation camp participation, outreach activities, debate, communication workshops, student chapter participation.
Personal and Behavioural Support	Support for students requiring counselling related to personal difficulty, social isolation, discipline, habits, or adjustment issues.	Individual counselling, HoD interaction, parent interaction, peer support, and referral to institutional counsellor where required.

E. Frequency and Mode of Mentor-Mentee Interaction

The department ensures both scheduled and need-based mentoring. Formal meetings are conducted at least 3 to 4 times in a semester. More frequent meetings are held in cases of low attendance, weak performance, disciplinary concerns, project-related requirements, placement preparation, or personal counselling needs.

Meeting Type	Frequency	Mode	Purpose
Initial profiling meeting	Once at the beginning of mentoring cycle / semester	Physical / group meeting	Collection and verification of student data, academic background, interests, and initial concerns.
Academic progress review	After internal assessment cycles and before semester-end examination	Physical / individual or group	Review of CA performance, attendance, course difficulty, and remedial requirement.
Course/lab-specific support meeting	Need-based	Physical / online / laboratory interaction	Support for weak subjects, laboratory performance, mini-projects, and practical learning.
Career and skill development meeting	At least once per semester and need-based	Physical / online	Guidance for MOOC, internship, placement, higher studies, entrepreneurship, and professional activities.
Parent/guardian counselling	Need-based	Physical / telephonic / online	Intervention in selected cases of poor attendance, weak performance, discipline, or personal issues.
Final review and follow-up	End of semester	Physical / documented review	Documentation of action taken, improvement achieved, and next-semester follow-up requirement.

F. Online and Physical Mentoring Services

Service Mode	Services Provided	Effectiveness / Use
Physical mentoring	Individual counselling, group mentoring, attendance discussion, internal assessment review, laboratory guidance, HoD-level intervention, parent meeting, and professional society guidance.	Useful for trust building, behavioural observation, personal counselling, and immediate academic intervention.
Online mentoring	Communication through email, messaging groups, telephonic discussion, online sharing of study resources, MOOC guidance, placement preparation resources, and follow-up reminders.	Useful for quick communication, documentation, support beyond class hours, and follow-up with students who require frequent monitoring.
Hybrid support	Combination of physical meetings and online tracking for performance, attendance, project progress, skill development, and participation in events.	Improves continuity of mentoring and ensures that students can approach mentors even outside scheduled meeting hours.

G. Academic Monitoring and Learner Support

Slow learners and advanced learners are identified through continuous observation and internal assessment performance. Internal assessment tests such as CA1, CA2, CA3, and CA4 are used to identify weak areas. Mentors discuss these observations with students and, where required, inform the concerned subject teacher. Remedial classes are arranged on identified topics for slow learners. Advanced learners are guided towards MOOC courses, technical competitions, paper presentations, design contests, internships, conferences, professional society activities, and project-based laboratory

work.

Student Category	Identification Basis	Mentoring Intervention	Expected Impact
Slow learners	Low internal assessment marks, poor attendance, weak laboratory performance, difficulty in specific courses, and mentor observation.	Remedial classes, subject teacher referral, additional assignments, attendance monitoring, parent counselling where needed.	Improvement in academic performance, attendance, confidence, and regularity.
Advanced learners	High academic performance, strong laboratory involvement, interest in projects, participation in contests, and technical curiosity.	MOOC guidance, project work, research exposure, design contests, paper presentation, internships, professional society activities.	Higher technical competence, placement readiness, higher-study orientation, and innovation culture.
Students needing behavioural/personal support	Mentor observation, peer feedback, social isolation, discipline concerns, attendance irregularity, or student self-reporting.	Individual counselling, HoD interaction, parent meeting, professional counsellor support where needed.	Positive attitude, improved social skills, discipline, and emotional stability.

H. Senior-to-Junior Mentoring

The department encourages senior-to-junior mentoring through professional society activities, laboratory exposure, project demonstrations, induction interactions, technical clubs, and peer learning. Senior students, particularly final-year students and active members of student chapters, guide juniors on laboratory practices, project selection, contest preparation, basic technical tools, communication, and participation in departmental events. This peer-support mechanism supplements faculty mentoring and helps freshmen adapt to the academic environment.

Activity	Senior Student Role	Junior Student Benefit	Faculty Supervision
Induction and orientation support	Share academic experience, explain departmental culture, and guide juniors on basic academic expectations.	Smooth transition into engineering academic life.	Faculty mentors and induction coordinators.
Laboratory familiarisation	Demonstrate safe laboratory practices, basic equipment handling, and project examples.	Improved confidence in practical classes.	Laboratory in-charge / technical assistants.
Project and contest guidance	Guide juniors on mini-projects, design contests, paper presentation, and technical events.	Early exposure to project-based learning.	Project guides and student activity coordinators.
Professional society activity	Support juniors in IETE and other student chapter activities.	Improved technical networking and participation.	Faculty coordinator of professional society.
Skill development support	Share resources on MOOC courses, coding, embedded systems, FPGA, IoT, communication skills, and placement preparation.	Improved self-learning culture and career awareness.	Mentors and placement/skill coordinators.

I. Effectiveness and Impact of the Mentoring System

The effectiveness of the mentoring system is observed through improved teacher-student interaction, better academic monitoring, timely identification of weak students, improved attendance follow-up, increased student participation in co-curricular activities, better awareness of career options, and structured support for higher studies and placement preparation. The mentoring system also supports all-round development by encouraging participation in sports, cultural activities, social outreach programmes, technical competitions, professional society activities, and design contests.

Impact Area	Evidence / Indicator	Observed Effectiveness
Academic performance	Internal assessment review, remedial class referral, course teacher interaction.	Students receive timely academic support and topic-specific guidance.
Attendance and regularity	Attendance monitoring and mentor follow-up.	Irregular students are identified early and counselled.
Student confidence	Individual and group mentoring sessions.	Students develop confidence to discuss academic and personal concerns with faculty.
Skill development	MOOC guidance, workshops, technical contests, project-based laboratory activities.	Students become more aware of current trends and professional skill requirements.
Career advancement	Placement preparation, higher studies guidance, entrepreneurship discussion, company requirement awareness.	Students identify career paths and prepare for placement/higher study opportunities.
All-round development	Participation in sports, cultural events, outreach programmes, professional society activities, and competitions.	Students develop teamwork, communication, leadership, and social responsibility.
Behavioural support	Mentor counselling, HoD intervention, parent interaction, counsellor support where required.	Improvement in attitude, discipline, social interaction, and goal-setting behaviour.
Peer learning	Senior-to-junior mentoring and student chapter activities.	Freshmen receive practical academic orientation and early technical exposure.

J. Records and Documents Maintained

- Semester-wise mentor allocation list.
- Student mentoring profile form containing roll number, contact details, guardian details, academic background, and field of interest.
- Mentoring activity register with date, activity, attendance, remarks, and follow-up action.
- Internal assessment performance record for CA1, CA2, CA3, and CA4.
- Attendance monitoring record and action taken record for irregular students.
- Remedial class details for students requiring course-specific support.
- Parent counselling records in selected cases.
- Professional society, workshop, technical event, project, and competition participation records.
- Mentoring review remarks by HoD / departmental committee.

K. Sample Mentoring Format

The department maintains student mentoring forms for profile collection and meeting records. The following formats may be used as supporting evidence for NBA documentation.

K.1 Student Profile Format

Sl. No.	Name of Student	University Roll	Class Roll	Email ID	Mobile No.	Father's / Guardian's Name	Guardian Contact	Class 10 Marks (%)	Class 12 Marks (%)	Field of Interest
1										
2										
3										
4										

K.2 Mentoring Activity Record Format

Name of Student	University Roll	Date	Activity / Issue Discussed	Attendance / Performance Remark	Guidance Given	Follow-up Action	Mentor Signature

9.3. Feedback Analysis (20)

9.3.1. Feedback on Teaching and Learning Process and Corrective Measures Taken, if any (10)

(Provide details of the feedback collection process on TLP, average percentage of students who participate; Specify the feedback analysis process; Basis of reward/ corrective measures during the assessment period. Specify the number of corrective measures taken. Exhibit the details of analysis done.)

A. Feedback Collection Process on Teaching and Learning Process

Feedback on the Teaching-Learning Process is collected through structured course-end and semester-end feedback forms. The form captures academic delivery, faculty effectiveness, syllabus coverage, assessment fairness, practical exposure, mentoring, and student engagement. Students provide rating-based responses along with written comments wherever required. Responses are compiled semester-wise, course-wise, and parameter-wise for departmental review.

Table 9.3.1(a): Teaching-Learning Feedback Collection Process

Sl. No.	Feedback Component	Mode of Collection	Respondents	Frequency	Parameters Covered	Responsibility
1	Course-End Feedback	Structured feedback form	Students enrolled in respective courses	End of course delivery	Syllabus coverage, teaching approach, examples, communication, assessment clarity	Course Teacher / Department
2	Semester-End Feedback	Structured student feedback	Students of all semesters	End of semester	Academic experience, mentoring, pedagogy, communication skill development	Departmental Feedback Committee

3	Student Satisfaction Survey	Consolidated survey format	Students across batches	Periodic	Knowledge acquisition, real-life application, learning environment, faculty expertise	Department / IQAC-linked process
4	Mentor-Mentee Feedback	Interaction-based review	Mentees allotted to faculty mentors	Periodic	Academic support, counselling, project guidance, difficulty areas	Faculty Mentors
5	Departmental Review	Feedback analysis meeting	Faculty members and DAC members	After compilation	Weak indicators, corrective measures, action tracking	HoD / DAC

B. Average Percentage of Student Participation

The average student participation in the feedback process is approximately 75% to 80%, considering the consolidated response pattern across batches and feedback instruments. The participation level is adequate for meaningful interpretation of academic delivery trends and corrective action planning.

Table 9.3.1(b): Student Participation in Feedback Process

Feedback Type	Coverage	Approximate Participation Level	Interpretation
Course-End Feedback	Course-wise and semester-wise	75%-80%	Sufficient representation for course delivery analysis
Semester-End Feedback	Batch-wise academic review	75%-80%	Useful for identifying common academic concerns
Student Satisfaction Survey	Department-level academic experience	75%-80%	Suitable for broad trend analysis
Mentor-Mentee Feedback	Group-based interaction	Continuous participation	Useful for corrective mentoring and individual academic support

C. Feedback Analysis Process

Collection of student feedback responses through structured formats.

Compilation of feedback data course-wise, semester-wise, and parameter-wise.

Calculation of positive response percentage, average score, and dissatisfaction indicators.

Identification of strong areas and weak indicators from rating trends and written comments.

Segregation of academic concerns into teaching, assessment, mentoring, practical exposure, and engagement.

Departmental review followed by DAC-level discussion and approval of corrective measures.

Preparation of Action Taken Report and follow-up monitoring in subsequent cycles.

Table 9.3.1(c): Feedback Analysis Methodology

Analysis Dimension	Method Used	Output Generated	Use in Corrective Planning
Syllabus Coverage	Percentage analysis	Completion satisfaction level	Review of course progress and delivery planning
Teaching Approach	Rating analysis	Teaching effectiveness indicators	Faculty counselling, peer discussion, FDP planning

Evaluation Fairness	Response trend and comments	Ambiguity in assessment criteria	Rubric-based evaluation and pre-assessment disclosure
Practical Relevance	Low-score indicator analysis	Need for real-life examples and lab-based learning	Mini-projects, demonstrations, industry tools
Mentoring	Batch-wise comparison	Consistency of mentor support	Mentor group restructuring
Classroom Interaction	Qualitative comments	Need for interactive teaching	Flipped classroom, simulations, visual aids
Project Guidance	Higher-semester feedback	Requirement of structured project support	Weekly mentoring slots
Student Engagement	Semester-wise feedback	Need for technical and co-curricular activities	Hackathons, quizzes, expos, club activities

D. Summary of Teaching-Learning Feedback Analysis

Table 9.3.1(d): Teaching-Learning Feedback: Major Observations

Parameter	Feedback Observation	Approximate Positive Response / Rating	Interpretation
Syllabus Coverage	Most students confirmed substantial syllabus completion	81%-85%	Strong course planning and delivery
Teaching Approach	Faculty teaching was rated Excellent / Very Good by a large section of students	76%-80%+	Teaching effectiveness was satisfactory
Performance Discussion	Students appreciated discussion on assignments and performance	78% to 4.0/4 in some analyses	Strong student-faculty communication
Overall Teaching-Learning Process	Students reported positive academic experience	75%-81%	Academic delivery was effective
Evaluation Fairness	Most students found evaluation fair, but some requested clearer criteria	77%-80%	Rubric clarity needed strengthening
Use of Examples	Students requested more real-life and application-oriented examples	66%-70% positive	Practical orientation required improvement
Mentorship and Counselling	Mentoring was rated positively, but some inconsistency was observed	76%-80%	Mentor group restructuring required
Knowledge Acquisition	Students reported acquisition of technical knowledge	74%-78%	Strong theoretical delivery, with need for application
Pedagogy and Communication	Students appreciated pedagogy but requested more interaction	80%-85%	Interactive teaching tools needed
Communication Skill Gains	Students reported improvement in communication skills	78%-85%	Scope for structured speaking forums

E. Corrective Measures Taken on Teaching-Learning Process

Table 9.3.1(e): Corrective Measures Taken for Teaching-Learning Process

Sl. No.	Feedback Identified	Issue	Corrective Measure Taken	Implementation Evidence / Action Mode	Expected Outcome
1	Need for more practical examples in		Real-life case studies and problem-based learning	Case-based lecture delivery and classroom discussion	Improved concept clarity and application ability

	theory classes	modules were introduced		
2	Need for application-oriented teaching	MATLAB, Simulink, Xilinx Vivado, IoT kits, Raspberry Pi modules, and simulation tools were used	Practical sessions and lab demonstrations	Better linkage between theory and practice
3	Ambiguity in evaluation criteria	Standardized rubrics were introduced for internal and laboratory assessment	Rubric-based grading and pre-assessment disclosure	Improved transparency and fairness
4	Students requested more interactive teaching	Flipped classroom, visual aids, live demonstrations, animations, and simulation-based teaching were adopted	Faculty pedagogy workshops and classroom practice	Increased classroom participation
5	Inconsistency in mentoring support	Mentor groups were restructured with reduced group size and year-wise allocation	Faculty-to-student mentoring structure	Better monitoring of student progress
6	Need for stronger one-to-one academic support	Bi-semester feedback sessions were introduced between faculty and students	Scheduled interaction and performance discussion	Early identification of academic difficulty
7	Need for more hands-on activity	Mini-projects and open lab sessions were introduced	Xilinx Lab and Advanced Prototyping Lab usage	Improved experiential learning
8	Need for stronger industry relevance	Guest lectures and industry expert workshops were organized	Expert sessions and industry-linked topics	Better exposure to industry practices
9	Need for project guidance in higher semesters	Dedicated weekly mentoring slots were allocated for project work	Final-year project mentoring schedule	Better project planning and execution
10	Need for structured co-curricular participation	Hackathons, quizzes, technical competitions, mini project expos, and induction club activities were organized	Departmental student engagement activities	Improved holistic student development
11	Need for faculty improvement in pedagogy	Faculty development sessions on OBE, active learning, visual pedagogy, and simulation-based teaching were conducted	Internal faculty workshops	Improved teaching quality
12	Need for stronger academic monitoring	Mid-semester anonymous feedback was recommended for early corrective action	Feedback review mechanism	Faster response to emerging academic issues

F. Basis of Reward and Corrective Measures

The department uses feedback-based indicators for academic appreciation and corrective planning. Faculty members and course teams showing strong performance in teaching quality, syllabus completion, student interaction, mentoring, laboratory engagement, and project guidance are encouraged through departmental appreciation, responsibility in academic initiatives, mentoring leadership, laboratory coordination, and project supervision roles. Corrective measures are improvement-oriented and aligned with continuous quality improvement.

Table 9.3.1(f): Basis of Reward / Corrective Measures

Evaluation Basis	Reward / Recognition Mechanism	Corrective Measure Mechanism
High teaching feedback	Appreciation in departmental academic	Peer sharing of good practices

	review	
Strong syllabus completion	Assignment of course coordination responsibility	Course progress tracking for weaker courses
Effective mentoring	Mentor leadership role and student support responsibility	Restructuring of mentor groups
Strong project guidance	Allocation of project supervision and lab innovation responsibility	Weekly project monitoring for affected batches
High student engagement	Coordination of technical events and student clubs	Faculty involvement in engagement activities
Lower rating in use of examples	-	Instruction to increase real-life examples and demonstrations
Concerns in evaluation fairness	-	Rubric-based grading and assessment criteria disclosure
Low interactivity in classroom	-	FDP on flipped classroom, simulation tools, and visual pedagogy
Need for industry relevance	-	Guest lectures, workshops, and industry-aligned topics
Academic difficulty of students	-	One-to-one feedback and remedial academic counselling

G. Number of Corrective Measures Taken

A total of 12 major corrective measures were implemented under the Teaching-Learning Process. These measures covered teaching methodology, evaluation transparency, practical exposure, mentoring, student engagement, industry relevance, project guidance, and faculty development.

Table 9.3.1(g): Count of Corrective Measures under Teaching-Learning Process

Category	Number of Measures Taken	Examples
Teaching methodology improvement	3	Case studies, simulations, flipped classroom
Assessment reform	2	Rubrics, pre-assessment criteria disclosure
Mentoring and counselling	2	Reduced mentor group size, one-to-one sessions
Practical and laboratory integration	2	Mini-projects, open lab sessions
Industry and project exposure	2	Guest lectures, weekly project mentoring
Student engagement	1	Hackathons, quizzes, expos, club activities
Total	12	-

H. Exhibit of Analysis Done: Teaching-Learning Process

Table 9.3.1(h): Teaching-Learning Feedback Analysis and Action Mapping

Feedback Parameter	Student Feedback Trend	Weakness Identified	Corrective Action Taken	Status
Syllabus Completion	High satisfaction	Need to maintain timely completion	Course progress monitoring continued	Implemented
Teaching Approach	Positive rating	More activity-based teaching requested	Visual aids, simulations, flipped classroom	Implemented

Evaluation Fairness	Mostly positive, with some concerns	Ambiguous marking criteria	Rubric-based grading and assessment disclosure	Implemented
Practical Application	Moderate satisfaction	Need for more real-life examples	Case studies, demonstrations, mini-projects	Implemented
Mentoring	Positive but inconsistent across some batches	Uneven mentor support	Mentor group restructuring	Implemented
Communication Skills	Positive trend	Early-semester students needed forums	Debate clubs and public speaking workshops	Implemented
Industry Relevance	Generally positive	Need for updated technical content	IoT, AI, Embedded Systems, expert sessions	Implemented
Project Guidance	Concern in higher semesters	Need for dedicated project support	Weekly project mentoring slots	Implemented
Student Engagement	Lower participation in activities	Need for structured co-curricular activity	Hackathons, quizzes, expos, induction activities	Implemented
Academic Monitoring	Need for faster feedback response	Delayed identification of issues	Mid-semester feedback recommended	Planned / Ongoing

9.3.2. Feedback on Academic Facilities (10)

(Provide details of the feedback collection process on facilities, its analysis and corrective actions taken during the assessment period.)

A. Feedback Collection Process on Academic Facilities

Feedback on academic facilities is collected through semester-end feedback and student satisfaction survey formats. The facility feedback captures adequacy, accessibility, quality, and maintenance status of academic and support infrastructure. Students rate different facilities and provide suggestions for improvement. The department reviews the feedback and separates issues that can be resolved internally from those requiring institutional-level intervention.

Table 9.3.2(a): Facility Feedback Collection Process

Sl. No.	Facility Component	Mode of Feedback	Respondents	Review Level	Nature of Action
1	Laboratory Facilities	Semester-end feedback / SSS	Students using departmental laboratories	Department	Equipment procurement, scheduling, access improvement
2	Library Access	Facility feedback	Students across semesters	Department / Library	Extended hours, digital resources
3	Classroom Infrastructure	Facility feedback	Students across batches	Department / Institute	Seating, ventilation, AV improvement
4	Internet Connectivity	Facility feedback and complaints	Students, especially hostel users	Institute IT Cell	Routers, bandwidth, IT Helpdesk
5	Hostel Amenities	Facility feedback	Hostel residents	Institute authority	Hygiene, water purifiers, maintenance
6	Cleanliness and Hygiene	Feedback comments and ratings	Students	Institute / Housekeeping	Audits, waste bins, staff allocation

7	Canteen Services	Facility feedback	Students	Institute / Vendor	Menu revision, hygiene inspection
8	Digital Learning Support	Academic-facility feedback	Students and faculty	Department / Institute	LMS, e-content, online resources

B. Facility Feedback Analysis Process

Data Compilation: facility ratings and student comments are collected and arranged parameter-wise.

Parameter-wise Analysis: satisfaction and dissatisfaction trends are calculated.

Issue Prioritisation: problems are ranked according to severity and academic relevance.

Action Planning: department-level and institute-level corrective actions are identified and tracked.

Table 9.3.2(b): Facility Feedback Analysis Method

Facility Parameter	Analysis Indicator	Decision Criterion	Corrective Action Route
Laboratories	Positive response and equipment-related comments	Availability of instruments and access hours	Departmental procurement and scheduling
Library	Rating and request for extended access	Requirement of books, e-resources, access time	Library coordination
Classrooms	Seating, ventilation, AV support feedback	Learning comfort and instructional support	Department / Institute coordination
Internet	Low satisfaction and complaint frequency	Connectivity failure and bandwidth issue	IT Cell escalation
Hostel Amenities	Hygiene and room condition comments	Student residential welfare	Institute authority
Cleanliness	Dissatisfaction percentage and repeated complaints	Maintenance urgency	Housekeeping review
Canteen	Food quality and hygiene feedback	Health and service quality	Vendor review
Digital Resources	Requirement for LMS and e-content	Learning continuity	Department / Institute support

C. Summary of Facility Feedback Analysis

Table 9.3.2(c): Facility Feedback: Major Observations

Facility Area	Feedback Observation	Approximate Feedback Trend	Interpretation
Laboratories	Students rated laboratories positively but reported limited equipment availability and access constraints	62%-69% positive	Requires more equipment and better scheduling
Library	Students requested longer hours and more digital resources	66%-70% positive	Digital and extended access required
Classroom Infrastructure	Satisfactory rating with suggestions on seating, airflow, and teaching aids	63%-67% positive	Periodic classroom upgradation needed
Internet Connectivity	Lowest-rated facility, especially in hostels	Only 13%-15% rated highly in some analysis; dissatisfaction around 41%-44%	High-priority corrective area
Hostel Amenities	Mixed feedback; hygiene and room conditions were concerns	Around 30% rated lower categories in some	Maintenance and refurbishment required

		analysis	
Cleanliness and Hygiene	Dissatisfaction reported in hostels and common spaces	20%-25% dissatisfaction in some analysis	Regular audit and housekeeping required
Canteen Services	Food quality and hygiene concerns reported	15%-18% poor/unsatisfactory rating in some analysis	Vendor monitoring required
IT Support	Need for prompt complaint resolution	Repeated connectivity issue	IT Helpdesk required

D. Corrective Actions Taken on Academic Facilities

Table 9.3.2(d): Corrective Actions Taken for Academic Facilities

Sl. No.	Facility Identified	Issue	Corrective Action Taken	Implementing Unit	Expected Outcome
1	Shortage of laboratory instruments		Additional equipment and lab kits were procured	Department / Institute	Improved practical class execution
2	Limited laboratory access hours		Extended lab slots and improved batch-wise scheduling were introduced	Department	Better hands-on access for students
3	Need for project-based laboratory use		Xilinx Lab and Advanced Prototyping Lab were opened for student projects	Department	Better project and innovation support
4	Need for updated laboratory tools		IoT kits, Raspberry Pi modules, embedded systems tools, and simulation platforms were introduced	Department	Alignment with current technical practice
5	Limited library access		Library operating hours were extended	Library / Institute	Improved student access to resources
6	Need for digital library resources		E-journals, e-books, online repositories, and remote access were added	Library / Institute	Improved academic resource availability
7	Classroom infrastructure concerns		Seating, ventilation, projection systems, interactive boards, and AV support were improved	Institute / Department	Better teaching-learning environment
8	Poor internet connectivity		Routers and access points were installed; bandwidth was increased	IT Cell / Institute	Improved academic and hostel connectivity
9	Delayed complaint resolution		Student-facing IT Helpdesk and ticket-based response mechanism were initiated	IT Cell	Faster resolution of connectivity issues
10	Hostel hygiene concerns		Sanitation cycles were increased and maintenance actions were initiated	Institute / Hostel Administration	Improved residential environment
11	Drinking water and hostel amenities		Water purifiers and basic maintenance actions were initiated	Institute / Hostel Administration	Better student welfare
12	Common-area cleanliness concerns		Weekly cleanliness audits, waste bins, and additional housekeeping support were introduced	Institute / Housekeeping	Cleaner campus and hostel areas
13	Canteen food quality		Vendor review, menu revision,	Institute / Canteen	Improved food quality and

	concerns	student polls, and hygiene checks were initiated	Committee	hygiene
14	Need for continuous infrastructure monitoring	Monthly facility audits and infrastructure health review were recommended	Department / Institute	Sustained facility improvement

E. Prioritisation of Facility Corrective Measures

Table 9.3.2(e): Priority Matrix for Academic Facilities

Priority Level	Facility Area	Reason for Priority	Action Status
High	Internet Connectivity	Lowest student satisfaction and direct effect on digital learning	Implemented / Ongoing
High	Laboratories	Direct relation with practical learning and project work	Implemented
High	Library Access	Direct relation with academic preparation and self-learning	Implemented
Medium	Classroom Infrastructure	Supports teaching effectiveness and student comfort	Implemented / Ongoing
Medium	IT Helpdesk	Required for timely complaint resolution	Implemented
Medium	Cleanliness and Hygiene	Student welfare and campus quality	Implemented / Ongoing
Medium	Hostel Amenities	Affects residential students and satisfaction level	Forwarded / Ongoing
Medium	Canteen Services	Student welfare and service quality	Forwarded / Ongoing
Low to Medium	Digital Learning Ecosystem	Needed for long-term academic support	Planned / Ongoing

F. Number of Corrective Measures Taken for Academic Facilities

A total of 14 major corrective measures were taken or initiated for academic facilities. These measures include equipment procurement, laboratory scheduling, digital library support, classroom improvement, internet upgradation, IT support, hostel maintenance, cleanliness audits, and canteen service monitoring.

Table 9.3.2(f): Count of Corrective Measures under Academic Facilities

Facility Category	Number of Corrective Measures	Examples
Laboratory facilities	4	Equipment procurement, lab access, project labs, modern tools
Library facilities	2	Extended hours, e-resources
Classroom infrastructure	1	Seating, ventilation, AV support
Internet and IT support	2	Routers, bandwidth, IT Helpdesk
Hostel and amenities	2	Hygiene, water purifiers, maintenance
Cleanliness and hygiene	1	Audits, bins, housekeeping
Canteen services	1	Vendor review, menu revision, hygiene checks
Facility monitoring	1	Monthly audit and infrastructure review
Total	14	-

G. Exhibit of Analysis Done: Academic Facilities

Table 9.3.2(g): Facility Feedback Analysis and Action Mapping

Facility Parameter	Student Feedback Trend	Weakness Identified	Corrective Action Taken	Status
Laboratories	Moderate to positive	Limited equipment and access slots	Equipment procurement and extended lab sessions	Implemented
Project Laboratories	Positive demand for practical work	Need for project-based access	Xilinx Lab and Advanced Prototyping Lab opened	Implemented
Library	Positive but with access concerns	Need for longer hours and e-resources	Extended hours and digital resources	Implemented
Classrooms	Satisfactory	Seating, ventilation, AV support required	Classroom infrastructure upgraded	Implemented / Ongoing
Internet	Low satisfaction	Poor connectivity, especially in hostels	Routers, bandwidth increase, access points	Implemented / Ongoing
IT Complaints	Repeated technical issues	Lack of quick complaint handling	IT Helpdesk introduced	Implemented
Hostel Amenities	Mixed response	Hygiene and basic amenities concerns	Maintenance, purifiers, sanitation cycles	Ongoing
Cleanliness	Dissatisfaction in common areas	Need for periodic monitoring	Weekly audits and housekeeping support	Implemented / Ongoing
Canteen	Food quality concerns	Hygiene and menu issues	Vendor review and menu revision	Implemented
Digital Learning	Need for better access to learning materials	Limited online academic support	LMS and e-content recommended	Planned / Ongoing

9.4. Training and Placement Support (10)

(Provide details of the training and placement supports, calendar of scheduled trainings, career guidance and effectiveness of career guidance, industry interaction exclusively for pre-placement/ internship/placement/counseling and support for higher study etc.)

The Department of Electronics and Communication Engineering provides structured training and placement support through coordinated academic, technical, aptitude, soft-skill, placement-readiness, internship, and higher-study guidance activities. The support system is implemented through departmental placement coordinators in association with the Central Training and Placement Cell, faculty mentors, subject experts, training vendors, industry resource persons, and alumni wherever applicable. The system begins with awareness and orientation, progresses through skill-gap identification and practice-test-based preparation, and culminates in company-specific campus recruitment support, internship facilitation, higher-study counselling, and post-drive follow-up.

The training and placement support system is designed to address diverse student career paths such as campus placement, internship, higher studies, competitive examinations, entrepreneurship, and domain-specific skill development. Students are guided from the pre-final stage onwards through career counselling, company-specific preparation, mock tests, group discussion sessions, mock interviews, GATE-oriented academic support, and placement drive coordination.

A. Objectives of Training and Placement Support

To provide structured career guidance to students based on individual career preferences and skill readiness.

To prepare students for aptitude, verbal ability, logical reasoning, analytical reasoning, programming, coding, group discussion, and personal interview rounds.

To provide access to company-pattern mock tests through institutional training platforms and vendor-based practice systems.

To coordinate pre-placement, internship, and placement-related communication between students, department, Central TPO Cell, and recruiting companies.

To support students interested in higher studies through GATE-focused subject guidance and examination-oriented academic counselling.

To monitor the effectiveness of training interventions through participation, test practice, placement-drive readiness, and student progression.

B. Institutional and Departmental Mechanism

A dedicated team of departmental placement coordinators interacts with students and provides placement-related guidance. The coordinators function as the departmental interface between students and the Central Training and Placement Office. The system includes structured communication of company details, consent collection from interested students, preparation of eligible student lists, scheduling of tests and interviews, and follow-up in case of technical, scheduling, or offer-letter related issues.

Sl. No.	Support Unit	Role in Training and Placement Support	Mode of Support	Evidence / Output
1	Central Training and Placement Cell	Overall institutional coordination with recruiters, training partners, and placement drives	Physical and online	Company communication, drive schedule, recruiter interface
2	Departmental Placement Coordinators	Student guidance, consent collection, eligible-list preparation, drive communication, issue escalation	Online forms, messaging groups, physical interaction	Student lists, drive notices, attendance, follow-up records
3	Faculty Mentors and Subject Experts	Career guidance, academic counselling, higher-study counselling, and GATE-oriented support	Physical classes, mentoring, academic discussion	Mentoring notes, special classes, subject support
4	Training Vendors / Platforms	Mock-test-based training for aptitude, verbal ability, reasoning, programming, and coding	Online practice platforms	Practice test records and readiness improvement
5	Industry Resource Persons / Recruiters	Pre-placement talks, internship orientation, company-specific interaction, and role-specific guidance	Online / offline sessions	PPT sessions, interaction records, internship/placement guidance
6	Alumni / Senior Students	Peer guidance on preparation strategies, placement experience, and company-specific process	Interactive sessions, peer counselling	Experience-sharing sessions and informal support

C. Availability of Career Guidance Facilities

Career guidance is provided from the pre-final stage onwards through departmental placement coordinators and faculty mentors. Students are informed about available career routes such as software placement, core electronics opportunities, internships, higher studies, GATE preparation, competitive examinations, and skill-based certification. Based on each student's preferred career path, suitable preparation guidance is provided.

Career Guidance Area	Support Provided	Target Student Group	Implementation Mode	Expected Outcome
Campus Placement	Guidance on company expectations, eligibility criteria, assessment pattern, job role, CTC, and preparation strategy	Pre-final and final-year students	Drive notices, counselling sessions, online communication	Improved placement readiness
Pre-Placement Preparation	Mock tests, aptitude practice, coding practice, verbal ability	Students appearing for	Purchased platforms and internal TBT	Better test confidence and screening

	modules, and company-specific preparation	recruitment drives		performance
Internship Support	Information on internship opportunities, company requirements, domain choice, and skill expectations	Pre-final and final-year students	Departmental communication and TPO support	Increased internship awareness and participation
Higher Studies	Guidance for GATE and other higher-study options	Final-year and interested pre-final students	Special subject classes and faculty guidance	Improved preparation for higher-study examinations
Career Path Selection	Counselling on software, core, higher study, entrepreneurship, and skill development paths	Students needing career decision support	Faculty mentoring and placement coordinator interaction	More rational career planning
Soft Skills and Interview Preparation	Group discussion, mock interview, communication support, and interview-facing skills	Placement-eligible students	Physical/online practice sessions	Improved communication and interview performance

D. Calendar of Scheduled Training Activities

The training calendar is implemented in a phase-wise manner so that students are gradually prepared for placement and higher-study requirements. Early activities focus on awareness and skill-gap identification, while later activities focus on practice tests, company-specific drives, group discussion, mock interviews, and post-drive follow-up.

Phase / Semester	Scheduled Training / Guidance Activity	Major Contents	Mode	Responsibility	Measurable Output
Early orientation phase	Career awareness and domain orientation	Career paths, placement process, higher studies, internship routes, skill expectations	Physical / online	Faculty mentors and placement coordinators	Awareness level and student interest mapping
Skill-building phase	Aptitude and communication readiness	Quantitative ability, logical reasoning, verbal ability, English communication, basic programming orientation	Practice sessions / online modules	Training Cell and department	Student participation and practice progress
6th semester	Practice-test-based pre-placement training	Company-pattern mock tests using Placement Season, CoCubes, AMCAT, Reference Globe and internal TBT	Online platforms and internal tests	Training vendors / TPO / Department	Mock-test practice records
6th to 7th semester	Soft-skill and interview readiness	Group discussion, mock interview, resume orientation, communication practice	Physical / online	TPO and departmental coordinators	GD/PI readiness and student confidence
7th semester onwards	Company-specific preparation	Assessment pattern, previous trends, coding/aptitude practice, role-specific preparation	Special mock tests and online practice	TPO, vendors, coordinators	Drive-wise readiness
7th to 8th semester	Campus placement drive coordination	Eligibility communication, consent collection,	Online forms,	Departmental placement	Student participation in

		test/interview schedule, issue escalation, offer follow-up	notices, physical coordination	coordinators and Central TPO Cell	drives and offer processing
Final-year support	Higher-study counselling and GATE preparation	Subject-wise GATE syllabus support by specialist faculty members	Special classes / mentoring	ECE faculty experts	Higher-study examination preparedness
Throughout placement season	Post-drive support and corrective counselling	Feedback after tests/interviews, missed-test escalation, offer-letter follow-up	Coordinator-student interaction	Department and TPO Cell	Closure of drive-related issues

E. Pre-Placement Training and Practice-Test-Based Support

Students undergo practice-test-based training through purchased and institutional platforms. The practice tests are aligned with the assessment patterns of recruiting companies and are intended to improve speed, accuracy, confidence, and familiarity with online recruitment tests. The test modules generally include English and verbal ability, quantitative and numerical ability, logical and analytical ability, programming ability, and coding ability.

Training Platform / System	Nature of Support	Major Modules Covered	Target Use	Expected Benefit
COCUBES - AON	Mock-test platform aligned with recruitment assessment patterns	Aptitude, verbal ability, logical reasoning, technical/coding modules as applicable	Company assessment preparation	Improved test-taking readiness
Placement Season - NEOPAT	Practice test and placement preparation platform	Company-pattern test practice, aptitude, reasoning, verbal, programming-oriented modules	Pre-placement training and drive-specific practice	Higher familiarity with online tests
Reference Globe	Practice platform for assessment preparation	Aptitude, reasoning, technical preparation and company-oriented practice	Campus recruitment preparation	Improved assessment preparedness
AMCAT	Employability assessment and mock-test support	Employability skills, aptitude, English, technical/coding sections as applicable	Recruitment-screening readiness	Improved employability benchmarking
Internal TBT	Department / institution-supported test-based training	Aptitude, reasoning, verbal, programming, coding and company-specific practice	Supplementary preparation	Additional practice and readiness support

F. Training Platform Utilisation Data

The following data reflects the use of practice-test-based platforms for placement preparation. The data indicates that a major portion of students were covered through one or more training systems, including external platforms and internal test-based training.

Academic Year	Passing Out Year	Total Students	Placement Season	CoCubes	AMCAT	Reference Globe	Internal TBT	Total Platform/Training Allocation
AY 2021-22	2023	137	59	28	18	NA	32	137

AY 2020-21	2022	136	72	28	NA	NA	36	136
AY 2019-20	2021	128	26	50	NA	27	25	128

The platform allocation shows systematic coverage of students through multiple practice-test routes. The use of vendor platforms combined with internal TBT ensures that students receive repeated exposure to recruitment-style assessments before appearing in actual campus drives.

G. Career Guidance and Its Effectiveness

Career guidance is made effective by aligning student preparation with intended career choices. Students interested in campus placement are guided towards aptitude, coding, company-specific mock tests, and interview preparation. Students interested in higher studies are guided through GATE-oriented subject support. Students requiring improvement in communication are encouraged to attend group discussion, mock interview, and soft-skill sessions. The effectiveness is assessed through participation in practice tests, improved confidence in placement rounds, student engagement in recruitment drives, and better preparedness for interviews and higher-study examinations.

Guidance Component	Implementation Method	Effectiveness Indicator	Impact on Students
Placement guidance	Company profile, job profile, CTC, eligibility criteria, and test pattern are communicated before drives	Number of interested and eligible students responding to drives	Students take informed decisions regarding drive participation
Mock-test practice	Regular practice through purchased platforms and internal TBT	Completion of practice modules and improved test familiarity	Students become more confident for online assessments
Company-specific preparation	Special mock tests aligned with major campus drives	Drive-wise practice before recruitment tests	Reduced uncertainty regarding company assessment pattern
Soft-skill support	Group discussion and mock interview sessions	Improved participation and interview-facing ability	Better communication and presentation confidence
Higher-study counselling	Special GATE-oriented classes by subject experts	Participation of interested final-year students	Students receive academic support for competitive higher-study routes
Coordinator follow-up	Issue escalation regarding missed tests, interview schedules, and offer letters	Resolution of student-specific placement-process issues	Placement process becomes more student-responsive

H. Industry Interaction for Pre-Placement, Internship, Placement and Counselling

Industry interaction is facilitated through pre-placement communication, company-specific sessions, internship guidance, recruiter-driven assessment processes, and counselling on job roles and industry expectations. Before major placement drives, students are informed about the company profile, job profile, CTC, eligibility criteria, assessment pattern, and selection procedure. When required, special mock tests are organized in alignment with the recruiting company's assessment structure.

Industry Interaction Type	Purpose	Participants	Mode	Outcome
Pre-placement interaction	To explain company profile, job role, eligibility criteria, selection process and compensation details	Eligible and interested students	Online / physical	Students understand recruiter expectations before applying
Company-specific	To prepare students for	Students registered	Online practice	Improved readiness for

mock test	the assessment pattern of a particular company	for the drive	/ vendor support	company assessment round
Internship-related guidance	To inform students about internship opportunities, required skills, and application process	Pre-final and final-year students	TPO / departmental communication	Better internship awareness and application preparedness
Placement drive coordination	To ensure smooth conduct of tests, interviews, communication and student participation	Recruiters, TPO, coordinators and students	Online/physical coordination	Efficient execution of campus recruitment process
Post-drive counselling	To guide students after assessment/interview performance and resolve process issues	Participating students	Coordinator interaction	Improved student support and follow-up
Higher-study and career counselling	To guide students on GATE, higher education, and long-term career choices	Interested students	Faculty-led sessions	Support for placement as well as higher-study pathways

I. Placement Process and Departmental Support

During campus placement drives, departmental placement coordinators play an active role in ensuring that students receive timely and correct information. The coordinators support both administrative and student-facing activities so that the placement process remains organized, transparent, and responsive.

Sl. No.	Placement Support Activity	Detailed Process	Responsible Unit	Document / Output
1	Drive information circulation	Students are informed about company profile, job profile, CTC, eligibility criteria, selection stages and drive schedule	Departmental placement coordinators / TPO	Drive notice / student communication
2	Consent collection	Interested students submit willingness to participate through Google Form or equivalent online process	Departmental placement coordinators	Consent list
3	Eligible student list preparation	Coordinator verifies interested students and prepares list for forwarding to Central TPO Cell	Departmental placement coordinators	Student nomination list
4	Forwarding to company	Central TPO Cell forwards student details to the recruiting company as per drive requirements	Central TPO Cell	Company-ready database/list
5	Test/interview schedule communication	Students are informed about assessment and interview schedule after information is received from company	TPO and departmental coordinators	Schedule notice/message
6	Drive-day coordination	Students are guided regarding joining links, venue, reporting time, login instructions and required documents	Departmental coordinators / TPO	Smooth participation in drive
7	Issue escalation	If test/interview is not conducted as	Departmental	Issue resolution record

		scheduled for any student, the matter is escalated to the company through Central TPO Cell	coordinators and TPO	
8	Offer-letter follow-up	If selected students do not receive offer letters in due time, the matter is followed up through Central TPO Cell	Departmental coordinators and TPO	Offer follow-up communication

J. Soft-Skill and Interview-Facing Support

Soft-skill training is provided to improve communication ability, confidence, group-discussion performance, and interview-facing skills. Group discussion sessions and mock interviews are conducted to familiarise students with recruitment-stage behaviour and professional communication requirements. This support is particularly useful for students who possess technical knowledge but require improvement in articulation, presentation, and interview handling.

Training Area	Activity Conducted	Skills Addressed	Outcome Expected
Group Discussion	Practice-based GD sessions	Spoken English, logical expression, listening, team behaviour	Improved participation in GD rounds
Mock Interview	Simulated technical and HR interviews	Confidence, clarity, domain response, behavioural answering	Improved interview readiness
Communication Practice	English communication support	Verbal ability, professional expression, vocabulary, fluency	Improved communication quality
Resume and Profile Orientation	Guidance on presenting academic, project and skill profile	Professional profile presentation	Better recruiter-facing profile
Company-Specific Interaction	Drive-wise orientation before major companies	Assessment awareness and role clarity	Better preparedness before drive

K. Support for Higher Studies

The department provides counselling and academic support to students interested in higher studies and competitive examinations. Special classes are conducted for final-year ECE students for GATE preparation. Subjects included in the GATE syllabus are handled by ECE faculty members having subject expertise. Students are also guided regarding examination strategy, subject prioritisation, concept revision, and career opportunities after higher studies.

Higher Study Support Area	Support Provided	Faculty / Unit Involved	Beneficiary Group	Expected Outcome
GATE preparation	Special classes for GATE syllabus subjects	ECE subject experts	Interested final-year students	Improved conceptual preparation
Subject-specific counselling	Guidance on weak areas, important topics, and revision strategy	Course teachers and mentors	Students preparing for competitive examinations	Focused subject preparation
Higher education awareness	Information on M.Tech, research, public sector routes and other options	Faculty mentors / placement coordinators	Students interested in higher studies	Better clarity of future pathway
Career choice counselling	Guidance on placement versus higher study decision	Mentors and placement coordinators	Students requiring career decision support	Rational career planning

L. Online and Physical Services Provided

Service Mode	Services Provided	Examples of Use	Benefit
Online services	Mock-test platforms, Google Forms for consent, online drive communication, test/interview schedule sharing, issue escalation	Placement Season, CoCubes, AMCAT, Reference Globe, online forms, email/messages	Fast communication and scalable student tracking
Physical services	Career counselling, GATE classes, group discussions, mock interviews, faculty mentoring, pre-drive briefing	Departmental sessions, classrooms, TPO interaction	Personalised support and confidence building
Hybrid services	Company-specific mock tests, recruiter interaction, internship guidance, placement counselling	Online tests with physical/online coordinator support	Flexible and accessible training support

M. Effectiveness and Impact Study

The effectiveness of the training and placement support system is evaluated through observable process and outcome indicators. The department monitors student participation in mock tests, drive-wise consent data, participation in campus drives, soft-skill training involvement, readiness for assessment tests, resolution of placement-process issues, and student interest in higher-study preparation. The use of multiple practice platforms ensures wide coverage, and the structured role of placement coordinators improves communication efficiency during recruitment drives.

Impact Area	Indicator Used	Evidence of Effectiveness	Improvement Achieved
Placement readiness	Participation in practice-test platforms and company-specific mock tests	Platform-wise student allocation and mock-test practice	Students receive repeated exposure to assessment patterns
Communication readiness	GD sessions, mock interviews and soft-skill activities	Student participation in interview-facing preparation	Improved confidence in HR and technical interactions
Career decision support	Counselling based on student career preference	Placement, higher-study and internship guidance	Students choose preparation routes aligned with career goals
Drive coordination	Consent collection, eligible-list preparation and schedule communication	Drive-wise student lists and coordinator communication	Reduced communication gaps during placement process
Issue resolution	Escalation of missed tests, interviews and delayed offer letters	TPO-mediated follow-up with companies	Student-specific placement issues receive timely attention
Higher-study support	GATE-oriented special classes by subject experts	Participation of final-year students	Better academic support for competitive examinations

9.5. Start-up and Entrepreneurship Activities (05)

(Describe the initiatives, facilities created/utilization and their effectiveness in encouraging students for innovation, entrepreneurship, incubation and start-up. Also provide the list of beneficiaries.)

The institute has developed a structured ecosystem to encourage students towards innovation, entrepreneurship, incubation readiness and start-up orientation. The activities are conducted through departmental initiatives, Institution's Innovation Council (IIC), Industry-Institute Partnership Cell (IIPC), professional society chapters, student clubs, technical laboratories, seminars, workshops, ideathons, expos and hands-on design activities. The emphasis is on opportunity identification, project idea formulation, product-oriented thinking, technology demonstration, business model awareness, marketing orientation, prototype readiness and participation in competitive innovation events.

The event data analysed for this section shows a sustained pattern of entrepreneurship and innovation support across technical and management domains. The activities include entrepreneurship awareness, startup launch strategy, sales and marketing for startups, entrepreneurial thinking, RKVY-RAFTAAR project idea guidance, soft robotics and sensor design innovation, Ideathon and Expo, World Innovation & Creativity Day, XR exposure, PCB design, VLSI/analog IC design and coding/problem-solving contests. These initiatives collectively support the transformation of students from passive learners into problem identifiers, prototype developers, team participants and early-stage venture thinkers.

A. Institutional Mechanism for Innovation and Entrepreneurship

Awareness-building activities are conducted to expose students to entrepreneurship, startup culture, branding, marketing, creativity and business opportunity identification.

Technical innovation activities are organized through laboratories and professional bodies to develop prototype orientation in electronics, sensors, soft robotics, VLSI, PCB design, coding and immersive technologies.

Idea-development activities such as ideathons, expos and project guidance sessions support student teams in identifying problems, formulating solution concepts and preparing project submissions.

Institutional support is routed through IIC, IIPC, R&D Cell, departmental committees, IEEE Student Branch, student clubs and faculty mentors.

Physical and online modes are used depending on the nature of the activity. Physical events use seminar halls, laboratories and department classrooms; online events are used for wider expert outreach and accessibility.

Activity Vertical	Implementation Mode	Student Benefit	Evidence Mode
Entrepreneurship Orientation	Seminars/workshops on entrepreneurship, startup strategy, sales and branding	Develops awareness of venture creation, customer thinking and business communication	Notices, brochures, reports, photos and attendance sheets
Innovation and Design Thinking	Ideathon, expo, innovation day and project idea guidance	Encourages problem identification, creative thinking and solution presentation	Event summary, participation list and photographs
Prototype and Product Readiness	Workshops on sensors, soft robotics, VLSI, PCB design, XR and coding	Develops hands-on exposure for converting ideas into technical artefacts	Reports, lab photographs and participant lists
Incubation Readiness	RKVY-RAFTAAR project guidance, R&D Cell support and IIC linkage	Supports students in preparing proposal-style submissions and funding-oriented ideas	Notice, flyer, write-up and participant evidence
Industry and Professional Linkage	IIPC, IEEE Student Branch, IIC and expert-led sessions	Connects students to professional practice and emerging technology trends	Committee records and event reports

Table 9.5(a): Institutional mechanism for start-up, innovation and entrepreneurship support

B. Facilities Created / Utilized for Innovation, Entrepreneurship and Start-up Support

Facility / Support Unit	Utilization for 9.5 Activities	Nature of Student Support	Effectiveness Indicator
Institution's Innovation Council (IIC)	Innovation awareness programmes, creativity day, IIC-linked innovation activities	Institutional platform for innovation culture and idea orientation	Repeated IIC-linked activities with attendance and reports

Industry-Institute Partnership Cell (IIPC)	Industry-oriented and innovation-oriented technical sessions	Guidance on industry relevance, emerging technologies and applied project directions	IIPC co-hosted ECE innovation activities
IEEE Student Branch	Technical talks and student professional development activities	Exposure to professional engineering practice, sensors, electronics and design domains	Student participation in ECE technical innovation sessions
R&D Cell	Guidance on project ideas and possible submissions such as RKVY-RAFTAAR	Proposal orientation, problem selection and project formulation	Event with notice, flyer, write-up and participant list
Xilinx Lab, ECE Department	VLSI, analog IC design and electronics design exposure	Hands-on orientation for semiconductor and embedded hardware domains	ECE event conducted in Xilinx Lab
Departmental Laboratories / Machine Lab	PCB design, circuit design, prototyping and hardware workshops	Supports prototype development, circuit realization and lab-based technical innovation	Participant lists and workshop reports
Seminar Halls / Digital Classrooms	Entrepreneurship, branding, business, startup and technology sessions	Supports expert interaction, orientation lectures and student engagement	Photographs, attendance sheets and reports
Student Clubs / Committees	XR activities, coding contests, ideathons and expos	Promotes peer learning, competition readiness and team-based innovation	Club-led activities with reports and attendance

Table 9.5(b): Facilities and support systems created/utilized for innovation and entrepreneurship

C. Calendar of Relevant Start-up, Entrepreneurship and Innovation Activities

Sl.	Date / Duration	Activity / Programme	Dept.	Committee / Cell	Innovation / Entrepreneurship Relevance
1	04-09-2024	Transforming Buoyancy into Entrepreneurship	ME	Seminar-25/1	Entrepreneurial motivation and opportunity recognition
2	11-09-2024	Seminar on Marketing and Branding - A Paradigm Shift in the Digital Era for an Entrepreneur	FMS	Events-Documentation Committee	Branding, digital marketing and market positioning for entrepreneurs
3	28-11-2023	Awareness of the Innovation Opportunity in the Field of Soft Robotics and Sensor Design	ECE	Departmental Seminar/Workshop Organizing Committee	Innovation opportunities in sensors, soft robotics and deployable devices
4	14-05-2025	Regarding Project Ideas and Possible Submission/Guidance of Projects in RKVY-RAFTAAR	CSE(DS)	RKVY-RAFTAAR project guidance activity	Idea submission, project guidance and funded innovation pathway orientation
5	03-04-2025 to 04-04-2025	Workshop on Building the Future: Harnessing Innovation and Strategy to Launch and Scale Startups	FMS	Events-Documentation Committee	Startup launch strategy, scaling, entrepreneurship mindset and business execution
6	25-02-2025	Workshop on Effective Sales and Marketing Strategies for Entrepreneurs/Startups	FMS	Events-Documentation Committee	Sales funnel, customer communication and marketing for entrepreneurs/startups
7	28-05-	Seminar on Business Beyond Boundaries: Entrepreneurial	FMS	Events-Documentation	Entrepreneurial thinking, opportunity expansion and

	2025	Thinking for MBAs		Committee	business perspective building
8	28-02-2025	Hackmaze 252K	MCA	Departmental Academic Committee (MCA)	Coding challenge, problem solving and rapid prototype logic
9	29-07-2024 to 02-08-2024	Innovation and Future Trends in Industrial System & Instrumentation	EE	Faculty Development Programme	Innovation in industrial systems, instrumentation and automation trends
10	28-01-2026	SDG 2K26 - Ideathon & Expo	CSE(DS)	SDG-2026	Ideation, SDG-linked problem solving and innovation exhibition
11	23-02-2026 to 24-02-2026	Workshop on Effective Sales and Marketing Strategies for Start-ups	FMS	Events-Documentation Committee	Startup sales, marketing execution and customer outreach
12	21-03-2026	World Innovation & Creativity Day	CSD	CSD NAAC Committee	Innovation awareness, creativity orientation and institutional innovation culture
13	16-05-2026	Introduction to VLSI & Analog IC Design	ECE	Training, MOOCs, Higher Studies	Hardware design, IC design exposure and domain-linked innovation pathway
14	20-01-2025 to 21-01-2025	Step into XR (AR, VR and MR) for 1st Year	CSD	Dezinova Club	Immersive technology awareness and digital prototype exposure
15	05-02-2025 to 06-02-2025	Step into XR (AR, VR and MR) for 2nd & 3rd Year	CSD	Dezinova Club	Prototype-oriented immersive technology exposure
16	17-02-2026 to 18-02-2026	PCB and Circuit Designing Workshop	EE	PCB and Circuit Designing Workshop	PCB design, circuit prototyping and electronics product development

Table 9.5(c): Calendar of scheduled/organized start-up, entrepreneurship and innovation-related activities

D. Activity-wise Analysis

Sl.	Initiative	Purpose / Design Focus	Beneficiary Group	Evidence Available
1	Transforming Buoyancy into Entrepreneurship	Entrepreneurial motivation and opportunity recognition	Engineering students interested in opportunity identification, entrepreneurship and product thinking	Notice, brochure, brief report, photographs and participant list available
2	Seminar on Marketing and Branding - A Paradigm Shift in the Digital Era for an Entrepreneur	Branding, digital marketing and market positioning for entrepreneurs	Students interested in business model development, sales communication, branding and market access	Notice, banner, report, photo and attendance available
3	Awareness of the Innovation Opportunity in the Field of Soft	Innovation opportunities in sensors, soft robotics and	ECE students, IEEE student members and learners	IIC/IIPC report and photographs

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	Robotics and Sensor Design	deployable devices	interested in hardware innovation	available
4	Regarding Project Ideas and Possible Submission/Guidance of Projects in RKVY-RAFTAAR	Idea submission, project guidance and funded innovation pathway orientation	Students and project groups preparing problem statements and guided project submissions	Notice, flyer, write-up, photograph and participant list available
5	Workshop on Building the Future: Harnessing Innovation and Strategy to Launch and Scale Startups	Startup launch strategy, scaling, entrepreneurship mindset and business execution	Students seeking knowledge on startup formation, innovation strategy and business scaling	Notice, workshop banner, report, photos and merged attendance available
6	Workshop on Effective Sales and Marketing Strategies for Entrepreneurs/Startups	Sales funnel, customer communication and marketing for entrepreneurs/startups	Students interested in product-market fit, customer acquisition and business communication	Notice, banner, report and photograph available
7	Seminar on Business Beyond Boundaries: Entrepreneurial Thinking for MBAs	Entrepreneurial thinking, opportunity expansion and business perspective building	Students interested in management, business development and venture thinking	Notice, poster, report, photograph and attendance available
8	Hackmaze 252K	Coding challenge, problem solving and rapid prototype logic	Students interested in coding contests, algorithmic problem solving and innovation challenges	Report, photographs and attendance available
9	Innovation and Future Trends in Industrial System & Instrumentation	Innovation in industrial systems, instrumentation and automation trends	Students/faculty learners interested in industrial technology trends and applied innovation	Office order, flyer, report, screenshot and participant list available
10	SDG 2K26 - Ideathon & Expo	Ideation, SDG-linked problem solving and innovation exhibition	Student teams proposing socially relevant ideas and prototype concepts	Notice, event summary, geo-tagged photographs and participation list available
11	Workshop on Effective Sales and Marketing Strategies for Start-ups	Startup sales, marketing execution and customer outreach	Students preparing for startup/business projects and early-stage venture communication	Notice, banner, report, photographs and attendance available
12	World Innovation & Creativity Day	Innovation awareness, creativity orientation and institutional innovation culture	Students participating in innovation awareness and creativity activities under IIC linkage	Brochures, report, pictures and attendance available
13	Introduction to VLSI & Analog IC Design	Hardware design, IC design exposure and domain-linked innovation pathway	ECE students and IEEE/IIPC learners interested in semiconductor design and product-oriented electronics	Event document and photograph available
14	Step into XR (AR, VR and MR) for 1st Year	Immersive technology awareness and digital prototype exposure	First-year students exposed to AR/VR/MR tools and creative technology	Brochure/notice, write-up, photos and attendance

			applications	available
15	Step into XR (AR, VR and MR) for 2nd & 3rd Year	Prototype-oriented immersive technology exposure	Second and third-year students interested in AR/VR/MR applications and digital innovation	Brochure/notice, write-up, photo and attendance available
16	PCB and Circuit Designing Workshop	PCB design, circuit prototyping and electronics product development	Students interested in hardware prototyping, PCB layout and electronics design	Approval, flyer, brief, geo-tagged photographs and participant list available

Table 9.5(d): Activity-wise analysis with beneficiary mapping

E. List of Beneficiaries

The beneficiary list is mapped activity-wise because the uploaded event records contain participant-list/attendance evidence for the respective activities. Where exact numerical counts are required for audit consolidation, the values should be taken from the attached attendance sheets or participant-list files available in the event records. The beneficiary groups are listed below for NBA documentation and cross-verification.

Sl.	Activity	Beneficiary Dept. / Unit	Venue	Beneficiaries	Attendance Evidence
1	Transforming Buoyancy into Entrepreneurship	ME	Digital Class Room, ME	Engineering students interested in opportunity identification, entrepreneurship and product thinking	Attendance / participant list available
2	Seminar on Marketing and Branding - A Paradigm Shift in the Digital Era for an Entrepreneur	FMS	Albert Einstein Seminar Hall, BCRC	Students interested in business model development, sales communication, branding and market access	Attendance / participant list available
3	Awareness of the Innovation Opportunity in the Field of Soft Robotics and Sensor Design	ECE	ECE Department, GF-02 Seminar Room	ECE students, IEEE student members and learners interested in hardware innovation	Event evidence available
4	Regarding Project Ideas and Possible Submission/Guidance of Projects in RKVY-RAFTAAR	CSE(DS)	CSE(Data Science) Department	Students and project groups preparing problem statements and guided project submissions	Attendance / participant list available
5	Workshop on Building the Future: Harnessing Innovation and Strategy to Launch and Scale Startups	FMS	FMS, BCRC	Students seeking knowledge on startup formation, innovation strategy and business scaling	Attendance / participant list available
6	Workshop on Effective Sales and Marketing Strategies for Entrepreneurs/Startups	FMS	FMS, BCRC - Online	Students interested in product-market fit, customer acquisition and business communication	Event evidence available
7	Seminar on Business Beyond Boundaries: Entrepreneurial Thinking for MBAs	FMS	FMS, BCRC	Students interested in management, business development and venture thinking	Attendance / participant list available
8	Hackmaze 252K	MCA	Department	Students interested in coding	Attendance /

				contests, algorithmic problem solving and innovation challenges	participant list available
9	Innovation and Future Trends in Industrial System & Instrumentation	EE	Online	Students/faculty learners interested in industrial technology trends and applied innovation	Attendance / participant list available
10	SDG 2K26 - Ideathon & Expo	CSE(DS)	Seminar Hall, APC Roy Bhawan	Student teams proposing socially relevant ideas and prototype concepts	Event evidence available
11	Workshop on Effective Sales and Marketing Strategies for Start-ups	FMS	FMS, BCREC	Students preparing for startup/business projects and early-stage venture communication	Attendance / participant list available
12	World Innovation & Creativity Day	CSD	SF-02, Main Building, BCREC	Students participating in innovation awareness and creativity activities under IIC linkage	Attendance / participant list available
13	Introduction to VLSI & Analog IC Design	ECE	Xilinx Lab, ECE Department	ECE students and IEEE/IIPC learners interested in semiconductor design and product-oriented electronics	Event evidence available
14	Step into XR (AR, VR and MR) for 1st Year	CSD	CSD Department, BCREC	First-year students exposed to AR/VR/MR tools and creative technology applications	Attendance / participant list available
15	Step into XR (AR, VR and MR) for 2nd & 3rd Year	CSD	CSD Department, BCREC	Second and third-year students interested in AR/VR/MR applications and digital innovation	Attendance / participant list available
16	PCB and Circuit Designing Workshop	EE	Machine Lab, Main Building	Students interested in hardware prototyping, PCB layout and electronics design	Attendance / participant list available

Table 9.5(e): List of beneficiaries for start-up, entrepreneurship and innovation activities

F. Effectiveness of the Initiatives

The effectiveness of the start-up and entrepreneurship activities is reflected through participation evidence, repeated conduct of activities, presence of reports and photographs, involvement of institutional cells, use of technical laboratories and linkage with innovation-oriented platforms. The events show progression from awareness to skill exposure and from skill exposure to idea formulation. Entrepreneurship events provided market, branding, sales and startup strategy exposure. Technical activities supported prototype thinking in sensors, electronics, VLSI, PCB design, XR, coding and industrial instrumentation. Ideathon and RKVY-RAFTAAR-oriented activities further connected students with proposal preparation and opportunity exploration.

Effectiveness Dimension	Evidence Observed	Impact on Students
Awareness Level	Entrepreneurship seminars, branding sessions, World Innovation & Creativity Day	Students become aware of startup culture, market orientation and creative problem solving
Skill Level	PCB design, VLSI/analog IC design, XR, coding and technical innovation workshops	Students acquire practical exposure needed for prototype and product development
Idea Level	Ideathon & Expo, RKVY-RAFTAAR project	Students learn to identify problems, refine ideas

	guidance	and prepare solution proposals
Professional Linkage	IIC, IIPC, IEEE Student Branch, R&D Cell and departmental committees	Students receive institutional and professional society support for innovation activities
Evidence Level	Reports, photographs, notices, brochures and participant/attendance lists	Activities are documentable and auditable for NBA assessment

Table 9.5(f): Effectiveness mapping of entrepreneurship and innovation initiatives

G. Overall Impact Study

Impact Area	Observed Evidence	Effectiveness / Outcome
Student Motivation	Students were exposed to entrepreneurship, startup strategy, sales, branding and business expansion concepts.	Improved motivation towards self-employment, venture thinking and market-oriented project ideas.
Innovation Orientation	Students participated in innovation day, ideathon, soft robotics, sensor design and XR activities.	Improved understanding of creativity, problem solving and design-based learning.
Prototype Readiness	Students received hands-on exposure through PCB design, VLSI/analog IC design and lab-based technical activities.	Improved readiness for laboratory-to-prototype transition.
Incubation Preparedness	Students received project idea guidance and exposure to RKVY-RAFTAAR submission possibilities.	Improved ability to formulate proposal-oriented ideas for external schemes and institutional support.
Interdisciplinary Participation	Activities were conducted across ECE, CSD, CSE(DS), FMS, MCA, EE and ME.	Strengthened interdisciplinary learning and peer exposure.
Audit Readiness	Each activity is supported by event-level evidence such as notice, report, photographs and attendance/participant list.	Improved traceability and documentation quality for NBA review.

Table 9.5(g): Impact study of start-up and entrepreneurship support

Annexure: Evidence Availability from Event Records

Sl.	Activity	Evidence Available in Event Record
1	Transforming Buoyancy into Entrepreneurship	Notice, brochure, brief report, photographs and participant list available
2	Seminar on Marketing and Branding - A Paradigm Shift in the Digital Era for an Entrepreneur	Notice, banner, report, photo and attendance available
3	Awareness of the Innovation Opportunity in the Field of Soft Robotics and Sensor Design	IIC/IIPC report and photographs available
4	Regarding Project Ideas and Possible Submission/Guidance of Projects in RKVY-RAFTAAR	Notice, flyer, write-up, photograph and participant list available
5	Workshop on Building the Future: Harnessing Innovation and Strategy to Launch and Scale Startups	Notice, workshop banner, report, photos and merged attendance available
6	Workshop on Effective Sales and Marketing Strategies for Entrepreneurs/Startups	Notice, banner, report and photograph available
7	Seminar on Business Beyond Boundaries: Entrepreneurial Thinking for MBAs	Notice, poster, report, photograph and attendance available
8	Hackmaze 252K	Report, photographs and attendance available
9	Innovation and Future Trends in Industrial System &	Office order, flyer, report, screenshot and

	Instrumentation	participant list available
10	SDG 2K26 - Ideathon & Expo	Notice, event summary, geo-tagged photographs and participation list available
11	Workshop on Effective Sales and Marketing Strategies for Start-ups	Notice, banner, report, photographs and attendance available
12	World Innovation & Creativity Day	Brochures, report, pictures and attendance available
13	Introduction to VLSI & Analog IC Design	Event document and photograph available
14	Step into XR (AR, VR and MR) for 1st Year	Brochure/notice, write-up, photos and attendance available
15	Step into XR (AR, VR and MR) for 2nd & 3rd Year	Brochure/notice, write-up, photo and attendance available
16	PCB and Circuit Designing Workshop	Approval, flyer, brief, geo-tagged photographs and participant list available

Annexure Table: Document availability for audit verification

9.6. Governance and Transparency (15)

9.6.1. Governing Body, Administrative Setup, Functions of Various Bodies, Service Rules, Recruitment procedures and Promotion Policies (10)

(Provide details of statutory and non-statutory administrative committees like the Governing body, Academic Council/ Senate, Grievance redressal Committee, IQAC, Anti-Raging committee, Disciplinary committee in place; Internal Complaints Committee (Women harassment mitigation committee) etc., provide the approval of these committees along with details of members, the meetings details (meeting notice, agenda, minutes, action taken etc. The service rules, policies and procedures; year of publication are to be listed.)

The institute has a defined governance structure with statutory bodies, administrative offices, academic bodies, student-support committees and service units. The structure enables policy formulation, decentralized academic administration, statutory compliance, student welfare, financial control, examination management, grievance handling, anti-ragging enforcement, innovation support, industry interaction and internal quality monitoring. The governance mechanism functions through documented committees, assigned responsibilities, meeting-based decision making, records, action-taken mechanisms and reporting to competent authorities.

The administrative arrangement follows a clear hierarchy: Society/Board level policy decisions, Principal-led institutional implementation, Vice-Principal and Dean-level coordination, HoD-led departmental administration, committee-based execution, and functional support from Registrar, Finance, Examination, Library, Training and Placement, Estate, Campus Administration, Hostel Administration and technical staff.

A. Institutional Administrative Setup

Organizational Structure and Administrative Reporting System

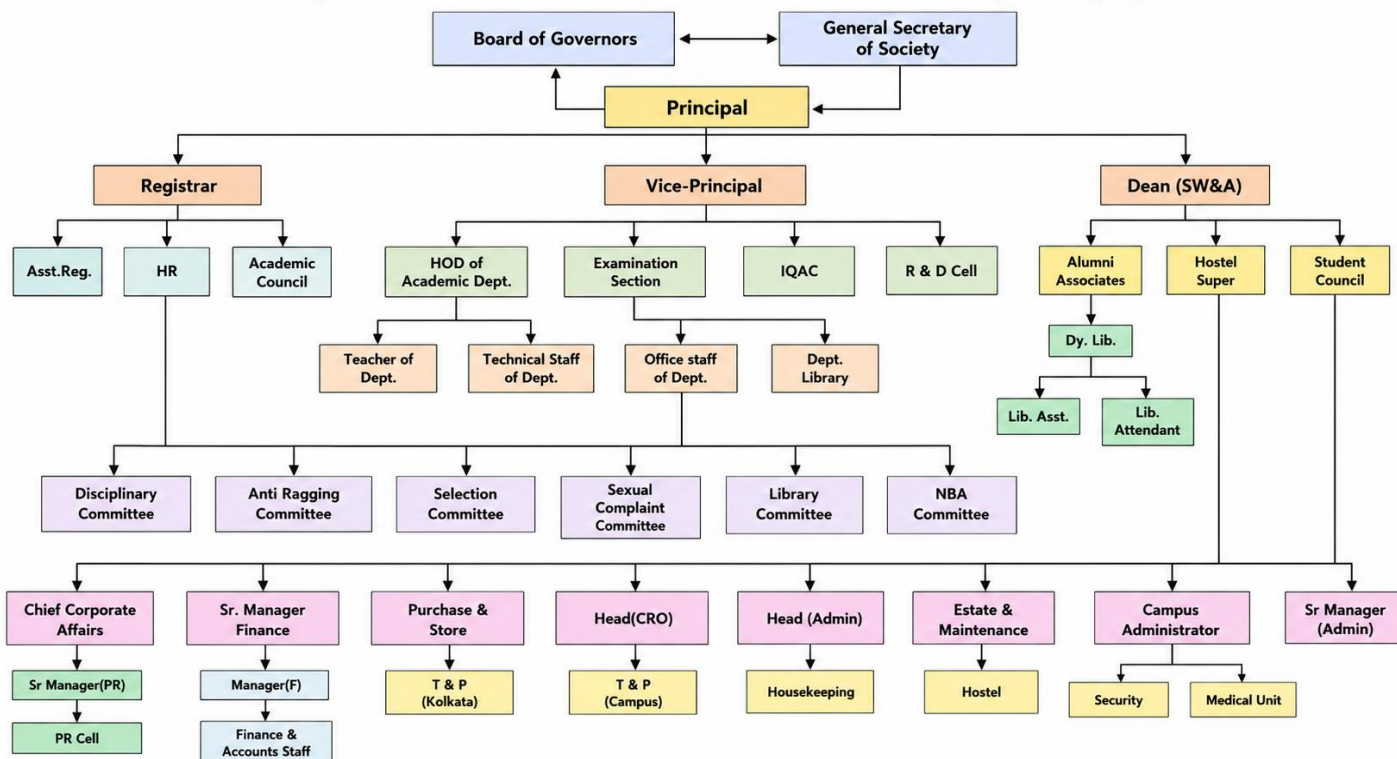


Figure 9.6.1(a): Organizational Structure and Administrative Reporting System

The organization chart shows the reporting linkage among the Board of Governors, Society, Principal, Vice-Principal, Dean (Students Welfare and Alumni), Registrar, Academic Council, HoDs, sections, library, accounts, hostel, campus administration, security, maintenance and other service units. This structure provides role clarity and supports separation of policy, academic administration, student support, statutory compliance and operational services.

B. Governance and Administrative Function Matrix

Body / Position	Composition / Positioning	Major Functions
Board of Governors	Chairman, Principal/Director as Member Secretary, Society nominees, statutory nominees, industry/academic experts and faculty representatives	Policy formation, approval of institutional plans, budget approval, statutory compliance, service rule adoption, senior appointment ratification and strategic academic direction
Principal	Chief Academic and Administrative Head	Implementation of BoG/Society decisions, statutory liaison, academic monitoring, NBA/NAAC/NIRF coordination, committee constitution, grievance redressal, anti-ragging and disciplinary leadership
Vice-Principal	Deputy Executive Authority	Academic coordination, routine/load monitoring, data scrutiny for accreditation, Academic Council/IQAC participation, examination and library coordination, departmental liaison
Dean (Students Welfare and Alumni)	Student welfare and alumni authority	Student welfare, hostel coordination, student council, student events, alumni activities, student grievances and feedback from hostels
Academic Council	Principal, HoDs, academic	Academic regulations, instructional arrangements, evaluation

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	representatives and administrative representation	systems, curriculum-related proposals, departmental recommendations and academic quality monitoring
Registrar	Administrative officer reporting to Principal	Statutory records, student admission/registration, employment records, leave/attendance records, scholarship matters, discipline and administrative coordination
Heads of Departments	Academic and administrative heads of departments	Class allocation, laboratory functioning, DAC meetings, attendance/performance monitoring, NBA activities, departmental purchase proposals, industry interaction and T&P coordination
Faculty Members	Professor, Associate Professor and Assistant Professor cadre	Teaching, research, mentoring, laboratory development, seminars/workshops, publications, MOOCs guidance, examinations and institutional committees
Technical Staff	Technical assistants, lab instructors and workshop staff	Laboratory preparation, equipment maintenance, stock records, lab manuals, practical class support, project/research assistance and safety support
Administrative and Support Units	Finance, Estate, Campus Administration, Library, Examination Cell, T&P, PR and Hostel units	Financial control, campus upkeep, placements, records, library service, examination conduct, hostel/campus safety and student support

C. Board of Governors: Constitution, Powers and Functions

The Board of Governors is constituted as per applicable statutory guidelines and includes representation from the Society, Principal/Director, affiliating university/statutory bodies, government/technical education authorities, industry/technology/education experts and faculty representatives. The Principal/Director acts as Member Secretary. The Board functions as the policy-forming and supervisory body of the institute.

Approves institutional plans, academic development proposals, annual/activity reports and budgetary provisions.

Ensures compliance with AICTE, affiliating university, state government and other statutory requirements.

Provides strategic direction for academic administration, examinations, research, employability, student support and infrastructure.

Ratifies senior-level appointments and enables adoption, amendment or modification of service rules with due process.

Delegates specific powers and functions to officers or committees for effective execution.

Institutes scholarships, prizes and medals and supports measures for employability, research and project activities.

D. Functions of Major Statutory and Non-Statutory Bodies / Committees

Sl. No.	Committee / Body	Constitution From	Level	Key Office Bearers / Representation	Principal Function
1	Student Council	02-02-2021	Non-Departmental	Chairman: Dr. Sanjay Sahebrao Pawar; Conveners: Sri Saindhab Chattaraj, Smt. Sarabjeet Lahiri	Student representation, welfare feedback, student event coordination and student-institute communication
2	Central Event Reporting (PR)	01-01-2024	Non-Departmental	Conveners: Sri Shouvik Kumar Chandra, Sri Amitava Ghosh; Members: Sri Soumitra Goswami, Sri Supriya Tarafder	Documentation, reporting, public communication and consolidation of institutional events
3	Anti-Ragging Committee	02-07-2025	Non-Departmental	Convener: Sri Saindhab Chattaraj; members include Principal, senior faculty, HoDs,	Ragging prevention, awareness, compliance, monitoring and escalation

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				faculty members and staff	of complaints
4	Anti-Ragging Squad	01-07-2025	Non-Departmental	Convener: Dr. Soumyadip Das; members from multiple departments and administrative staff	Surprise inspection, hostel/campus vigilance, incident reporting and immediate intervention
5	Finance Committee	01-03-2025	Non-Departmental	Convener: Sri Ravi Sharma; members include Principal, senior academic and administrative members	Budget review, financial scrutiny, expense recommendation and internal financial oversight
6	Internal Complaint Committee	01-07-2025	Non-Departmental	President: Dr. Sanjay Sahebrao Pawar; Convener: Dr. Arunava Mookherjee; Member Secretary: Smt. Sukarna Dey Mondal; Legal Expert: Sri Sandip Mukherjee	Prevention and redressal of complaints under the institutional internal complaint mechanism
7	Institute Innovation Council	01-07-2025	Non-Departmental	President: Dr. Sanjay Sahebrao Pawar; Vice President: Dr. K. M. Hossain; Convener: Dr. Aloke Saha; Dr. Abhijit Banerjee as Innovation Activities Coordinator	Innovation culture, IPR awareness, startup activities, internship linkage and entrepreneurial initiatives
8	Purchase Committee	01-03-2025	Non-Departmental	Convener: Dr. Mrinmoy Chakraborty; members include Principal, Vice-Principal, finance and academic representatives	Procurement scrutiny, need validation, purchase recommendation and vendor process support
9	Industry Institute Partnership Cell (Central)	01-07-2025	Non-Departmental	Convener: Dr. Tribeni Prasad Banerjee; members include Dr. Abhijit Banerjee and faculty/administrative representatives	Industry liaison, internships, expert lectures, MoUs, industrial visits and placement-oriented interaction
10	Institute Examination Committee	25-10-2024	Non-Departmental	Convener: Dr. Subhashish Pal; members include Principal, Vice-Principal and senior faculty members	Internal and external examination planning, duty allocation, question-paper process and record management
11	Institute IPR Cell	26-02-2026	Non-Departmental	Convenor: Dr. Sovan Bhattacharya; Co-Convenor: Sri Saradindu Mondal; members from academic departments	IPR awareness, patent/copyright support, documentation and protection of institutional intellectual output

E. Mandatory Committee Availability and Functional Coverage

Committee / Mechanism	Status	Functional Coverage
Governing Body / Board of Governors	Available	Policy formation, budget approval, statutory compliance, senior appointments and service rule approval
Academic Council	Available	Academic norms, instructional arrangements, evaluation systems, admission-related regulations and academic monitoring
IQAC	Available through Principal-led quality framework	Quality assurance, academic monitoring, accreditation coordination and quality enhancement

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Anti-Ragging Committee	Available	Anti-ragging compliance, awareness, preventive action and complaint handling
Anti-Ragging Squad	Available	Surveillance, surprise checks, campus/hostel vigilance and immediate reporting
Internal Complaint Committee	Available	Handling of internal complaints with representation including legal expertise
Disciplinary Committee	Available through Principal/Registrar-led discipline framework	Student discipline, staff discipline support, liaison with law-enforcement if required
Grievance Redressal Mechanism	Available	Online and physical grievance receipt, review and redressal
Finance Committee	Available	Budget scrutiny, financial review and financial decision support
Purchase Committee	Available	Procurement need validation, technical/financial scrutiny and purchase recommendation
Institute Examination Committee	Available	Internal and university examination preparation, duty chart, question-paper process and examination records
Institute Innovation Council	Available	Innovation, startup, IPR, internship and entrepreneurship activities
Industry Institute Partnership Cell	Available	Industry interaction, expert lectures, internships, MoUs and placement support
Institute IPR Cell	Available	IPR awareness, patent/copyright guidance and documentation
Student Council	Available	Student representation, welfare feedback and student activity coordination

F. Administrative Roles and Functional Responsibilities

Administrative Unit / Role	Assigned Responsibilities
Principal	Chief academic and executive authority; implements BoG/Society decisions; chairs/coordinates academic, quality, disciplinary, grievance and accreditation activities; liaises with AICTE, MAKAUT and government bodies.
Vice-Principal	Deputy executive authority; bridges Principal office and academic departments; monitors academic planning, routine, accreditation data, departmental functioning and academic support services.
Dean (Students Welfare and Alumni)	Coordinates student welfare, hostel matters, student council, student activities, alumni engagement, student grievances and feedback mechanisms.
HoD	Administers academic and administrative affairs of the department; monitors teaching, laboratories, attendance, DAC meetings, purchase proposals, NBA activities, industry interaction and T&P linkage.
Registrar	Manages statutory records, admission/registration, employment records, leave records, scholarship support, non-teaching staff supervision and general administration.
Examination Cell	Prepares examination guidelines, question-paper instructions, duty charts, seating arrangements, internal/university examination records and examination logistics.
Librarian	Manages library services, procurement planning, records, e-resources, software systems, information access and user services.
Training and Placement Head	Maintains student placement database; conducts soft skill/aptitude/GD/mock interview training; coordinates with companies and T&P execution committee.

Campus Administrator	Maintains campus discipline, hostel coordination, outsourced security, maintenance, food-quality monitoring, emergency readiness and campus upkeep.
Finance Section	Manages financial records, fee reconciliation, statutory payments, salary disbursement, audit support and annual financial reporting.
Technical Staff	Maintains laboratories, instruments, issue registers, stock records, experiment readiness and practical class support.
Office Assistants	Maintain departmental/section records with confidentiality and support routine administrative work under HoD/Registrar.

G. Service Rules and Institutional Service Governance

The institution maintains service governance through delegated authority, appointment records, leave records, performance appraisal, conduct monitoring, faculty/non-teaching duty allocation, financial compliance and statutory documentation. Service matters are processed through the Principal, Registrar, Finance section, Appraisal Committee, Society and Board mechanism as applicable.

Service Rule Area	Institutional Practice
Appointment and Probation	Appointment orders are issued through the competent authority after approval. Probation and confirmation are handled through service records, performance review and administrative process.
Leave Rules	Leave is sanctioned by competent authorities as per delegated powers. Principal/Vice-Principal handle leave approval according to institutional rules and service category.
Performance Appraisal	Performance Appraisal Reports are reviewed for teaching and non-teaching staff. Appraisal covers academic contribution, duties, research, mentoring, institutional work and discipline.
Discipline and Conduct	Staff discipline is monitored through administrative channels. Student discipline is handled through disciplinary and anti-ragging mechanisms under the Principal and designated committees.
Financial and Statutory Compliance	Salary, statutory payments, PF/ESI/professional tax/insurance and related records are handled by the Finance section under the Society/Institute mechanism.
Academic Duties	Faculty members conduct classes, tutorials, remedial classes, laboratory work, mentoring, evaluation, research, FDP participation and committee duties.
Laboratory and Asset Responsibility	Technical staff maintain equipment, issue registers, stock records and experimental readiness under the guidance of faculty-in-charge and HoD.

H. Recruitment Procedure

The recruitment process is need-based, rule-governed and routed through departmental, administrative and competent approval channels. The process ensures suitability of qualification, specialization, experience, teaching/research ability, administrative requirement and statutory compliance.

Step	Recruitment Stage	Procedure / Evidence
1	Need Identification	Department/section identifies workload, laboratory, administrative or statutory requirement and submits proposal through HoD/Registrar.
2	Scrutiny and Approval	Requirement is examined by Principal, administration and Society/competent authority as applicable.
3	Notification / Search	Vacancy is notified or suitable candidates are identified as per institutional and statutory requirements.
4	Screening	Applications are screened for qualification, experience, specialization and eligibility as per AICTE/MAKAUT/institutional norms.
5	Selection Process	Interview, subject assessment, presentation/demo or technical interaction is conducted

		by the selection committee.
6	Recommendation	Selection committee recommends suitable candidates with justification and records.
7	Appointment Order	Appointment is issued by the competent authority with terms of service and reporting instructions.
8	Joining, Induction and Probation	Employee joins, records are created, duties are allotted and performance is monitored during probation.
9	Confirmation / Continuation	Confirmation or continuation is processed after review of service, conduct and performance.

I. Promotion / Career Advancement Policy

Promotion and career advancement are governed through performance appraisal, statutory eligibility, institutional requirement, research contribution, teaching quality, mentoring involvement, academic leadership, administrative contribution and service record. Faculty development, conference participation, publication output and departmental responsibilities are considered as part of academic growth review.

Policy Component	Practice Followed
Eligibility	Qualification, experience, service record, statutory norms and institutional requirement are examined.
Performance Indicators	Teaching quality, result contribution, mentoring, research/publications, FDP participation, laboratory development, administrative duties and institutional contribution are considered.
Review Mechanism	Performance Appraisal Report and recommendations from HoD/Principal/Appraisal Committee are reviewed.
Approving Authority	Promotion/upgradation is processed through the competent authority and Society/BoG mechanism wherever applicable.
Academic Incentives	Faculty may receive support for conference registration, special leave, publication incentive and academic participation subject to approval.
Career Advancement	Career advancement plans for faculty are recommended through academic and administrative review mechanisms.

J. Grievance Redressal, Discipline, Anti-Ragging and Internal Complaint Mechanisms

The institute operates grievance redressal through online and physical modes. Students and staff may submit grievances through institutional mechanisms, mentor/HoD/Registrar/Principal route, committee route or student welfare channels. Issues related to discipline, ragging, harassment, hostel discipline and campus safety are handled by specific committees with defined reporting and escalation mechanisms.

Issue Type	Handling Authority	Mode of Redressal
Student Academic Grievance	Course teacher, mentor, HoD, Academic Council/Principal as required	Academic counselling, remedial measures, clarification and departmental review
Administrative Grievance	Registrar/Principal	Record verification, administrative correction and communication to concerned section
Hostel / Campus Grievance	Dean SW&A, Campus Administrator, Superintendent/Warden Hostel	Counselling, maintenance action, safety intervention and parent communication if required
Ragging Complaint	Anti-Ragging Committee and Squad	Immediate inquiry, preventive action, compliance reporting and disciplinary action as applicable
Internal Complaint	Internal Complaint Committee	Formal complaint handling, confidential review and action as per applicable norms

Discipline Issue	Disciplinary Committee / Principal / Registrar	Inquiry, counselling, warning, parent interaction, statutory/legal escalation if needed
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K. Implementation and Effectiveness of Governance Mechanism

Governance Indicator	Implementation Evidence	Effectiveness
Decentralized governance	Responsibilities are distributed among BoG, Principal, Vice-Principal, Dean, HoDs, Registrar, committees and functional units.	Faster implementation, role clarity and stronger accountability
Committee-based functioning	Committees have chairpersons/conveners/members with defined functions.	Structured handling of academic, administrative, student welfare, innovation, examination and compliance functions
Academic monitoring	Academic Council, DAC, HoDs, mentors and examination cell monitor teaching, evaluation and student performance.	Improved teaching-learning control and timely corrective measures
Student support	Student Council, Dean SW&A, mentors, grievance redressal, anti-ragging mechanisms and hostel administration are operational.	Better student communication, welfare support and safety
Compliance assurance	AICTE/MAKAUT/NBA/NAAC/statutory records are maintained through Principal, Registrar, IQAC and concerned committees.	Audit readiness and compliance tracking
Financial and purchase control	Finance and Purchase Committees support budget, procurement and expenditure review.	Improved transparency in resource utilization
Industry and innovation support	IIC, IIPC and IPR Cell are available.	Better linkage with entrepreneurship, internships, expert interaction and intellectual property awareness

L. List of Enclosures / Documentary Evidence

Sl. No.	Evidence / Record to be Attached
1	Organization chart showing reporting structure
2	BoG constitution, minutes and action-taken records
3	Academic Council constitution, minutes and academic review records
4	Office orders for statutory and non-statutory committees
5	Anti-Ragging Committee and Squad circulars, awareness records and duty charts
6	Internal Complaint Committee constitution and complaint handling records, if any
7	Grievance redressal portal/screenshots/register and disposal records
8	Service rules, appointment orders, leave records and appraisal records
9	Recruitment advertisements, selection committee proceedings and appointment approvals
10	Promotion/career advancement/appraisal records and related approvals
11	Finance Committee and Purchase Committee minutes/approvals
12	Examination Committee records, duty charts and examination circulars

9.6.2. Transparency (05)

(Information on policies, rules, processes, delegation of financial powers, faculty, students, etc., and dissemination of this information to stakeholders should be made available on the Institute's website. Agendas and minutes of the Governing Body, Academic Council, and Senate are also required to be uploaded on the Institute's website. Additionally, state the extent of awareness among the stakeholders.)

The institute as well as the department maintains transparency in academic, administrative and financial functioning through documented policies, approved rules, defined processes, committee-based decision making, website-based information dissemination, official circulars, notice boards, departmental meetings, web mail communication and records maintained for statutory inspections. The system ensures that faculty members, staff, students, parents, alumni, recruiters, regulatory bodies and other stakeholders are informed about relevant policies, processes and academic services.

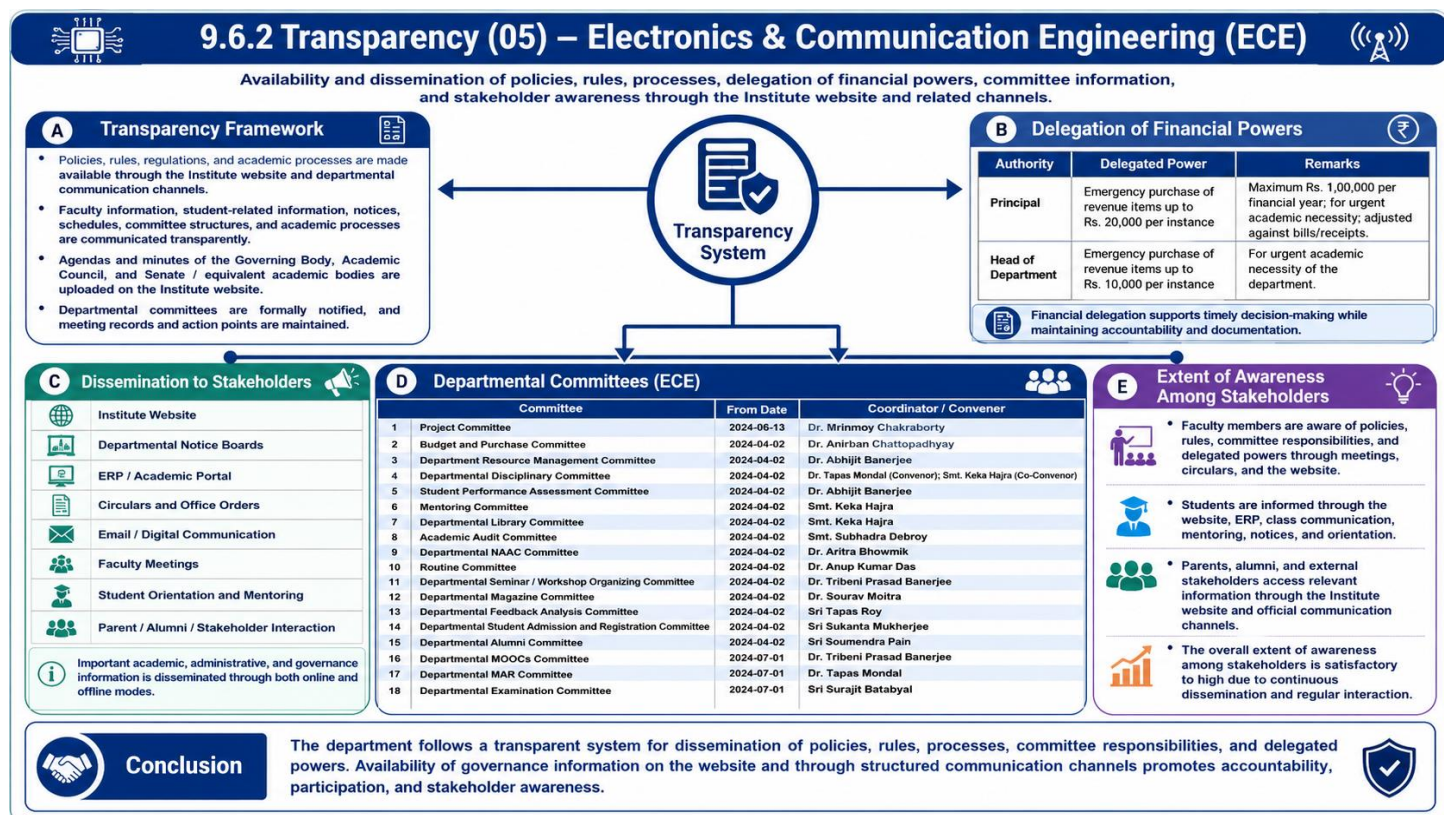


Figure 9.6.2(a): Departmental Academic and Administrative Transparency Structure

A. Transparency Framework and Disclosure Mechanism

The governance and administrative structure functions through a hierarchy of responsible authorities and committees. Policy-level matters are routed through the Governing Body and Society authorities. Academic administration is supervised through the Principal, Vice-Principal, Academic Council, IQAC, Heads of Departments and Departmental Academic Committees. Department-level academic transparency is ensured through programme coordinators, module coordinators, project coordinators, assessment committees, feedback analysis committee, student affairs committee, research and development committee, laboratory assessment, library monitoring and question paper moderation mechanisms.

Area of Transparency	Information Disclosed / Maintained	Primary Stakeholders	Mode of Dissemination
Policies and rules	Academic regulations, syllabus, course structure, examination rules, attendance requirements, anti-ragging rules, grievance redressal provisions	Students, faculty, staff, parents, regulatory bodies	Institute website, mandatory disclosure, notices, circulars, departmental meetings,

	and institutional service procedures.		official records
Processes	Admission procedure, registration, examination process, internal assessment, grievance handling, mentoring, laboratory usage, library access, placement process and student support procedures.	Students, parents, faculty, staff	Website, notice boards, classroom announcements, departmental communication and web mail
Governance records	Agendas and minutes of Governing Body, Academic Council and relevant statutory/non-statutory committees.	Management, faculty, staff, auditors, statutory bodies	Institute website / official document repository and records presented during inspection
Academic information	Academic calendar, class routine, syllabus, previous question papers, university marks, mid-semester marks, attendance and department news.	Students, parents, faculty	Website, ERP/student portal, department notice board and official communication
Faculty and staff information	Staff details, roles, committee memberships, responsibilities and official communication channels.	Students, parents, faculty, staff, external stakeholders	Institute website, department records, circulars and web mail
Compliance information	AICTE approval, mandatory disclosure, affiliation-related documents, NBA/NAAC/ISO-related evidence and inspection records.	Regulatory bodies, stakeholders, inspection teams	Website and official records made available during inspections

B. Delegation of Financial Powers

Financial delegation is formally defined to ensure timely academic functioning while retaining accountability, documentation and expenditure control. Emergency purchases for urgent academic requirements are permitted within approved limits. Such purchases are made through written proposals on note sheets, and advances or payments are adjusted with due receipt and supporting records.

Authority	Nature of Financial Power	Current Limit per Transaction	Maximum Limit per Financial Year	Control / Documentation Mechanism
Principal	Emergency purchase of revenue items required for urgent academic necessity without tender process, subject to institutional rules.	Rs. 20,000	Rs. 1,00,000	Written proposal on note sheet; advance from Corporate Office where applicable; adjustment with receipt and supporting document.
Head of Department	Emergency purchase of revenue items for urgent academic necessity of the department.	Rs. 10,000	Rs. 50,000	Departmental written proposal; record of purchase; submission of bill/receipt; review through institutional financial procedure.
Finance / Accounts Section	Processing, verification, record maintenance, reconciliation and reporting of approved expenditure.	As approved by competent authority	As per approved institutional budget	Bill verification, voucher record, budget head mapping, statutory financial records and audit support.
Purchase and Store Section	Procurement support for approved departmental and institutional requirements.	As per approval and purchase procedure	As per sanctioned budget	Indent, quotation/tender where applicable, purchase order, stock entry and issue record.

C. Transparency in Student Award, Reward and Faculty Development Schemes

The institution follows committee-approved mechanisms for recognizing student achievements and supporting faculty/staff development. Schemes for awards, rewards, academic recognition, faculty development, staff development and professional improvement are placed before competent bodies for consideration and approval. The approval of such schemes strengthens transparency, equity and institutional accountability.

Scheme / Support Area	Purpose	Approval / Review Level	Beneficiaries	Transparency Mechanism
Student achievement awards / rewards	Recognition of academic, technical, co-curricular, innovation and competition-based performance.	Competent institutional authority / BOG-level approval where applicable.	Students	Approved scheme, notification, records of recipients and award documentation.
Faculty development	Support for FDP, training, workshops, seminars, conferences and academic improvement.	Institutional authority through defined approval process.	Faculty members	Applications, approvals, participation certificates and reports.
Staff development	Skill and role-specific development of administrative and technical staff.	Institutional authority / concerned reporting authority.	Staff members	Training records, approval notes and departmental recommendations.
Professional exposure	Encouragement for academic events, publication support, technical participation and capacity building.	Principal / HoD / committee route as applicable.	Faculty, staff and students	Circulars, recommendations, approval records and activity reports.

D. Website, Notice Board and Official Communication System

Information is disseminated through multiple channels so that stakeholders receive timely and verifiable institutional updates. The institute website serves as the main public disclosure platform. Official circulars, departmental notices, classroom announcements, web mail, departmental meetings, HoD meetings and document records supplement the online disclosure mechanism.

Dissemination Channel	Type of Information Disseminated	Target Stakeholders	Frequency / Trigger
Institute website	Mandatory disclosure, academic regulations, syllabus, course structure, staff details, notices, department news, alumni details, previous papers, results-related links and approval-related information.	Students, parents, faculty, staff, alumni, regulators, public	Continuous / whenever updated
Notice boards in blocks and departments	Notices, circulars, academic schedules, examination updates, student activity information and urgent announcements.	Students, faculty and staff	As and when required
Classroom communication	Significant circulars, examination instructions, academic activities, attendance-related information and urgent student notices.	Students	As and when required
ERP Facility http://bcrcerp.cloud	Official communication to faculty members and staff with individual IDs for faster and accurate dissemination.	Faculty and staff, Administration and Management	Regular / need-based

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Web mail facility https://bcrec.ac.in	Official communication to faculty members and staff with individual IDs for faster and accurate dissemination.	Faculty and staff, Students, Parents and External Agencies	Regular / need-based
HoD meetings and departmental meetings	Academic, administrative, committee, feedback, examination, NBA and quality-related information.	Faculty and departmental staff	Periodic
Student portal / online access	Attendance, university marks, mid marks report, course information and performance-related information.	Students and parents	Periodic / live where enabled
Inspection and accreditation records	Documents needed by Social Welfare Department, University committees, NBA, ISO, corporate accreditation and other inspection teams.	Inspection bodies and institutional authorities	During inspection / audit / accreditation

E. Information Available to Students, Parents, Faculty and Other Stakeholders

Students and parents are provided academic and administrative information through official institutional channels. Parents can access information about attendance and performance of their wards. Students can access academic records, notices, syllabus and institutional updates. Faculty and staff receive information through official communication channels and meetings.

Stakeholder	Information Available	Purpose / Utility
Students	University marks, internal marks, attendance, previous question papers, syllabus, course structure, department news, notices, staff details and alumni details.	Academic planning, examination preparation, attendance monitoring and participation in departmental activities.
Parents / Guardians	Attendance, academic performance and relevant institutional information about the ward.	Monitoring student progress and supporting corrective action where required.
Faculty	Policies, academic calendar, committee responsibilities, meeting decisions, student-related information, examination circulars and quality initiatives.	Academic planning, mentoring, assessment, administrative contribution and compliance.
Staff	Administrative procedures, responsibilities, circulars, service-related information and institutional activities.	Execution of administrative duties and compliance with institutional processes.
Regulatory / Accreditation Bodies	Mandatory disclosure, approvals, governance records, statutory compliance documents, NBA/NAAC/ISO evidence and inspection records.	Verification of institutional compliance and quality assurance.
Alumni and Employers	Department news, alumni details, placement-related information and institutional profile.	Networking, engagement and industry-institute interaction.

F. Committee-Based Governance and Transparency in Decision Making

The institution follows committee-based governance for academic, administrative, student-related, research, examination, purchase, resource management and quality assurance activities. All faculty members are associated with Departmental Academic Committee processes. Important issues are discussed in periodic HoD meetings and departmental meetings. Decisions are communicated to concerned stakeholders through official channels.

Committee / Body	Role in Transparency	Records Maintained / Disclosed
Governing Body	Policy approval, financial oversight, institutional direction, approval of schemes and review of institutional functioning.	Agenda, minutes, resolutions and action records.

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Academic Council	Academic regulations, curriculum-related implementation, academic standards and review of academic processes.	Agenda, minutes, academic decisions and implementation records.
IQAC	Quality assurance, continuous improvement, institutional documentation and quality-related monitoring.	Quality records, action plans, minutes and reports.
Departmental Academic Committee	Department-level academic planning, teaching-learning review, assessment review and feedback action.	Meeting records, action points, academic review records.
Examination / Assessment Committees	Moderation, internal assessment, course file monitoring and examination-related transparency.	Question paper moderation records, assessment records, course file review.
Feedback Analysis Committee	Collection, analysis and reporting of student feedback.	Feedback reports, analysis tables and action-taken records.
Student Affairs / Student Mentor System	Student support, mentoring, performance review and student welfare.	Mentoring records, performance review and counselling records.
Research & Development Committee	Research activity monitoring, publication support and project-related guidance.	Research activity records, project records and publication-related documentation.
Budget / Resource / Purchase Committees	Need identification, resource allocation, procurement and expenditure tracking.	Budget proposals, indents, approvals, purchase records and stock records.

G. Extent of Awareness among Stakeholders

Stakeholder awareness is ensured through repeated dissemination, public availability of core documents, meeting-based communication and direct access to academic information. Students are aware of attendance, marks, syllabus, course structure, notices, previous question papers and staff details through institutional digital platforms and notice boards. Faculty members are aware of policies, academic processes and committee decisions through HoD meetings, departmental meetings and official web mail. Parents are enabled to access attendance and performance-related information. Statutory and accreditation bodies are provided relevant records during inspections.

Stakeholder Group	Awareness Mechanism	Extent of Awareness / Evidence
Students	Website, notice boards, class announcements, student portal, departmental communication and mentoring.	High awareness of attendance, marks, syllabus, notices, course structure, examination instructions and department news.
Faculty	HoD meetings, departmental meetings, official e-mail, committee participation and DAC involvement.	High awareness of policies, academic calendar, assessment rules, committee decisions and departmental responsibilities.
Staff	Office communication, section-wise instructions, circulars and reporting structure.	Adequate awareness of administrative duties, service procedures and institutional records.
Parents / Guardians	Online access to student attendance/performance and interaction during academic follow-up.	Awareness of ward attendance, academic progress and institutional communication channels.
Alumni	Website, alumni details, departmental updates and institutional communication.	Awareness of alumni-related activities and institutional updates.
Regulatory / Accreditation Bodies	Mandatory disclosure, website information, records maintained for inspection and submitted documents.	Full access to required compliance documents during audit/accreditation/inspection.

H. Documentary Evidence and Compliance Mapping

NBA Requirement under 9.6.2	Institutional Response / Evidence
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Information on policies, rules and processes	Mandatory disclosure, academic regulations, syllabus, course structure, institutional policies, anti-ragging rules, grievance redressal information, examination rules and internal processes are made available through website and official communication channels.
Delegation of financial powers	Principal and HoDs have defined emergency purchase powers with transaction limits and annual ceilings. Documentation is maintained through note sheets, receipts, bills and approval records.
Information to faculty, students and stakeholders	Important information is disseminated through website, notices, circulars, departmental meetings, class announcements, web mail and student/parent access systems.
Agendas and minutes of bodies	Agendas, minutes and resolutions of Governing Body, Academic Council and other committees are maintained and made available through website / official records as per institutional procedure.
Stakeholder awareness	Students, faculty, staff, parents and external stakeholders receive information through multiple channels; awareness is evidenced by use of website, student portal, meetings, notice boards and inspection records.
Transparency in academic administration	Faculty participation in DAC, HoD meetings, committee-based academic planning, feedback analysis, assessment committees and departmental academic monitoring ensure participatory and traceable decision making.

9.7. Budget Allocation, Utilization, and Public Accounting at Institute Level (12)

(Provide a summary of the financial year's budget and actual expenditure incurred exclusively for the institution in the three financial years: CFYm1, CFYm2, and CFYm3. If the management oversees multiple Institutions, exclusive audited records for each Institute must be provided and made available on the Institute's website. The budget should be approved by the Institute BoG/GB/GC before the start of the financial year.)

CFY=Current Financial Year. CFYm1=Current Financial Year Minus 1. CFYm2=Current Financial Year Minus 2. CFYm3=Current Financial Year Minus 3.

For CFYm1, 2025-2026 (Unaudited)

Table No. 9.7.1a: Summary of budget and actual expenditure incurred at Institute level for CFYm1.

Total Income in the CFYm1				Actual expenditure in the CFYm1	Total Students in the Institute	Expenditure per student in CFYm1
Fee	Govt.	Grant(s)	Other Sources (specify)	Actual Expenditure	Total Students	Expenditure per Student
40,13,82,902	2,47,618	-	4,71,83,529	38,11,51,568	3,129	1,21,812.58

For CFYm2, 2024-2025

Table No. 9.7.1a: Summary of budget and actual expenditure incurred at Institute level for CFYm2.

Total Income in the CFYm2				Actual expenditure in the CFYm2	Total Students in the Institute	Expenditure per student in CFYm2
Fee	Govt.	Grant(s)	Other Sources (specify)	Actual Expenditure	Total Students	Expenditure per Student
36,11,43,377	63,33,351	-	2,76,01,617	39,69,10,361	3,116	1,27,378.16

For CFYm3, 2023-2024

Table No. 9.7.1b: Summary of budget and actual expenditure incurred at Institute level for CFYm3.

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Total Income in the CFYm3				Actual expenditure in the CFYm3	Total Students in the Institute	Expenditure per student in CFYm3
Fee	Govt.	Grant(s)	Other Sources (specify)	Actual Expenditure	Total Students	Expenditure per Student
30,61,84,441	11,27,790	-	2,20,15,987	36,61,83,721	2,986	1,22,633.53

For CFYm4, 2022-2023

Table No. 9.7.1c: Summary of budget and actual expenditure incurred at Institute level for CFYm4.

Total Income in the CFYm4				Actual expenditure in the CFYm4	Total Students in the Institute	Expenditure per student in CFYm4
Fee	Govt.	Grant(s)	Other Sources (specify)	Actual Expenditure	Total Students	Expenditure per Student
28,17,29,293	33,56,569	6,04,597	2,15,31,651	32,73,85,758	2,805	1,16,715.07

Calculation Details

Year / Period	Actual Expenditure (Rs.)	Total Students	Expenditure per Student (Rs.)
CFYm1 (2025-2026 (Unaudited))	38,11,51,568	3,129	1,21,812.58
CFYm2 (2024-2025)	39,69,10,361	3,116	1,27,378.16
CFYm3 (2023-2024)	36,61,83,721	2,986	1,22,633.53
CFYm4 (2022-2023)	32,73,85,758	2,805	1,16,715.07

Items that could not be completed: None. All expenditure-per-student fields have been completed. CFYm1 total student count was computed from the department-wise AY 2025-26 student count.

Table No. 9.7.2: Budget and actual expenditure incurred at Institute level.

Items	Budgeted in CFY (2025-26)	Actual expenses in CFY (2025-26) (unaudited)	Budgeted in CFYm1 (2024-25)	Actual Expenses in CFYm1 (2024-25)	Budgeted in CFYm2 (2023-24)	Actual Expenses in CFYm2 (2023-24)	Budgeted in CFYm3 (2022-23)	Actual Expenses in CFYm3 (2022-23)
Infrastructure Built-Up	3,00,00,000	2,03,84,672	2,17,36,000	2,31,94,346	1,30,00,000	2,81,89,417	65,00,000	87,64,935
Library	22,75,500	19,72,526	33,97,000	21,16,995	26,70,000	26,06,893	31,50,000	22,21,767
Laboratory Equipment	32,55,000	34,08,126	1,66,10,000	1,67,82,739	1,23,25,000	1,19,45,130	1,10,00,000	1,46,00,437
Teaching and Non-teaching Staff Salary	24,42,50,000	24,48,00,755	23,21,00,000	24,30,70,793	22,31,90,000	22,24,73,566	20,80,00,000	21,14,90,803
Outreach Programs	2,00,000	1,615	50,000	62,458	20,000	542	50,000	10,866
R&D	3,05,000	1,43,211	17,70,000	5,93,088	11,60,000	7,23,286	61,50,000	18,81,426
Training, Placement	17,77,000	16,00,652	19,70,000	11,51,640	15,20,000	10,49,506	12,50,000	10,82,973

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and Industry Linkage								
SDGs	1,10,000	74,134	75,000	96,170	-	-	-	-
Entrepreneurs hip	1,00,000	-	25,000	7,448	20,000	9,455	-	-
Others*, pl. specify	10,82,90,000	10,87,65,877	11,15,08,000	10,98,34,684	8,82,76,000	9,91,85,926	8,46,70,500	8,73,32,551
Total Amount	39,05,62,500	38,11,51,568	38,90,91,000	39,69,10,361	34,21,81,000	36,61,83,721	32,07,70,500	32,73,85,758

* Items to be mentioned.

- **ACADEMIC EXPENSES:** AICTE Fee, MAKAUT Fee, Conference, Seminar, FDP & W/S, Student projects, Industrial Training, Industry Expert, Internship, Internet Access Charges A/C, Laboratory Consumables, Support for faculty development etc.
- **HOSTEL RUNNING & MAINTENANCE:** Catering Service Expenses, House Keeping Services, Security Service, Pest Control Expenses etc.
- **ADMINISTRATIVE & ESTABLISHMENT EXPENSES:** Corporation / ADDA / W.B. Govt charges, Electricity Charges, Generator Running & Hire Expenses, Insurance Charges, License Fee for software, Membership Fee, Office Maintenance, Printing & Stationery Exp., Professional Service Expenses, Promotional Expenses, Staff Welfare Expenses, Travelling & Conveyance Exp.etc.
- **STUDENTS WELFARE AND AMENITIES:** Dress Kit Expenses, College Students Activities Exp. etc.

9.8. Program Specific Budget Allocation, Utilization (08)

(Total budget at program level: CFYm1, CFYm2 & CFYm3 CFY=Current Financial Year.

CFYm1=Current Financial Year Minus 1. CFYm2=Current Financial Year Minus 2. CFYm3=Current Financial Year Minus 3.)

For CFYm1, 2025-26 (Unaudited)

Table No. 9.8a: Summary of budget and actual expenditure incurred at programme level.

Total Budget in CFYm1:		Actual expenditure in CFYm1:		Total No. of students in CFYm1:	
Demanded	Actual Allocated	Actual Expenditure	% Spent	Total No. of Students	Expenditure per student
16,79,000	9,44,000	8,99,255	90.47	449	1976.39

Note: Expenditure per student = 8,99,255 / 449 = Rs. 2,002.80. If M.Tech (ECE) is to be included in a department-level count, the student count becomes 463 and the value becomes Rs. 1,942.24.

For CFYm2, 2024-25

Table No. 9.8a: Summary of budget and actual expenditure incurred at programme level.

Total Budget in CFYm2:		Actual expenditure in CFYm2:		Total No. of students in CFYm2:	
Demanded	Actual Allocated	Actual Expenditure	% Spent	Total No. of Students	Expenditure per student
25,00,000	24,44,500	11,37,203	46.52	489	2435.12

Note: Expenditure per student = 11,37,203 / 489 = Rs. 2,325.57. The available student-count source provides ECE as UG and PG aggregate for this year.

For CFYm3, 2023-24

Table No. 9.8a: Summary of budget and actual expenditure incurred at programme level.

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Total Budget in CFYm3:		Actual expenditure in CFYm3:		Total No. of students in CFYm3:	
Demanded	Actual Allocated	Actual Expenditure	% Spent	Total No. of Students	Expenditure per student
19,00,000	17,99,000	16,34,544	90.86	498	3363.26

Note: Expenditure per student = 16,34,544 / 498 = Rs. 3,282.22. The available student-count source provides ECE as UG and PG aggregate for this year.

For CFYm4, 2022-23

Table No. 9.8a: Summary of budget and actual expenditure incurred at programme level.

Total Budget in CFYm4:		Actual expenditure in CFYm4:		Total No. of students in CFYm4:	
Demanded	Actual Allocated	Actual Expenditure	% Spent	Total No. of Students	Expenditure per student
20,50,000	19,89,000	19,23,717	96.72	498	3363.26

Table No. 9.8.2: Budget and actual expenditure incurred at program level.

Items	Budgeted in CFY (2025-26)	Actual expense s in CFY (2025-26) (unaudited)	Budgeted in CFYm1 (2024-25)	Actual Expenses in CFYm1 (2024-25)	Budgeted in CFYm2 (2023-24)	Actual Expenses in CFYm2 (2023-24)	Budgeted in CFYm3 (2022-23)	Actual Expenses in CFYm3 (2022-23)
Laboratory Equipment	5,00,000	4,85,364	14,18,000	7,11,999	13,00,000	12,86,237	6,50,000	6,67,609
Software	-	-	-	-	-	-	3,50,000	3,48,100
SDGs	15,000	-	-	-	-	-	-	-
Support for faculty development	90,000	68,767	50,000	23,250	50,000	30,500	50,000	56,383
R & D	20,000	-	4,00,000	21,002	1,00,000	12,168	5,00,000	4,58,430
Industrial Training, Industry expert, Internship	1,20,000	1,24,400	30,000	25,500	15,000	3,200	15,000	5,100
Miscellaneous Expenses *	2,49,000	2,20,724	5,46,500	3,55,452	3,34,000	3,02,439	4,24,000	3,88,095
Total Amount	9,94,000	8,99,255	24,44,500	11,37,203	17,99,000	16,34,544	19,89,000	19,23,717

*Miscellaneous expenses in the above table includes Laboratory Consumable; Maintenance and Spares; Seminar & W/S, Student Activities; Contingencies.

- In the above tables, all financial data are in rupees.

A. Justification of Budgeting

The budget allocation for the Electronics and Communication Engineering programme is planned with the objective of strengthening teaching-learning processes, laboratory practices, student-centric academic activities, research orientation, industry exposure, and overall student development. The budgeting process is aligned with the programme requirements, student strength, laboratory needs, faculty inputs, infrastructure requirements, and the expected attainment of Programme Outcomes.

The department considers the total number of students enrolled in the programme while estimating its annual resource requirements. This ensures that adequate academic support, laboratory equipment, consumables, software tools, maintenance facilities, project resources, and student-development provisions are available for effective delivery of the curriculum. The budgetary provisions are also guided by the requirements identified by faculty members, laboratory in-charges, programme coordinators, and relevant departmental committees.

Faculty members provide inputs regarding teaching-learning requirements, reference materials, software tools, project-based learning support, seminar and workshop requirements, industry interaction, site visits, and other activities required for improving student learning and technical competence. Laboratory in-charges provide specific requirements related to equipment maintenance, replacement, upgradation, consumables, calibration, safety requirements, and laboratory modernization. These inputs help the department ensure that the budget is directly linked with academic delivery and student learning outcomes.

The budgetary provisions are justified under the following major heads:

Budget Head	Justification	Expected Academic Outcome
Laboratory Equipment	Allocation for laboratory equipment is required for strengthening practical exposure and enabling students to apply theoretical concepts through experiments. Upgradation and maintenance of equipment help students work with relevant and industry-oriented tools.	Supports hands-on learning, problem-solving ability, experimentation skills, and attainment of practical-oriented Programme Outcomes.
Software and Simulation Tools	Provision for software is required to expose students to modern design, analysis, modelling, simulation, and computational tools used in Electronics and Communication Engineering.	Enhances technical skill, design competence, simulation capability, and preparedness for industry and higher studies.
Laboratory Consumables and Maintenance	Regular procurement of consumables and maintenance support is needed for uninterrupted conduct of laboratory classes, project work, and experimental learning.	Ensures smooth laboratory functioning, better practical learning, and timely completion of experiments and projects.
Faculty Development	Budgetary support for faculty development enables faculty members to participate in FDPs, workshops, training programmes, conferences, and technical upskilling activities.	Improves quality of teaching, academic delivery, mentoring, and exposure to recent developments in the discipline.
Research and Development	Allocation for R&D promotes faculty and student involvement in research, prototypes, publications, innovation, consultancy, and interdisciplinary technical activities.	Encourages analytical thinking, research culture, problem formulation, and project-based learning.
Industrial Training, Internship and Industry Interaction	Funds are required for arranging industry expert lectures, industrial visits, training programmes, internship support, and interaction with professionals.	Bridges the gap between academic learning and industrial practice; improves employability and professional awareness.

Budget Head	Justification	Expected Academic Outcome
Seminars, Workshops and Student Activities	Budgetary provision is required for conducting technical events, invited lectures, workshops, student competitions, project exhibitions, and skill-development activities.	Supports all-round development, communication skills, technical exposure, teamwork, and lifelong learning.
Miscellaneous Academic Expenses	This includes academic support activities, documentation, printing, minor repairs, departmental events, and other operational requirements.	Supports smooth departmental functioning and effective implementation of academic processes.

The allocation is therefore need-based and outcome-oriented. It supports the achievement of Programme Outcomes by providing appropriate resources for theory courses, laboratory work, projects, seminars, professional training, research exposure, and student development. The department ensures that funds are used for activities that directly contribute to the quality of education and the development of competent Electronics and Communication Engineering graduates.

B. Process of Budgeting

The department follows a systematic, participative, and transparent budgeting process. The process begins with the identification of academic, laboratory, research, and student-development requirements for the forthcoming academic year. Inputs are collected from faculty members, laboratory in-charges, programme coordinators, project coordinators, and departmental committees.

Faculty members submit requirements related to teaching-learning materials, software tools, books, project support, professional development, seminars, workshops, and other academic activities. Laboratory in-charges identify requirements for laboratory equipment, repair and maintenance, consumables, calibration, replacement of defective items, and modernization of laboratories. These requirements are examined with respect to curriculum needs, student strength, utilization of existing facilities, previous year expenditure, and relevance to Programme Outcomes.

The requirements received from different stakeholders are consolidated by the department. The Budget and Purchase Committee, in consultation with the Head of the Department, reviews the consolidated requirements and prepares the departmental budget proposal under appropriate heads. The proposal is prepared by considering academic priority, recurring and non-recurring requirements, laboratory utilization, planned student activities, previous year budget utilization, and available institutional resources.

The budget proposal is then submitted to the college administration or the competent finance authority for scrutiny and approval. During the review process, the proposed expenditure is assessed with respect to institutional priorities, financial feasibility, cost-centre allocation, previous utilization pattern, and justification of the proposed items. The administration may approve the proposal as submitted or suggest modifications based on the availability of funds and institutional requirements.

After approval, the department utilizes the sanctioned budget as per the approved heads and institutional purchase procedures. For significant purchases, the department follows a comparative quotation process, generally obtaining at least three quotations wherever applicable. This ensures transparency, cost-effectiveness, and accountability in procurement. Purchase decisions are made after comparing technical specifications, cost, vendor credentials, warranty, service support, and suitability for academic use.

C. Budgeting Workflow

Stage	Activity	Responsibility	Output
1	Identification of academic, laboratory, software, maintenance, research, and student-development requirements	Faculty members, laboratory in-charges, coordinators, committees	Requirement list
2	Review of student strength, curriculum needs, laboratory load, and previous utilization	Department / concerned committee	Need-based justification
3	Consolidation of requirements under budget heads	Budget and Purchase Committee / HoD	Draft departmental budget

Stage	Activity	Responsibility	Output
4	Scrutiny and prioritization of proposed items	HoD and departmental committee	Final departmental proposal
5	Submission to college administration / finance authority	HoD	Budget proposal
6	Review with respect to financial feasibility, past expenditure, and institutional priorities	Administration / Finance Committee	Approved / revised budget
7	Procurement and fund utilization as per approved heads	Department and purchase authority	Implementation of budget
8	Verification of expenditure and documentation	Department / Accounts / Administration	Utilization record
9	Review of utilization and planning for next cycle	HoD and committee	Feedback for next budget

D. Transparency and Accountability in Budget Utilization

The department follows institutional procedures for procurement, approval, expenditure, and documentation. Need-based proposals are initiated by the department and processed through the competent administrative and financial authorities. For major purchases, quotations are obtained and compared to ensure fairness and financial prudence. Records of proposals, approvals, quotations, purchase orders, bills, and utilization are maintained as per institutional norms.

The Budget and Purchase Committee supports the department in reviewing requirements, prioritizing expenditure, and monitoring utilization. The process ensures that the budget is not merely expenditure-oriented but is linked with curriculum delivery, laboratory effectiveness, student learning, faculty development, research support, and attainment of Programme Outcomes.

E. Outcome of the Budgeting Process

- The budgeting process enables the department to:
- Provide adequate laboratory facilities and consumables for practical learning.
- Maintain and upgrade equipment for effective laboratory delivery.
- Support use of relevant software and simulation tools.
- Promote faculty development and academic quality improvement.
- Support student projects, seminars, workshops, internships, and industry exposure.
- Encourage research, innovation, and technical activities.
- Ensure effective utilization of financial resources through transparent procedures.
- Link financial planning with student learning, Programme Outcomes, and departmental development.

Thus, the budgeting process of the Electronics and Communication Engineering programme is participative, need-based, transparent, and aligned with academic quality enhancement. It ensures that resources are deployed effectively for the benefit of students, faculty, laboratories, and the overall academic development of the programme

9.9. Quality of Learning Resources (Hard/Soft) (05)

(Provide details of available learning resources, including e-resources (books and journals), as well as information on the accessibility of these resources to students. Additionally, describe the support provided to students for self-learning activities.)

The institute maintains a well-equipped and structured learning-resource ecosystem to support curricular teaching-learning, self-learning, laboratory preparation, project work, seminar activity, research orientation, competitive-examination preparation, and lifelong learning. The resources are provided through the Central Library, Book Bank, departmental libraries, Digital Library, e-resources, online databases, NPTEL Local Chapter, National Digital Library membership,

DELNET membership, OPAC services, reprographic support, document delivery service, CD-ROM/DVD archives, journals, magazines, conference proceedings, reference collections, and Wi-Fi-enabled access facilities.

The learning resources are relevant to the Electronics and Communication Engineering programme as they include core and advanced textbooks, reference books, journals, IEEE and Springer resources, technical handbooks, NPTEL/MOOC materials, project references, laboratory-related resources, previous year question papers, and competitive-examination materials. These resources support students in developing course knowledge, laboratory competence, design orientation, literature-search ability, seminar preparation, project documentation, and independent learning habits.

A. Library Facilities and Infrastructure

The Central Library is housed in a separate three-storied building and functions as a composite academic support facility for undergraduate and postgraduate students. The library is computerized, barcoded, and supported by OPAC based on KOHA ILMS on Cloud. The library provides access to hard-copy resources as well as digital learning resources.

Facility / Parameter	Availability / Details
Central Library Building	Separate three-storied building
Carpet Area of Library	1150 sq. m.
Reading Space	450 sq. m.
Seating Capacity	105
Library Hours	8:00 AM to 8:00 PM
Library Automation	Computerized library with barcode operation
Catalogue Facility	OPAC based on KOHA ILMS on Cloud
Digital Library	Available in Central Library
Internet / Intranet	Available
Wi-Fi Facility	Available for accessing library resources
QR-Code Based Access	Available for OPAC, e-resources, previous year question papers, etc.
Security Support	CCTV system installed in Central Library premises
Reprographic Support	Available
Document Delivery Service	Available through DELNET and library support mechanism

The Ground Floor section of the Central Library remains open up to 8:00 PM and provides reading-room facilities. It houses the Reference and Periodical Section, Library Office, Photocopier Room, Digital Library, and E-Library. The reading spaces are well ventilated and equipped with power sockets, lighting, fans, and Wi-Fi connectivity.

B. Library Staff Support

The library is supported by qualified professional staff members who manage circulation, cataloguing, digital-resource access, user support, document delivery, reference services, and library automation.

Sl. No.	Name	Designation / Qualification
1	Dr. Susanta Koley	Librarian; B.Com. (Hons.), MLIS Gold Medal, PhD
2	Smt. Aabira Ray	Deputy Librarian; MA, NET Qualified, MLIS
3	Sri Tapas Kr. Ghosh	Assistant Librarian; B.Sc. (Hons. in Economics), MA Economics, MLIS
4	Smt. Soma Ghosal	Junior Librarian; MA, MLIS
5	Sri Judhajit Jash	Junior Librarian; M.Com., MLIS
6	Sri Ashis Karmakar	Junior Librarian; M.Com., MBA HR, MLIS
7	Sri Rana Mukhopadhyay	Junior Librarian; BA, BLISc, CITA
8	Sri Kunal Chakraborty	Junior Librarian; MA, MLIS

Sl. No.	Name	Designation / Qualification
9	Smt. Indrani Banerjee	Library Assistant; MA, MLIS
10	Sri Dharmadas Konar	Library Attendant

The presence of trained library personnel ensures proper maintenance of learning resources, user guidance, access to e-resources, issue-return support, and assistance in literature search and reference consultation.

C. Available Learning Resources: Hard and Soft Resources

Resource / Facility	Availability / Description	Academic Utility
Central Library	Three-storied separate library building with reading space, reference section, periodical section, book circulation, reprographic support, and Digital Library.	Supports regular course study, reference work, seminar preparation, project work, and research orientation.
Book Bank	At the beginning of the semester, 6 to 9 books are issued to each student for retention throughout the semester.	Ensures continuous access to syllabus-oriented textbooks and reduces dependence on short-term circulation.
Departmental Libraries	Libraries attached to teaching departments.	Provide quick reference support for course work, laboratory preparation, project consultation, and faculty-guided study.
Digital Library	Facility to access online and offline databases, e-journals, NPTEL/MOOC content, CD-ROMs/DVDs, and downloadable learning material.	Supports literature search, self-learning, project work, and digital academic access.
OPAC / KOHA ILMS	Online Public Access Catalogue available through KOHA ILMS on Cloud.	Enables students and faculty to search library holdings by author, title, subject, and other catalogue fields.
NPTEL Local Chapter	Institutional Local Chapter of National Programme on Technology Enhanced Learning.	Encourages online certification, self-paced learning, and curriculum enrichment.
National Digital Library	Institutional Member of National Digital Library.	Provides access to multi-domain academic digital resources, e-books, video lectures, journals, and theses.
DELNET	Institutional member of Developing Library Network.	Provides access to e-books, foreign journals, patents, union catalogues, theses, dissertations, and document delivery services.
Journals and Magazines	Subscribed print journals, print magazines, online journals, and bound volumes.	Supports seminar work, project work, research exposure, and current technical awareness.
CD-ROMs / DVDs	4121 discs available.	Provides supplementary offline digital learning resources and archived academic material.
Reference Collection	Encyclopaedias, technical handbooks, professional reference volumes, and subject handbooks.	Supports advanced reading, design work, laboratory reference, seminar preparation, and technical report writing.
Competitive Examination Resources	Special collection for GATE, GRE, CAT, MAT, XAT, GMAT, SAT, TOEFL, and related examinations.	Supports higher studies, competitive examination preparation, and career development.

D. Department-wise Library Holdings of Books

The institute maintains a large collection of books relevant to engineering, technology, science, management, humanities, and allied domains. The department-wise holdings are summarized below.

Department / Area	Titles of Books	Volumes of Books
CSE / IT / AIML / DS / CSD / CS	1348	17710
ECE	1376	15537
EE	783	9944
ME	900	10669
CE	457	5947
Mathematics	387	9378
Chemistry	127	2610
Physics	176	4685
Humanities	1083	2425
MCA	199	7172
MBA (FMS)	850	15137
Biology	7	419
MLT	1	9
Sub-total	7694	101642
Gift / Specimen Copy	275	464
Total	7969	102106

For the Electronics and Communication Engineering programme, the library holds 1376 titles and 15537 volumes. This provides strong subject-specific support for analog and digital electronics, communication systems, signal processing, microwave engineering, antenna engineering, VLSI, embedded systems, control systems, instrumentation, microprocessors, IoT, networking, and allied interdisciplinary areas.

E. Break-up of Holdings in Different Constituent Libraries

Library Component	Number of Volumes
Central Library	29349
Book Bank, including MCA / MBA (FMS) Book Bank Books	66613
Departmental Libraries	978
MCA Central Library	1564
FMS Departmental Library	3138
Gift / Specimen Copy	464
Total	102106

The Book Bank is a major student-support facility, with 66613 volumes. It enables students to retain required textbooks for the whole semester. Departmental libraries provide localized academic support for quick reference during classes, laboratory sessions, project meetings, and faculty-guided learning.

F. E-Resources, Journals, Magazines and Digital Databases

The institute subscribes to major digital resources and maintains access to online journals, print journals, magazines, and bound volumes. Indian journals are mainly available in print form, while international journals are primarily available

through online full-text databases. The databases are accessible through internet-enabled PCs and laptops under institutional static IP-based access, including access support within the campus and hostels.

Resource / Database	Number of Titles / Description	Discipline Relevance / Use
IEEE ASPP	251 journals / transactions with back-file access since 1998	Relevant to CSE, EE, ECE, telecommunication, electronics, and allied disciplines.
Springer Nature	530 journals with back-file access	Relevant to engineering, computer science, and management.
Sage India	10 titles	Supports interdisciplinary and management-related learning.
DELNET Open-Source Full-Text Journals	1748 titles	Supports literature search, research exposure, theses, dissertations, patents, and document delivery.
Print Journals	20 subscribed titles	Supports current academic reading and discipline-specific reference.
Print Magazines	20 subscribed titles	Supports technical awareness, general awareness, and career preparation.
Bound Volumes of Journals	482 volumes	Supports retrospective literature search and reference work.

The subscribed databases provide access to current and archival literature. DELNET's Document Delivery Service helps faculty members and students obtain photocopies of journal articles, chapters, and academic documents required for R&D, project work, and seminar preparation.

G. Digital Media and Total Document Holdings

Total Items / Holdings	Volumes / Numbers
Books	102106
CD-ROMs / DVDs	4121
Bound Volumes of Journals	482
Grand Total	106709

The CD-ROM/DVD collection provides supplementary digital learning material, including course content, book-related media, archived academic resources, and offline learning materials. The bound volumes support retrospective academic consultation and literature survey.

H. Reference Resources and Competitive Examination Support

The library maintains a strong reference collection consisting of encyclopaedias, technical handbooks, and professional reference materials. Important reference resources include Encyclopaedia Britannica, McGraw-Hill Encyclopaedia of Science and Technology, World of Science, Modern Power Station Practice, Instrument Engineers Handbook, Welding Handbook, ASM Handbook, Industrial Electronics Handbook, VLSI Handbook, and other discipline-specific technical handbooks.

These resources are useful for advanced study, design calculations, project formulation, technical report writing, seminar preparation, laboratory work, and faculty-guided student activities. The library also maintains special collections for competitive examinations such as GATE, GRE, CAT, MAT, XAT, GMAT, SAT, and TOEFL. These resources support students aspiring for higher studies, public-sector examinations, management studies, and overseas education.

I. Digital Library Infrastructure and Access Facilities

Infrastructure / Facility	Availability
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Infrastructure / Facility	Availability
Digital Library Services	Yes
Digital Library Contents	Yes
Number of Courses Supported	16 courses: 10 UG B.Tech, 4 PG M.Tech, MBA, and MCA
NPTEL E-Resources	600+
NDL E-Resources	Institutional Member of NDL; access to e-books, theses, video lectures, journals, and related resources
Intranet / Internet	Available
Exclusive Space / Room	Available
Average Number of Users per Day	158

The Digital Library is located in the Central Library and enables students to access e-journals, e-books, online academic resources, offline databases, NPTEL/MOOC content, and downloadable learning materials. Students can use the internet facilities in the library for accessing e-books, journals, previous year question papers, digital repositories, and academic platforms.

J. Accessibility of Learning Resources to Students

Access Dimension	Support Available
Physical Access	Central Library remains open from 8:00 AM to 8:00 PM, enabling access before and after regular class hours.
Reading Room Access	Ground Floor reading space remains open up to 8:00 PM and provides seating, ventilation, lighting, power sockets, fans, and Wi-Fi.
Book Bank Access	6 to 9 books are issued to each student at the beginning of the semester for retention throughout the semester.
OPAC Access	OPAC based on KOHA ILMS on Cloud enables searching of books by author, title, subject, and other fields.
QR-Code Access	Users can search Library OPAC, e-resources, previous year question papers, and related resources using QR codes.
Digital Access	Online databases, NPTEL, NDL, DELNET, and e-journals are accessible through internet-enabled systems.
Wi-Fi Access	Wi-Fi facility is available for accessing digital library resources.
Departmental Access	Departmental libraries provide quick reference support near academic departments.
Document Delivery	DELNET DDS and library support mechanisms help users obtain journal articles, chapters, and other academic documents.
Reprographic Support	Photocopying facility is available for academic use, subject to library rules.
Competitive Examination Support	Resources are available for GATE, GRE, CAT, MAT, XAT, GMAT, SAT, TOEFL, and related examinations.
Safety and Monitoring	CCTV system supports safety and monitoring of Central Library premises.

The accessibility mechanisms ensure that students can use learning resources through physical, digital, departmental, semester-long, and self-service modes. OPAC, QR-code access, Wi-Fi, internet access, e-resources, and Digital Library facilities help students locate and use learning materials independently.

K. Support Provided for Self-Learning Activities

The institute promotes self-learning by providing resources and facilities that allow students to study beyond classroom

teaching. Students are encouraged to use NPTEL courses, NDL resources, DELNET resources, library databases, reference books, competitive-examination materials, project literature, previous year question papers, and Digital Library services.

Self-Learning Support	Mechanism	Student Benefit
NPTEL Local Chapter	Students are encouraged to enrol in NPTEL / MOOC courses relevant to curriculum and professional goals.	Supports self-paced learning, certification, concept strengthening, and exposure to expert lectures.
National Digital Library	Institutional membership provides access to e-books, theses, video lectures, journals, and multi-domain resources.	Supports independent reading, supplementary learning, and academic exploration.
DELNET Access	Users can access e-books, foreign journals, patents, theses, dissertations, union catalogues, and document delivery services.	Supports literature survey, project work, seminar preparation, and research orientation.
Book Bank	Students receive 6 to 9 books at the beginning of the semester for retention throughout the semester.	Ensures continuous access to textbooks and supports regular study.
Digital Library	Students can access e-journals, online/offline databases, NPTEL/MOOC materials, and downloadable content.	Supports digital self-learning and literature search.
Web OPAC / KOHA	Students can independently search book holdings by title, author, subject, and other catalogue fields.	Improves resource discovery and independent library use.
QR-Code Access	QR codes help students locate OPAC, e-resources, and previous year question papers.	Provides quick access to academic resources.
Competitive Examination Collection	Books and materials are available for GATE, GRE, CAT, MAT, XAT, GMAT, SAT, TOEFL, and related examinations.	Supports higher studies, competitive examinations, and career development.
Reference Collection	Encyclopaedias, handbooks, technical references, and professional volumes are available.	Supports advanced learning, design work, technical reporting, and seminar preparation.
CD-ROM / DVD Archive	4121 discs are available as supplementary offline digital learning resources.	Provides archived and offline academic learning content.
Departmental Libraries	Course-specific and laboratory-specific materials are available close to teaching departments.	Supports quick consultation during classes, laboratories, and projects.
Reprographic / DDS Support	Photocopying and document delivery services are available for selected academic material.	Helps students and faculty obtain required academic documents.

L. Relevance to Programme Outcomes and Student Development

Development Area	Relevant Learning Resources	Expected Learning Impact
Course Learning	Textbooks, Book Bank, Central Library, departmental libraries, and reference books.	Supports syllabus coverage, conceptual clarity, and regular academic preparation.
Laboratory Learning	Technical handbooks, departmental libraries, CD-ROMs/DVDs, previous year materials, and online resources.	Supports experiment preparation, design calculations, simulation reference, and technical reporting.

Development Area	Relevant Learning Resources	Expected Learning Impact
Project and Seminar Work	IEEE ASPP, Springer Nature, DELNET, reference books, bound journals, DDS, and reprographic services.	Supports literature review, design justification, problem analysis, and documentation.
Research Orientation	Online databases, DELNET, NDL, bound journals, conference proceedings, and technical references.	Provides exposure to current and archival literature, patents, theses, and research documents.
Higher Studies and Career Preparation	GATE/GRE/CAT/MAT/XAT/GMAT/SAT/TOEFL resources, NPTEL courses, and magazines.	Supports competitive examinations, postgraduate admissions, and career development.
Lifelong Learning	NPTEL, NDL, OPAC, Digital Library, e-resources, and self-service access mechanisms.	Encourages independent learning beyond classroom instruction.
Professional Skill Development	Technical magazines, reference books, project literature, and seminar resources.	Enhances technical communication, analytical ability, and professional awareness.

M. Summary of Learning Resource Strength

Indicator	Availability / Number
Library Carpet Area	1150 sq. m.
Reading Space	450 sq. m.
Seating Capacity	105
Library Timing	8:00 AM to 8:00 PM
Total Book Titles	7969
Total Book Volumes	102106
ECE Book Titles	1376
ECE Book Volumes	15537
IEEE ASPP Journals / Transactions	251
Springer Nature Journals	530
Sage India Titles	10
DELNET Open-Source Full-Text Journals	1748
Print Journals	20
Print Magazines	20
Bound Journal Volumes	482
CD-ROMs / DVDs	4121
Grand Total Document Holdings	106709
NPTEL E-Resources	600+
Courses Supported by Digital Library	16
Average Digital Library Users per Day	158
Major Digital Platforms	IEEE, Springer Nature, Sage India, DELNET, NPTEL, NDL, OPAC / KOHA

9.10. E-Governance (05)

(E-governance initiatives, sustainable practices in academic and learning management, campus-wide computing resources, and their accessibility and availability to support academic and professional activities for students and faculty.)

The Institute has established an e-governance enabled academic and administrative ecosystem supported by a campus-wide LAN, high-speed internet connectivity, cloud-hosted ERP services, ICT-enabled classrooms, online IT support, digital asset management, professional communication systems, and a structured surveillance and monitoring framework. The system supports academic planning, learning management, faculty and staff administration, student services, institutional reporting, IT maintenance, and professional activities of students and faculty members.

A running ERP system is implemented for academic management. The ERP has been internally developed and customized to suit institutional academic and administrative workflows. The system includes academic modules along with faculty/staff attendance, leave management, profiles, publications, roles and responsibilities, IT ticketing, technical assistant activity logs, job management, resource management, and asset management modules. The in-house nature of the ERP allows process-specific customization, quick modification, and sustainable maintenance without excessive dependence on external software vendors.

A. E-Governance Initiatives and Functional Coverage

The e-governance framework is designed around digital recording, monitoring, reporting, and decision support. The ERP and related IT systems reduce manual duplication, create institutional data traceability, and enable timely academic and administrative action.

Sl. No.	E-Governance Initiative	Functional Coverage	Stakeholders Benefitted	Present Status
1	Indigenous ERP Academic Module	Academic records, class management, routines, academic documents and role-based academic workflows.	Students, faculty, HoDs, academic administration	Implemented / running
2	Faculty and Staff Attendance with Facial Recognition	Digital attendance capture and monitoring of employee presence.	Faculty, staff, administration	Implemented
3	Leave Management Module	Online leave application, approval, record keeping and administrative monitoring.	Faculty, staff, approving authorities	Implemented
4	Profile, Publications and Roles & Responsibilities Modules	Faculty/staff profile maintenance, publication records and institutional responsibility mapping.	Faculty, departments, accreditation teams	Implemented
5	IT Ticketing System	Registration, tracking and resolution of IT issues.	Students, faculty, laboratories, administrative offices	Implemented
6	TA Activity Logs and Job Management	Digital monitoring of technical support activities and assigned maintenance work.	Technical assistants, HoDs, IT administration	Implemented
7	Resource and Asset Management	Database of IT and laboratory assets integrated into the ERP/ticketing system.	Departments, laboratories, administration	Implemented
8	Professional Email System	Institutional communication using G-Suite / Gmail based private email server.	Faculty, staff, institutional offices	Available
9	Institutional Website	Publication of institutional information, notices, approvals and stakeholder-facing information.	Students, parents, faculty, external agencies	Available

B. E-Governance Architecture

The e-governance architecture integrates cloud-hosted ERP modules, network backbone, academic services, IT support systems, digital learning resources, and monitoring infrastructure. The academic module functions as a central digital layer for academic management, while the campus-wide computing and network infrastructure supports accessibility across departments, laboratories, offices, classrooms and hostels.

E-Governance and IT Support Architecture

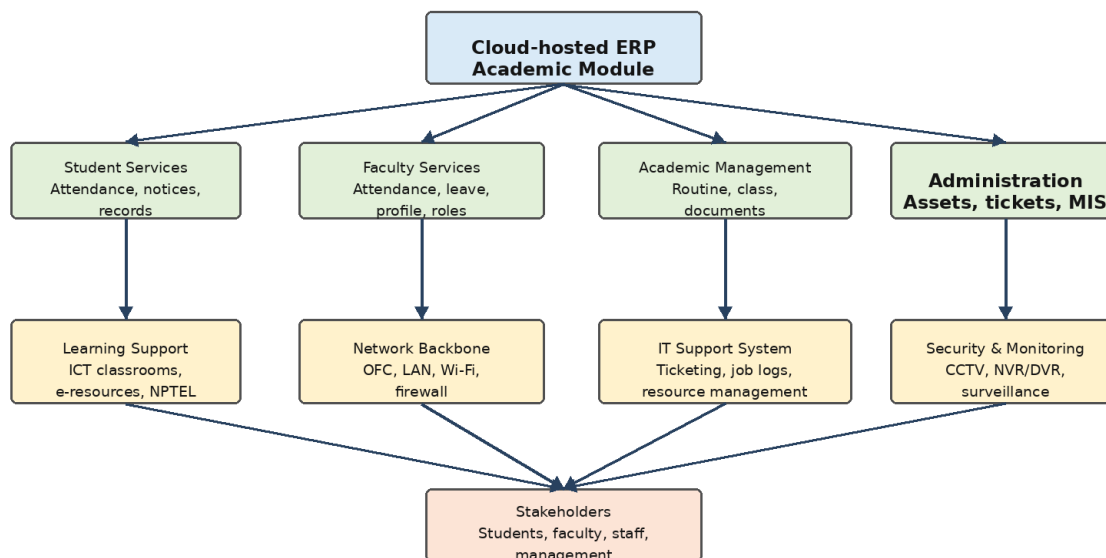


Figure 9.10.1: E-Governance and IT Support Architecture

C. Sustainable Practices in Academic and Learning Management

The ERP-based academic module supports sustainable academic management by reducing paper-based record keeping and enabling digital access to academic documents, routine/class management, institutional records, leave records, attendance data, technical support logs and asset records. The system promotes data continuity, faster retrieval, improved accountability and better internal monitoring.

Area	Sustainable E-Governance Practice	Academic / Administrative Benefit
Academic Management	Use of cloud-hosted ERP academic module for routine, class and academic document management.	Improves academic record consistency and reduces manual duplication.
Attendance and Leave	Digital attendance and leave workflows for faculty and staff.	Improves traceability and reduces paper processing.
Documentation	Storage of critical academic documents and employee records on secured cloud servers.	Supports accreditation, audit and administrative continuity.
IT Maintenance	Ticketing, job management and activity logs for issue tracking.	Improves response accountability and maintenance transparency.
Asset Management	Cloud-based tracking of laboratory and IT assets.	Supports preventive maintenance, stock verification and procurement planning.
Learning Support	ICT classrooms, online resources, NPTEL access and internet-enabled learning support.	Improves access to digital academic material and self-learning.

Communication	Institutional email and website for professional information flow.	Supports fast dissemination of academic and administrative information.
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D. Campus-Wide Computing and Network Resources

The institution has a strong IT infrastructure consisting of a campus-wide LAN, OFC backbone, Wi-Fi access, managed switching, redundant leased line internet, hostel internet facilities, cloud server architecture, local departmental servers, ICT-enabled classrooms, surveillance systems and licensed/open-source software resources. The entire college operates through a common LAN using mixed Star and Tree topology, with OFC, CAT6 and CAT5 cabling used for end-to-end connectivity.

Parameter	Available Facility / Quantity
Campus LAN	Campus-wide LAN using mixed Star and Tree topology
Network Backbone	Optical Fibre Cable backbone connecting all buildings
Network Devices	Approximately 310 network devices including managed L2 switches, PoE switches and wireless controllers
Routers / Access Points	92
Switches	218
Internet Bandwidth	1 Gbps primary leased line + 100 Mbps secondary leased line; aggregated throughput up to 1100 Mbps
Firewall / UTM	Sophos Firewall and UTM with load balancing and automatic failover
Emergency Internet Backup	Third dedicated emergency connection maintained for critical redundancy
Wi-Fi Coverage	85% of built-up area
Hostel Internet	Separate leased line connection; OFC last-mile connectivity to individual hostel rooms with dedicated Wi-Fi router for occupied rooms
ICT Classrooms	31 classrooms equipped with ICT tools
Projectors	52
Video Conference Enabled Board / Discussion Rooms	3
Generator Backup	414 KVA
Online UPS	26 units of 6/10/20 KVA

E. Computing Resources and Software Availability

The available computing resources exceed the minimum requirement indicated for the institution. The college maintains computers for students, library use, administration, language laboratory, academic use and high-end computing/workstation requirements. Legal system software, legal application software and open-source software are available to support academic and professional activities.

Particulars	AICTE Requirement	Available
No. of PCs/Laptops to student ratio	546 Nos.	1571 Nos.
No. of Legal System Software	3	11
No. of Legal Application Software	20	50
LAN and Internet	All	All
Mail Server and Client	Desired	Available
Internet Bandwidth	1000 Mbps	1100 Mbps

Black Printers	28	79
Colour Printers	-	3

Computing / IT Resource	Quantity / Status
Total Computers	1571
Computers exclusively available to students	1312
Computers for other academic purposes	140
Computers available in library	14 office computers and 30 student computers
Computers available in administrative office	45
Computers in Language Lab	30
Total Laptops	24
Servers	3
High-end Workstations	30
Printers	82
CCTV Cameras	235
Scanners	14
Licensed Application Software	50
Licensed System Software	11
Open Source Software	10
Computers purchased in last three years	390

F. Internet Connectivity, Cloud Integration and Accessibility

The internet architecture is designed for high availability. The primary leased line is a 1 Gbps OFC connection, supported by a 100 Mbps secondary OFC leased line. Both connections are managed through Sophos Firewall and UTM, enabling load balancing, aggregation and automatic failover. A third emergency connection is maintained for critical redundancy.

The ERP server is hosted on cloud infrastructure, enabling access to administrative, financial and academic management tools. A separate secured cloud server hosts the indigenous ERP for critical academic documents and employee records. Departments also maintain local servers for research and administrative work. Hostel internet is provided through a separate leased line and room-level OFC last-mile connectivity, with dedicated Wi-Fi routers in occupied rooms. This arrangement supports online learning, project work, research activity, placement preparation and regular academic work beyond classroom hours.

G. Support for Academic and Professional Activities

Stakeholder	Support Provided through E-Governance / IT Infrastructure	Resulting Academic / Professional Utility
Students	Campus internet, hostel internet, ICT classrooms, laboratory computers, language lab, ERP academic services, digital notices and learning resources.	Supports self-learning, assignments, coding practice, online courses, project work and placement preparation.
Faculty Members	ERP access, institutional email, profile/publication modules, ICT tools, internet access, departmental servers and IT ticketing.	Supports teaching, documentation, research, publication records, classroom delivery and academic administration.
Technical Staff	TA activity logs, job management, resource management, ticketing system and knowledge transfer documentation.	Supports structured lab maintenance, IT response, issue tracking and accountability.

Administrative Staff	ERP modules, staff records, leave management, asset management, email and reporting systems.	Supports record maintenance, internal communication and institutional reporting.
Management / HoDs	Dashboards, digital records, asset database, attendance records and academic documents.	Supports monitoring, decision making, audit readiness and planning.

H. Surveillance, Security and Academic Monitoring Support

The college has deployed a large-scale surveillance and vigilance system with more than 235 cameras across the campuses. The system includes PTZ cameras, high-resolution cameras, classroom cameras, NVR/DVR based recording, and LED display-based live monitoring. Classroom surveillance includes cameras connected with the MAKAUT examination system and 4K cameras with audio capability for monitoring classroom interaction, attendance discipline and teaching methodology. This infrastructure supports safety, examination monitoring, campus discipline and academic process observation.

Security / Monitoring Component	Available Facility	Purpose
CCTV Coverage	235 cameras across campuses	Campus vigilance and safety monitoring
Classroom Examination Cameras	32 CCTV cameras connected to MAKAUT examination system	Examination compliance and monitoring
Modern Classroom Cameras	Approximately 60 4K cameras with audio capabilities	Academic interaction, attendance and teaching process monitoring
PTZ / High-resolution Cameras	Installed at strategic and external locations	Wide-area surveillance and monitoring
NVR / DVR / LED Displays	Live feed monitoring and recording	Real-time institutional vigilance

I. Accessibility and Availability

The e-governance and computing facilities are accessible to stakeholders through campus LAN, Wi-Fi, hostels, computer laboratories, library systems, ICT-enabled classrooms, departmental servers, and cloud-hosted ERP services. Internet-enabled PCs and laptops across the campus support the use of academic databases, learning materials, software platforms, project development and institutional applications. The hostel internet system extends academic access beyond regular college hours.

Access Location / Mode	Facilities Available	Users
Departments and Laboratories	LAN, internet, laboratory computers, local servers, ERP and licensed/open-source software	Students, faculty, technical staff
Classrooms	ICT tools, projectors, camera systems and network support	Students and faculty
Library	Computers, internet, e-resources and institutional digital access	Students and faculty
Hostels	Separate leased line, OFC last-mile connectivity and room-level Wi-Fi routers	Resident students
Cloud Access	ERP and secured institutional records	Authorized faculty, staff and administrators
Administrative Offices	ERP, email, computing resources and reporting tools	Administrative staff and authorities

J. Effectiveness of E-Governance Initiatives

The implemented e-governance system has improved academic record management, online workflow handling, institutional reporting, IT service response, communication speed, computing access and infrastructure monitoring. The indigenous ERP has created a sustainable academic management platform because the system can be modified internally according to departmental and institutional requirements. The IT ticketing and asset management modules have improved traceability of complaints, resources and maintenance activities.

Area of Effectiveness	Observed / Expected Effect
Academic Management	Digital records, routines, academic documents and class information are managed in a structured manner.
Administrative Efficiency	Attendance, leave, profiles, roles and responsibilities are maintained through digital workflows.
IT Service Quality	Ticketing and job management improve complaint tracking and resolution accountability.
Asset Traceability	Cloud-based asset records support stock verification, maintenance planning and procurement decisions.
Learning Support	ICT classrooms, internet access and computing resources support digital learning and self-learning.
Student Support	Hostel internet and student-access computers improve access to academic work beyond scheduled classes.
Accreditation Readiness	ERP records, IT summaries, asset data and digital documentation support audit and accreditation requirements.

9.11. Initiatives and Implementation of Sustainable Development Goals (SDGs) (10)

(Provide details of initiatives taken towards implementation of SDG specifically on green energy, waste management, preserving water, net zero, quality education, reuse, recycle, less use to renewables, etc. Provide evidences on implementation (projects assigned, R & D activities, entrepreneurial activities, outreach programs etc.)

The institute and the department addresses Sustainable Development Goals through academic integration, resource-efficient administration, digital governance, student projects, entrepreneurship activities, outreach programmes, and student support practices. The focus areas are quality education, responsible resource use, reduced paper-based administration, skill development, ethical and inclusive education, sustainable engineering awareness, and community-linked problem solving.

The Electronics and Communication Engineering programme contributes to SDG-linked learning through curriculum components such as Environmental Science, Universal Human Values, Economics for Engineers, Principles of Management, Professional Communication, Mini Project/Electronic Design Workshop, Industrial Training, Project Stage-I and Project Stage-II. These components connect technical knowledge with sustainability, ethics, economy, public safety, communication, project management, and lifelong learning.

SDG Theme	Area / Existing Institute / Department Initiative	Mode of Implementation	Evidence to be Attached / Verified
SDG 4: Quality Education	Mentoring system, ICT-enabled classrooms, library resources, NPTEL Local Chapter, National Digital Library access, IEEE/Springer/DELNET/Web OPAC access, placement training, MOOCs and higher	Faculty mentoring, classroom/laboratory support, online resources, digital library, technical seminars, placement-readiness sessions.	Mentor allocation, mentoring registers, library records, NPTEL/NDL details, training schedules, attendance, photographs.

	study guidance.		
SDG 9: Industry, Innovation and Infrastructure	AICTE Idea Lab, IIC/IIPC activities, Xilinx Lab, departmental laboratories, PCB and circuit design workshops, VLSI/Analog IC design exposure, XR activities, coding contests and ideathons.	Hands-on sessions, prototype-oriented activities, technical workshops, idea submission guidance and innovation-linked student events.	Event notices, reports, attendance sheets, photographs, laboratory utilization records, project lists.
SDG 11: Sustainable Communities	Student mentoring, professional ethics, social responsibility, human values education, community-sensitive project guidance and outreach activities.	Counselling, human values course, social internship/outreach guidance, problem selection for local/societal needs.	Mentor records, course files, outreach reports, project abstracts and photographs.
SDG 12: Responsible Consumption and Production	E-governance, ERP-based academic records, digital attendance, leave management, asset management, IT ticketing and technical activity logs.	Reduced manual duplication, digital documentation, cloud-based asset traceability, maintenance planning and issue tracking.	ERP screenshots, module reports, ticket logs, asset registers, IT support records.
SDG 13: Climate Action / Environmental Awareness	Environmental Science course, sustainability-sensitive PO6/WK5/WK7 alignment, curriculum gap analysis identifying sustainability and green engineering as a strengthening area.	Classroom instruction, assignments, student projects, green engineering orientation and project topic guidance.	Course file, assignments, project list, PO mapping, gap analysis minutes.
Water, Waste, Reuse and Resource Conservation	Waste management, water preservation, reuse/recycle and green energy practices are to be mapped with campus-level records and student activities wherever available.	Administrative records, maintenance reports, NSS/club/IIC/outreach activities and project-based demonstrations.	To be attached by institute: water conservation records, waste management bills/logs, e-waste disposal records, plantation/cleanliness reports, renewable energy records, if available.

A. Academic Integration of Sustainability

- Environmental Science introduces students to ecology, pollution control, resource preservation and environmental responsibilities of engineers.
- Universal Human Values supports ethical conduct, social responsibility, empathy and respect for diversity.
- Economics for Engineers and Principles of Management support resource-aware planning, project budgeting and sustainable decision making.
- Mini projects, Electronic Design Workshop and final-year project work provide scope for problem selection related to efficient systems, low-cost solutions, monitoring, automation and community utility.
- The curriculum gap analysis already identifies the need to strengthen sustainability and green engineering exposure; this can be converted into planned seminars, project themes and value-added sessions.

B. Institutional Support for Sustainable Academic Operations

The in-house ERP reduces dependence on paper-based academic and administrative processing through digital academic records, attendance, leave records, profiles, publications, roles, responsibilities, IT ticketing, activity logs and asset records.

The digital asset management system supports inventory traceability, maintenance planning and responsible use of

IT/laboratory resources.

The library and digital platforms support self-learning through long-hour access, online journals, open-source journals, NPTEL, National Digital Library, DELNET and Web OPAC.

Campus-wide internet, ICT classrooms, laboratories and hostel connectivity support access to learning resources beyond regular class hours.

C. SDG-Linked Innovation, Entrepreneurship and Project Evidence

Activity / Facility	SDG Linkage	Relevance for 9.11
SDG 2K26 - Ideathon & Expo	SDG-linked problem solving and innovation exhibition	Direct SDG event evidence with ideation and student participation.
World Innovation & Creativity Day	Creativity, problem identification and solution thinking	Supports student awareness for social and technical problem solving.
Awareness of Innovation Opportunity in Soft Robotics and Sensor Design	Industry, automation, safety and assistive systems	Links ECE domain knowledge with problem-oriented innovation.
PCB and Circuit Designing Workshop	Responsible prototyping and hardware realization	Supports reuse, repairability and practical hardware skill development.
Introduction to VLSI & Analog IC Design	Semiconductor design, efficient electronics and domain readiness	Provides advanced technical exposure in ECE-relevant design.
AICTE Idea Lab / Departmental Laboratories	Prototype development and applied learning infrastructure	Supports student projects, R&D activities and entrepreneurship pathway.

D. Evidence Folder for 9.11

- Course files for Environmental Science, Universal Human Values, Economics for Engineers and Principles of Management.
- Project titles mapped to sustainability, energy efficiency, automation, monitoring, public safety, accessibility or resource conservation.
- IIC/IIPC/Idea Lab event reports, notices, attendance sheets and photographs.
- ERP screenshots showing digital academic records, ticketing, asset management and leave/attendance records.
- Records of any waste management, e-waste disposal, water preservation, plantation, campus cleanliness, energy saving or green energy practices maintained by the institute.

9.12. Innovative Educational Initiatives and Implementation (05)

(Provide details of initiatives taken towards mobility of students, implementation of academic bank of credits, and support for holistic education including human values, multidisciplinary/interdisciplinary curriculum/programs, initiatives on Indian Knowledge System, Contribution towards and implementation of teaching in Indian language, etc. Policies on inclusivity and equity and their implementation, support for economically, socially and physically challenged students. Action plan and its implementation for slow learners.)

The institute supports student mobility, holistic education and inclusive academic development through university-aligned curriculum, elective baskets, MOOCs/NPTEL, mentoring, training and placement support, digital learning resources, human values education, interdisciplinary project exposure, student chapters, technical events, and structured support for slow learners and advanced learners.

Area Required by SAR	Existing / Proposed Practice	Implementation Mechanism	Evidence
Student Mobility and	Student mobility is governed by	Departmental mentoring,	University circulars,

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Academic Bank of Credits	affiliating university norms. Students are encouraged to use MOOCs/NPTEL and credit-compatible online learning wherever permitted by university regulations.	academic counselling, notification of approved online courses and verification by academic coordinators.	ABC/credit transfer records if applicable, NPTEL records, student certificates.
Holistic Education	Human values, environmental awareness, communication, management, economics, ethics, teamwork and social responsibility are supported through curriculum and mentoring.	Universal Human Values, Environmental Science, Professional Communication, Economics, Management, seminars and mentoring.	Course files, attendance, assignments, mentoring records, event reports.
Multidisciplinary / Interdisciplinary Learning	Open electives, professional electives, mini projects, electronic design workshop, project work, IoT, embedded systems, VLSI, AI/ML exposure and XR/robotics/sensor workshops.	Elective registration, project grouping, lab-based sessions, technical workshops and IIC/IIPC activities.	Elective lists, project reports, lab utilization, workshop reports.
Indian Knowledge System / Indian Language Support	Relevant Indian context, ethics, professional responsibility, national development priorities, local societal problems and bilingual support may be used during mentoring, classroom clarification and outreach.	Faculty-led explanation in English with local-language support where required; use of Indian case contexts in projects and discussions.	Class notes, mentoring records, outreach records, sample teaching material if maintained.
Inclusivity and Equity	Mentoring system, parent interaction, need-based counselling, accessibility of library/ICT resources, support for economically and socially constrained students through institutional mechanisms.	Mentor identification, HoD referral, scholarship/administrative support, library and computing access.	Mentoring sheets, scholarship/support records, grievance records, library/ICT usage records.
Support for Physically Challenged Students	Reasonable academic support is provided as per institutional/university norms.	Office support, examination-related facilitation subject to university rules, faculty mentoring and access support.	Records to be verified with institute office and examination cell.
Slow Learner Action Plan	Slow learners are identified through attendance, internal assessment, laboratory performance and mentor interaction.	Remedial classes, subject-teacher counselling, assignment practice, laboratory retraining, previous-question discussion and parent interaction when required.	Slow learner list, remedial attendance, internal marks comparison, mentor follow-up.
Advanced Learner Support	Advanced learners are guided for MOOCs, internships, projects, GATE/higher studies, coding contests, paper presentations, seminars, professional society activities	Mentor guidance, faculty supervision, placement/higher-study sessions, project guidance and technical events.	Certificates, project reports, event participation lists, GATE/higher study records.

	and start-up/innovation events.		
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A. Action Plan for Slow Learners

Stage	Identification / Action	Responsibility	Expected Output
Identification	Use internal assessment, attendance, laboratory performance, class participation and mentor interaction to identify slow learners.	Subject teachers, laboratory teachers, mentors	Slow learner list with specific subject gaps.
Academic Counselling	Discuss difficulty areas, attendance issues, language barriers, examination anxiety and study habits.	Mentor and subject teacher	Counselling remarks and action plan.
Remedial Support	Conduct remedial/tutorial sessions, problem-solving classes, lab retraining and assignment practice.	Subject teacher and lab faculty	Improved performance in subsequent assessments.
Monitoring	Review progress after each internal assessment and update the mentor record.	Mentor and HoD	Progress tracking and follow-up status.
Parent / Guardian Interaction	Contact parents/guardians for persistent attendance or performance concerns.	Mentor / HoD	Joint support for student improvement.

B. Educational Initiatives Already Reflected in Other SAR Sections

Mentoring: all faculty members act as mentors, with 3 to 4 formal meetings per semester and need-based guidance.

Placement support: career guidance starts from early semesters, with 6th-semester onwards mock tests and company-specific preparation.

Learning resources: Central Library, long-hour access, large book and journal holdings, Web OPAC, DELNET, NPTEL and National Digital Library.

Digital learning: ERP, ICT-enabled classrooms, campus LAN/internet, hostel internet and student-access computing facilities.

Innovation exposure: AICTE Idea Lab, IIC/IIPC events, coding contests, XR workshops, VLSI/Analog IC design sessions and PCB/circuit design workshops.

9.13. Faculty Performance Appraisal and Development System (FPADS) (10)

(Faculty members of Higher Educational Institutions today have to perform a variety of tasks pertaining to diverse roles. In addition to instruction, faculty members need to innovate and conduct research for their self-renewal, keep abreast of changes in technology, and develop expertise for the effective implementation of curricula. They are also expected to provide services to the industry and community to understand and contribute to solving real-life problems in industry. Another role involves shouldering administrative responsibilities and cooperating with other faculty, heads of departments, and the head of the institute. An effective performance appraisal system for faculty is vital for optimizing the contribution of individual faculty to institutional performance. The assessment is based on a well-defined system for faculty appraisal for all the assessment years and its implementation and effectiveness.)

The institute follows a structured faculty performance review mechanism covering teaching, learning process contribution, student mentoring, result improvement, course file maintenance, laboratory development, research, publication, funded project involvement, consultancy, industry interaction, innovation, outreach, administrative roles, and professional development. The system is supported by departmental review, HoD verification, institutional appraisal records and ERP-based profile/publication/role-responsibility modules.

The appraisal system is intended to align individual faculty contribution with institutional mission, department mission, accreditation requirements, student support and academic quality. Faculty performance is reviewed through self-reporting, documentary evidence, departmental verification and review by competent authority.

Performance Dimension	Indicative Parameters	Source of Evidence	Review / Use
Teaching and Curriculum Delivery	Course allocation, lecture/lab delivery, syllabus coverage, lesson plan, course file, LMS/ICT use, student feedback and corrective action.	Course files, attendance, lesson plans, feedback analysis, HoD review.	Teaching quality review and corrective planning.
Outcome-Based Education	CO-PO mapping, assessment planning, internal question paper quality, attainment analysis, gap identification and action taken.	Course articulation matrices, attainment sheets, minutes, assessment records.	OBE compliance and academic improvement.
Student Support and Mentoring	Mentor meetings, slow learner support, advanced learner guidance, parent interaction, higher study/placement/project guidance.	Mentoring records, remedial attendance, student progress records.	Student progression and support quality.
Research and Publications	Journal/conference papers, patents, book chapters, research guidance, project proposals and research collaboration.	ERP profile/publication module, publication copies, approval records.	Research contribution and faculty development.
Sponsored Project / Consultancy / Industry Linkage	Funded projects, consultancy, industry problem solving, expert interaction and laboratory strengthening.	Project sanction records, MoUs, consultancy documents, event reports.	Industry relevance and institutional contribution.
Innovation and Entrepreneurship	Idea Lab/IIC/IIPC activity, start-up mentoring, prototype guidance, competitions, hackathons and workshops.	Event reports, attendance, photographs, project lists.	Innovation culture and student exposure.
Administrative Responsibility	Committee membership, examination duty, NBA/NAAC work, departmental coordination, placement coordination, lab-in-charge duties.	Office orders, committee minutes, ERP roles and responsibilities.	Workload recognition and governance support.
Professional Development	FDP/STTP/workshops, certification, MOOCs, industrial training, technical skill enhancement.	Certificates, FDP reports, attendance and certificates.	Faculty skill renewal and academic relevance.
Community and Outreach	Social outreach, awareness programmes, technical support to society, NSS/UBA/social internship supervision where applicable.	Activity reports, photographs, beneficiary records.	Societal contribution and professional responsibility.

A. FPADS Process Flow

Step	Activity	Responsible Person	Unit /	Output
1	Faculty submits self-appraisal with evidence for teaching, research, mentoring, student support, administrative work and development activities.	Faculty member		Self-appraisal form and supporting documents.
2	Department verifies course files, feedback, mentoring records, result/attainment data and assigned responsibilities.	HoD / Departmental review team		Verified departmental remarks.
3	Research, publications, FDPs, projects, patents, consultancy and professional activities are checked with documentary proof.	HoD / R&D / IQAC / Office as applicable		Evidence-based appraisal score/remarks.
4	Institutional authority reviews contribution, compliance, student support, professional conduct and future development needs.	Principal / Management / Competent authority		Final review and development guidance.
5	Corrective and developmental actions are communicated through departmental meetings, FDP nomination, workload planning and responsibility allocation.	HoD / Principal		Action plan for faculty improvement and institutional needs.

B. Effectiveness of FPADS

- Improves accountability in teaching, mentoring, course file maintenance and academic record keeping.
- Links faculty performance with student feedback, result review, attainment analysis and corrective actions.
- Encourages faculty participation in FDPs, workshops, research, publications, sponsored projects and industry-linked activities.
- Supports transparent assignment of academic, laboratory, accreditation, placement and administrative responsibilities.
- Creates audit-ready records through ERP-based profiles, publications, roles and responsibilities, attendance and leave modules.
- Helps identify individual faculty development needs and plan suitable training, mentoring or role allocation.

C. Documentary Evidence for 9.13

- Faculty appraisal formats and filled appraisal samples for assessment years.

- ERP faculty profile and publication records.
- Faculty attendance/leave records, workload records and role-responsibility records.
- Course files, student feedback analysis, corrective action records and attainment sheets.
- FDP/workshop certificates, research publications, project sanction documents and consultancy records.
- Committee office orders, meeting minutes, NBA/NAAC responsibility orders and departmental review minutes.

9.14. Outreach Activities (05)

(Provide details of outreach activities such as community service, Unnat Bharat Abhiyan, social internship and society connect activities undertaken by the students and their achievements.)

The institute promotes outreach, society connect and community-oriented learning through student mentoring, human values education, environmental awareness, professional society activities, student clubs, technical awareness programmes, innovation events, social responsibility-oriented projects and campus-level activities. The ECE department can present outreach activities through community service, school/college awareness, technical demonstrations, sustainability-linked events, digital literacy, safety awareness, health/assistive technology demonstrations, and student participation under institutional cells such as NSS, IIC, IIPC, Idea Lab and departmental clubs, wherever applicable.

Outreach Category	Illustrative Activities / Existing Linkage	Students' Role	Evidence / Achievement Record
Community Service and Society Connect	Awareness programmes, technical demonstrations, local problem identification, social responsibility activities and student-led support programmes.	Participation, volunteering, reporting, presentation, prototype demonstration.	Notices, attendance, photographs, reports, beneficiary details.
Unnat Bharat Abhiyan / Rural Connect	Rural/community problem identification, technology awareness and sustainable solution orientation, if mapped through institute-level UBA/NSS records.	Field survey, data collection, awareness, simple technical solution support.	UBA/NSS records to be attached where available.
Social Internship	Activities aligned with social responsibility, environment, digital support, public awareness and local community engagement.	Internship participation, report writing, presentation and reflection.	Social internship certificates, reports and evaluation sheets.
Technical Outreach	Workshops/seminars on sensors, soft robotics, VLSI, XR, PCB/circuit design, IoT, coding and instrumentation with student participation.	Peer learning, demonstration, event coordination and technical interaction.	Event reports, photographs, attendance, student certificates.
Sustainability and SDG Outreach	SDG 2K26 Ideathon & Expo, environmental awareness, responsible resource use, reuse/recycle and green technology project themes.	Idea presentation, poster/model display, project pitching and team participation.	SDG event documents, idea lists, reports and photos.
Professional and Career Outreach	Placement readiness, higher study guidance, GATE support, professional communication and mentoring for juniors.	Senior-junior mentoring, peer guidance, group discussion practice and interview preparation.	Mentoring records, training attendance, placement activity records.

A. Department-Level Implementation Plan for Outreach

Phase	Activity	Timeline	Responsibility	Output
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Planning	Prepare annual outreach calendar aligned with NSS/UBA/IIC/IIPC/departamental activities and SDG themes.	Beginning of academic year	HoD, faculty coordinators, student coordinators	Approved outreach calendar.
Student Orientation	Orient students on community service, professional ethics, field conduct, safety and documentation.	Before each activity	Faculty coordinator / mentor	Briefing record and participant list.
Execution	Conduct activity with student participation, faculty supervision and evidence capture.	As per calendar	Faculty and student coordinators	Activity completion and field record.
Documentation	Prepare report with objective, date, venue, beneficiaries, participant list, photos and outcomes.	Within one week after event	Student team and faculty coordinator	Audit-ready event report.
Review	Discuss outcomes in departmental meeting and map suitable activities to PO6, PO7, PO8, PO9 and PO11.	Post-event review	Departmental committee	Action taken / improvement notes.

B. Mapping of Outreach Activities with POs / Wks

Activity Type	Relevant PO / WK Linkage	Rationale
Community service / social internship	PO6, PO7, PO8, PO9, PO11; WK7, WK9	Develops societal awareness, ethics, teamwork, communication and lifelong learning.
Technical awareness / demonstration	PO1, PO3, PO5, PO9; WK3, WK4, WK6	Applies engineering knowledge and tools to explain or demonstrate practical solutions.
Sustainability / SDG activity	PO3, PO6, PO10, PO11; WK5, WK7	Connects engineering design with resource use, environment, society and planning.
Senior-junior mentoring	PO8, PO9, PO11; WK9	Promotes peer learning, communication, ethical support and academic confidence.
Innovation/entrepreneurship outreach	PO3, PO5, PO10, PO11; WK8	Supports prototype thinking, project management, tool use and technology awareness.

C. Evidence Folder for 9.14

- Annual outreach calendar and activity approval notices.
- Event reports with date, venue, objective, beneficiaries, participant list and photographs.
- NSS/UBA/social internship records, if available at institute level.
- Student certificates, appreciation letters, competition results or beneficiary feedback.
- PO/WK mapping sheet for selected outreach activities.
- Minutes of departmental review meetings showing follow-up or improvement plan.

Annexure I: Knowledge and Attitude Profile (WK)

- WK1:** A systematic, theory-based understanding of the natural sciences applicable to the discipline and awareness of relevant social sciences.
- WK2:** Conceptually-based mathematics, numerical analysis, data analysis, statistics and formal aspects of computer and information science to support detailed analysis and modelling applicable to the discipline.
- WK3:** A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline.
- WK4:** Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline.
- WK5:** Knowledge, including efficient resource use, environmental impacts, whole-life cost, re-use of resources, net zero carbon, and similar concepts, that supports engineering design and operations in a practice area.
- WK6:** Knowledge of engineering practice (technology) in the practice areas in the engineering discipline.
- WK7:** Knowledge of the role of engineering in society and identified issues in engineering practice in the discipline, such as the professional responsibility of an engineer to public safety and sustainable development.
- WK8:** Engagement with selected knowledge in the current research literature of the discipline, awareness of the power of critical thinking and creative approaches to evaluate emerging issues.
- WK9:** Ethics, inclusive behavior and conduct. Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes.

Annexure-II: Program Outcomes (POs)

- PO1: Engineering Knowledge:** Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.
- PO2: Problem Analysis:** Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)
- PO3: Design/Development of Solutions:** Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)
- PO4: Conduct Investigations of Complex Problems:** Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).
- PO5: Engineering Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)
- PO6: The Engineer and The World:** Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).
- PO7: Ethics:** Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)
- PO8: Individual and Collaborative Team work:** Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.
- PO9: Communication:** Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences
- PO10: Project Management and Finance:** Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.
- PO11: Life-Long Learning:** Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

Program Specific Outcomes (PSOs) up to 2-3.

Declaration

The head of the institution needs to make a declaration as per the format given below:

I undertake that, the institution is well aware about the provisions in the NBA's accreditation manual concerned for this application, rules, regulations, notifications and NBA expert visit guidelines in force as on date and the institute shall fully abide by them.

It is submitted that information provided in this Self-Assessment Report is factually correct. I understand and agree that an appropriate disciplinary action against the Institute will be initiated by the NBA in case any false statement/information is observed during pre-visit, visit, post visit and subsequent to grant of accreditation.

Date:

Signature & Name

Place:

Head of the Institution with seal

Annexure-III:



Dr. B. C. ROY ENGINEERING COLLEGE, DURGAPUR

(Approved by AICTE & Affiliated to MAKAUT, WB)

CAMPUS : JEMUA ROAD, FULJHORE, DURGAPUR-713206 (WB), INDIA

☎ (0343) 250-1353/4106/4121/4245, 6297128554, Fax (0343) 250-4059

E-mail : info@bcrec.ac.in • Website : www.bcrec.ac.in

To
Dr. Pijush Topdar
Associate Professor & Head,
Department of Civil Engineering
NIT-Durgapur

Date:18/11/2024

Respected Sir,

Warm Greetings from Dr. B. C. Roy Engineering College, Durgapur!!!

We would like to extend our cordial invitation to you for being an external Academic Auditor to conduct the Academic Audit for Academic Year 2023-24 of the Department of Civil Engineering of Dr. B. C. Roy Engineering College.

In this regard, I would like to mention that as per the NAAC mandate external academic audit should be conducted for submission of Quality Assurance Report. The Internal Quality Assurance Cell (IQAC) of Dr. B. C. Roy Engineering College has already completed the Internal Academic Audit for the last academic year 2023-24.

We would be grateful to you if you could confirm your availability as an external auditor on **22nd of November, 2024** at the 2nd half.

Request your favourable response and kind confirmation.

Looking forward to nurturing our valued association to greater heights.

With warm regards,

Sanjay Sengupta
18/11/2024

Dr. Sanjay Sengupta
Head of the Department
Dr. B. C. Roy Engineering College,
Durgapur

H.O.D
CIVIL ENGG. DEPT.
Dr. B. C. ROY ENGINEERING COLLEGE,
DURGAPUR





sanjay sengupta <sanjay.sengupta@bcrec.ac.in>

Invitation Letter to act as Academic Auditor for Dept. of Civil Engineering, Dr. B.C. Roy Engg. College

3 messages

sanjay sengupta <sanjay.sengupta@bcrec.ac.in>

Mon, Nov 18, 2024 at 8:32 PM

To: pijush.topdar@ce.nitdgp.ac.in

Cc: Arijit Banerji <arijit.banerji@bcrec.ac.in>, Soumyadip Das <soumyadip.das@bcrec.ac.in>, Shovan Roy <shovan.roy@bcrec.ac.in>, Sayantan Dutta <sayantan.dutta@bcrec.ac.in>, sanjay sengupta <sanjay.sengupta@bcrec.ac.in>

Respected Sir,

As discussed with you, please find attached the invitation letter to act as an external auditor for the Department of Civil Engineering, Dr. B. C. Roy Engineering College. The date of Audit is 22nd November in the 2nd half. I am attaching here the filled up academic audit format for your reference.

Kindly send a note of acceptance by replying to this email.

Regards,
Sanjay Sengupta
Head of the Department
Department of Civil Engineering
Dr. B.C. Roy Engineering College
Durgapur

2 attachments**Academic Audit Invitation.pdf**

251K

**12.09.2024_COMPILED_BCREC-Department-Academic-Audit-format_2023-2024.docx**

139K

Dr. Pijush Topdar <ptopdar.ce@nitdgp.ac.in>

Mon, Nov 18, 2024 at 9:04 PM

To: sanjay sengupta <sanjay.sengupta@bcrec.ac.in>

Dear Prof. Sengupta,

It is to acknowledge your email. Thanks for the invitation. I hope to be available for the job pending the approval from my higher authorities.

Best regards,
Dr. Pijush Topdar

[Quoted text hidden]

sanjay sengupta <sanjay.sengupta@bcrec.ac.in>

Mon, Nov 18, 2024 at 9:13 PM

To: Shovan Roy <shovan.roy@bcrec.ac.in>, "MD. HAMJALA ALAM" <mhamjala.alam@bcrec.ac.in>, Arijit Banerji <arijit.banerji@bcrec.ac.in>, Chanchal Das <chanchal.das@bcrec.ac.in>, Amit Kotal <amit.kotal@bcrec.ac.in>, Pranoy Roy <pranoy.roy@bcrec.ac.in>, Anupam Biswas <anupam.biswas@bcrec.ac.in>, Sayantan Dutta <sayantan.dutta@bcrec.ac.in>, Soumyadip Das <soumyadip.das@bcrec.ac.in>, Koyndrik Bhattacharjee <koyndrik.bhattacharjee@bcrec.ac.in>, Sanjay Sengupta <sanjay.sengupta@bcrec.ac.in>, ajiesh bhattacharjee <ajitesh.bhattacharjee@bcrec.ac.in>, Adityaprasad Roy <adityaprasad.roy@bcrec.ac.in>, Anindita Sengupta <anindita.sengupta@bcrec.ac.in>, surajit sen <surajit.sen@bcrec.ac.in>, Barnali Das <barnali.das@bcrec.ac.in>, debashish paramanik <debashish.paramanik@bcrec.ac.in>

Dear All,

Please find the trailing mail. On coming Friday i.e 22nd November (2nd half) external academic audit will be conducted. I request all to keep all the relevant documents ready for the audit.

All are requested to be present on the 2nd half of Friday during the external audit.

Dr. B. C. ROY ENGINEERING COLLEGE, DURGAPUR

AN AUTONOMOUS INSTITUTION

EXTERNAL ACADEMIC AND ADMINISTRATIVE AUDIT

ACADEMIC YEAR: 2023-2024

Name, Designation of Academic Audit Experts:

Date of the Audit: 22-11-2024

Dr. Pijush Topdar
Associate Professor & Head
Department of Civil Engineering
NIT-Durgapur

Comments of the Auditors:

- Detailed discussions were held between the auditor, faculty members, technical assistants and office personnel during the audit. Sample files related to different activities were also presented and gone through by the auditor. Based on all the above, the following observations are made.
- Dr. B.C. Roy College of Engineering has recently been granted autonomy from AY 2024-25 onwards. Accordingly, the department of Civil Engg. has geared up for preparing new B.Tech. Curriculum and syllabus for B.Tech. second year onwards, students.
 - Faculty strength is good. Out of eleven faculty members four are doctorates. Another three are expected to submit final PhD thesis shortly while the rest are either enrolled or in the process of enrolling for PhD. As a whole, the academic profile of the faculty members of the department is healthy.
 - Publication of faculty members in conference & book chapters is good. However, more effort is needed to increase publications in reputed journals.
 - Each faculty member is found to be adequately involved in both academic & administrative responsibilities of the institute.
 - Many faculty development programmes (FDP) are attended by faculty members. However, it will be more helpful & effective if they attend only such FDPs which are aligned to their area of specialisation/research and relevant inter-disciplinary themes.
 - Technical Assistants (TA) are ~~an~~ important for imparting technical education to students as well as helping in research of faculty members. TAs of the department are found to be adequately qualified and are involved in both technical and relevant administrative activities.

(Contd.)

Pijush Topdar 22/11/2024
Signature of the External Auditor with date

Dr. Pijush Topdar
Associate Professor & Head
Department of Civil Engineering
NIT-Durgapur

Dr. PIJUSH TOPDAR
Associate Professor & Head
Department of Civil Engineering
National Institute of Technology Durgapur
Durgapur - 713209, W.B., INDIA



Sanjay Sengupta 22/11/2024
Dr. Sanjay Sengupta
Professor & Head
Dept. of Civil Engineering
Dr. B. C. Roy Engg. College
Durgapur

Sanjay Sengupta 22/11/2024
Signature of the IQAC Coordinator with
Date and Stamp:



H.O.D.
CIVIL ENGG. DEPT.
Dr. B. C. ROY ENGINEERING COLLEGE
DURGAPUR

Dr. B. C. ROY ENGINEERING COLLEGE, DURGAPUR
AN AUTONOMOUS INSTITUTION
EXTERNAL ACADEMIC AND ADMINISTRATIVE AUDIT
ACADEMIC YEAR: 2023-2024

Name, Designation of Academic Audit Experts:

Date of the Audit: 22-11-2024

Dr. Pijush Topdar
Associate Professor & Head
Department of Civil Engineering
NIT-Durgapur

Comments of the Auditors: (Contd.)

- Due emphasis is given by the department on maintaining Course Files for each individual lecture/laboratory subjects.
- Department is found to have been maintaining the record of each mentored student.
- Department gives due effort in sending students for training/internship. Each year NHA I offers a number of paid internships to the students of this department (as per an existing agreement/understanding). The department follows a transparent screening process to select the students for this purpose.
- The department gives due effort in attracting testing/consultancy jobs from nearby industry.
- Utilisation of fund is impressive (around 90%).
- It is found that a few of the faculty members are continuing in the AGP 6000 even after five years of service. Similarly, there has been no promotion of TAs after 1/1/2019. This aspect may be looked at.
- Support to the faculty members for attending conference etc. may be enhanced further.
- Very importantly, the enrolment in First year B.Tech in Civil Engg. has been low for 2023-24 & 2024-25 ~~batch~~ entry batch. This aspect needs to be looked at from a holistic point of view. Accordingly, all relevant and possible measures may be explored to improve the admission scenario.

Pijush Topdar 22/11/2024
Signature of the External Auditor with date

Dr. Pijush Topdar
Associate Professor & Head
Department of Civil Engineering
NIT-Durgapur

Dr. PIJUSH TOPDAR
Associate Professor & Head
Department of Civil Engineering
National Institute of Technology Durgapur
Durgapur - 713209, W.B., INDIA



Sanjay Sengupta 22/11/2024
Signature of the IQAC Coordinator with Date and Stamp:

Sanjay Sengupta 22/11/2024
Dr. Sanjay Sengupta
Professor & Head
Dept. of Civil Engineering
Dr. B. C. Roy Engg. College
Durgapur



H.O.D
CIVIL ENGG. DEPT.
Dr. B. C. ROY ENGINEERING COLLEGE
DURGAPUR

Members of Civil Engineering Department present during Academic Audit and their Signature with date:

1. Dr. Sanjay Sengupta, Professor & HOD *Sanjay Sengupta 22/11/2024*
2. Dr. Arijit Banerji, Asst. Professor *AB 22/11/2024*
3. Dr. Shovan Roy, Asst. Professor *Shovan Roy 22/11/2024*
4. Dr. Sayantan Dutta, Asst. Professor *Sayantan Dutta 22/11/24*
5. Md. Hamjala Alam, Asst. Professor *MD Hamjala Alam 22/11/2024*
6. Mr. Chanchal Das, Asst. Professor *Chanchal Das 22/11/2024*
7. Mr. Amit Kotal, Asst. Professor *Amit Kotal 22/11/24*
8. Mr. Pranoy Roy, Asst. Professor *Pranoy Roy 22/11/24*
9. Mr. Anupam Kr. Biswas, Das, Asst. Professor *AK Biswas 22/11/24*
10. Mr. Soumyadip Das, Asst. Professor *Soumyadip Das 22/11/24*
11. Mr. Koyndrik Bhattacharjee, Asst. Professor *Koyndrik 22/11/2024*
12. Mr. Surajit Sen, STA *Surajit Sen 22/11/24*
13. Mr. Ajitesh Bhattacharjee, STA *Ajitesh Bhattacharjee 22/11/24*
14. Mr. Aditya Prasad Roy, TA *Aditya 22/11/2024*
15. Ms. Anindita Sengupta, TA *Anindita Sengupta 22/11/24*
16. Ms. Barnali Das, TA *B. Das. 22/11/24*



93	Prosenjit Majhi	Asst. Professor	COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)
94	Swadhin Kumar Mondal	Asst. Professor	
95	Dr. Gour Sundar Mitra Thakur	Associate Professor & HOD	
96	Suman Dasgupta	Asst. Professor	
97	Biswajit Saha	Asst. Professor	
98	Arnab Banerjee	Asst. Professor	COMPUTER SCIENCE AND ENGINEERING (DATA SCIENCE)
99	Atin Mukherjee	Asst. Professor	
100	Dr. Sovan Bhattacharya	Asst. Professor	
101	Dr. Saibal Majumdar	Asst. Professor	
102	Dr. Chandan Bandhyopadhyay	Associate Professor & HOD	
103	Dr. Subrata Samanta	Associate Professor	MECHANICAL ENGINEERING
104	Dr. Arijit Banerjee	Associate Professor	
105	Dr. Manoj Kundu	Asst. Professor	
106	Dr. Rupali	Asst. Professor	
107	Dr. Subhas Chandra Moi	Asst. Professor	
108	Pabitra Kr. Mandal	Asst. Professor	
109	Suman Karmakar	Asst. Professor	
110	Subhajit Bhattacharya	Asst. Professor	
111	Chitta Sahana	Asst. Professor	
112	Siddhartha Bhowmick	Asst. Professor	
113	Dr. Rajeev Ranjan	Asst. Professor	
114	Arka Banerjee	Asst. Professor	
115	Rakesh Biswas	Asst. Professor	
116	Deepak Kumar	Asst. Professor	
117	Koushik Chatterjee	Asst. Professor	CIVIL ENGINEERING
118	Dr. Sanjay Sengupta	Professor & HOD	
119	Dr. Arijit Kumar Banerji	Asst. Professor	
120	Md. Hamjala Alam	Asst. Professor	
121	Dr. Shovan Roy	Asst. Professor	
122	Chanchal Das	Asst. Professor	
123	Amit Kotal	Asst. Professor	
124	Anupam Kumar Biswas	Asst. Professor	
125	Pranoy Roy	Asst. Professor	
126	Dr. Sayantan Dutta	Asst. Professor	
127	Soumyadip Das	Asst. Professor	MASTERS OF BUSINESS ADMINISTRATION
128	Koyndrik Bhattacharya	Asstt. Professor	
129	Dr. Indrani Sengupta	Associate Professor	
130	Dr. Bhaswati Roy	Asst. Professor	
131	Dr. Arunava Mukherjee	Professor	
132	Dr. Sandip Mukherjee	Asst. Professor	
133	Ms. Krishna Roy	Asst. Professor	
134	Niloy Kumar Bhattacharjee	Asst., Professor	
135	Ms. Sayanti Samanta	Asst. Professor	
136	Subhasis Dutta	Asst. Professor	
137	Dr. Bijoy Gupta	Asst. Professor	
138	Dr. Pabitra Kumar Dey	Associate Professor & HOD	
139	Pradipta Pal	Asst. Professor	



DR. B.C ROY ENGINEERING COLLEGE

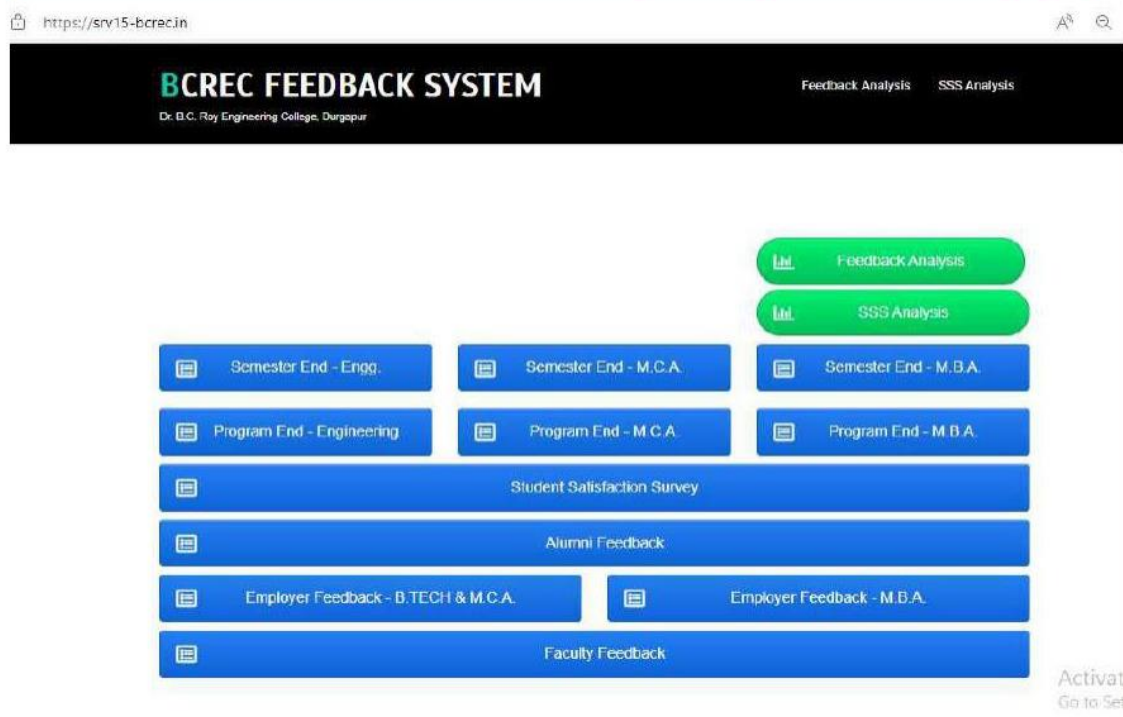
FEEDBACK COLLECTION SYSTEM

Feedback Collection is available in the website:

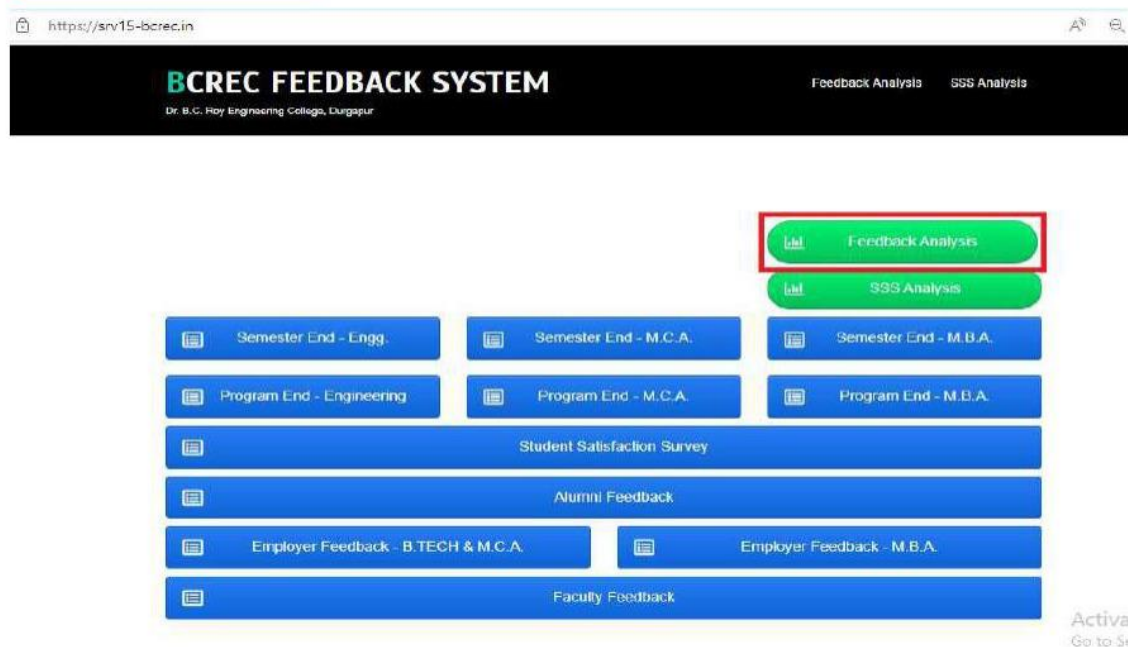
<https://bcrec.ac.in>



Feedback Collection is available for: Student, Faculty, Alumni and Employer



ANALYSIS OF FEEDBACK IS AVAIBLE THROUGH THE BUTTON PROVIDED IN THE FEEDBACK PAGE



SEMESTER END STUDENT FEEDBACK COLLECTION FOR ENGINEERING, MCA and MBA SEPERATELY



FEEDBACK FORM SEMESTER END STUDENT (ENGINEERING)

<https://srv15-bcrec.in/sem-end-survey-engineering/>

BCREC FEEDBACK SYSTEM

Dr. B.G. Roy Engineering College, Durgapur

Feedback Analysis

SSS Analysis

SEM-END SURVEY (ENGINEERING)

Step 1 of 2

Name *

Email *

University Roll No. *

Department *

- Please select -

Year *

- Please select -

Feedback on Teaching Learning

Did you acquire any new technical or scientific knowledge?

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Not Sure

FEEDBACK FORM SEMESTER END STUDENT (ENGINEERING) contd...

<https://srv15-bcrec.in/sem-end-survey-engineering/>

Feedback on Teaching Learning

Did you acquire any new technical or scientific knowledge?

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Not Sure

Are you able to apply the knowledge and skills you gained in real life problem solving?

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Not Sure

Are the subjects you studied relevant to the current industry need?

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Not Sure

Availability and adequacy of modern tools in the laboratories?

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Not Sure

Are the experiments/practical prescribed in the subjects/courses helpful for your future?

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Not Sure

How is the mentorship and counselling process in the department?

☐ Strongly Agree

☐ Agree

BCREC FEEDBACK SYSTEM

Dr. B.C. Roy Engineering College, Durgapur

Feedback Analysis

S3S Analysis

SEM-END SURVEY (ENGINEERING)

Step 2 of 2

Feedback on Facilities Available

Class room facility *

- ☐ Excellent
☐ Very Good
☐ Good
☐ Poor

Laboratory facility *

- ☐ Excellent
☐ Very Good
☐ Good
☐ Poor

Library facility *

- ☐ Excellent
☐ Very Good
☐ Good
☐ Poor

Hostel facility (if applicable)

- ☐ Excellent
☐ Very Good

Act
Go 1

https://srv15-bcrec.in/sem-end-survey-engineering/

- ☐ Very Good
☐ Good
☐ Poor

Sports facility *

- ☐ Excellent
☐ Very Good
☐ Good
☐ Poor

Water facility *

- ☐ Excellent
☐ Very Good
☐ Good
☐ Poor

Cleanliness and Hygiene *

- ☐ Excellent
☐ Very Good
☐ Good
☐ Poor

Canteen facility *

- ☐ Excellent
☐ Very Good
☐ Good
☐ Poor

Internet facility

- ☐ Excellent
☐ Very Good
☐ Good
☐ Poor

Captcha *

10 * 7 =

Submit

PROGRAM END STUDENT FEEDBACK COLLECTION FOR ENGINEERING, MCA and MBA SEPERATELY

<https://srv15-bcrec.in>

BCREC FEEDBACK SYSTEM
Dr. B.C. Roy Engineering College, Durgapur

Feedback AnalysisSSS Analysis

Feedback Analysis

SSS Analysis

Semester End - Engg.

Semester End - M.C.A.

Semester End - M.B.A.

Program End - Engineering

Program End - M.C.A.

Program End - M.B.A.

Student Satisfaction Survey

Alumni Feedback

Employer Feedback - B.TECH & M.C.A.

Employer Feedback - M.B.A.

Faculty Feedback

FEEDBACK FORM PROGRAM END STUDENT (ENGINEERING)

BCREC FEEDBACK SYSTEM
Dr. B.C. Roy Engineering College, Durgapur

Feedback AnalysisSSS Analysis

PROGRAM END SURVEY – ENGINEERING

Name *

University Roll No. *

Email *

Department
IT

Have you developed the ability to apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialisation for the solution of complex engineering problems? *

Strongly Agree

Agree

Disagree

Strongly disagree

Are you able to identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences? *

Strongly Agree

Agree

Disagree

Strongly disagree

Did you attain the ability of designing solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations? *

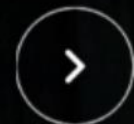
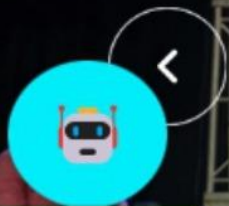
Strongly Agree

Highlights

NOTICE dated 24.04.2025 regarding suspension of classes on 25.04.2025 (Seco



Celebrating
25
YEARS OF
EXCELLENCE



DR. B.C. ROY SOCIETY

ENGINEERING

Feedback



Student Login - B.TECH, MCA, MBA



Department Login - B.TECH, MCA, MBA



Faculty Login - B.TECH, MCA, MBA

Analysis

MEMBERS OF GOVERNING BODY

Sr. No.	Proposed Names	Present Affiliations
1	Dr. Satyajit Bose	Chairperson, Dr. B.C. Roy Society
2	Shri Tarun Bhattacharya	General Secretary, Dr. B. C. Roy Society
3	Shri Jernail Singh	Treasurer, Dr. B.C. Roy Society
4	Prof. Saikat Maitra	Chief Advisor, Dr. B.C. Roy Society
5	Mrs. Mita Mitra	Vice-President, Dr. B.C. Roy Society
6	Prof. Sanjay Sengupta	HOD, CE
7	Prof. Susanta Dutta	HOD, EE
8	Mr B. P Singh	Director In-charge, DSP/ISP SAIL - Educationalist /Industrialist
9	Prof. N.K. Chakrabarti	VC-National University of Judicial Sciences, Kolkata -UGC Nominee
10	State Government Nominee	Director of Technical Education or her nominee
11	University Nominee	Prof. Bijan Sarkar, Director, School of Management, Jadavpur University
12	Prof. (Dr) Sanjay S Pawar	Principal, BCREC.
13	Prof. (Dr.) Swapan Kr. Mondal	Professor, Kalyani Govt. Engg. College Representing Higher Education Dept., Govt. of W.B
14	Prof. (Dr.) Keshab Bhattacharya	Educationalist
15	Prof. (Dr.) Arvind Choubey	Director, NIT Durgapur, Educationalist



Dr. B. C. ROY ENGINEERING COLLEGE, DURGAPUR

(Approved by AICTE & Affiliated to MAKAUT, WB)

CAMPUS : JEMUA ROAD, FULJHORE, DURGAPUR-713206 (W.B.), INDIA

☎ : (0343) 250-1353/4106/4121/4245, 8800443456, Fax : (0343) 250-4059

E-mail : info@bcrec.ac.in • Website : www.bcrec.ac.in

Minutes of the 45th Meeting of the Board of Governors held on 21st January, 2023 at 11.00 hours at the College Board Room

The 45th meeting of the Board of Governors of Dr. B. C. Roy Engineering College, Durgapur, was held on 21st January, 2023 at 11.00 AM at the Institute Board Room.

The meeting was presided over by Prof. (Dr.) Binay K. Dutta, Professor, Chairman, Board of Governors, Dr. B. C. Roy Engineering College, Durgapur.

Members present:

1	Prof. (Dr.) Binay K. Dutta, Former Visiting Professor, School of Environmental Science & Engineering, IIT-Kharagpur	Chairman
2	Prof. (Dr.) Arup Mukherjee, Professor, Department of Chemical Technology, University of Calcutta, representing MAKAUT.	Member
3	Dr. Dhananjoy Saha, Dy. Director of Technical Education, Directorate of Technical Education, Govt. of W.B. representing Director, DTE	Member
4	Prof. (Dr.) Anupam Basu, Director, NIT, Durgapur	Member
5	Prof. (Dr.) Arup Sinha, Vice President & Utility Head, Virtuoso Consulting & Technology Ltd.	Member
6	Dr. Satyajit Bose, Chairman and Chief Cardiologist, The Mission Hospital & President, BCREC Society	Member
7	Shri T. Bhattacharya, General Secretary, BCREC Society	Member
8	Shri J. Singh, Treasurer, BCREC Society	Member
9	Smt. Mita Mitra, Vice-President, BCREC Society	Member
10	Shri R. Roychowdhury, Asst. Secretary, BCREC Society	Member
11	Prof.(Dr.) Narendra Nath Pathak, Dean (SW&A) & HoD (ECE), Faculty Representative, BCREC	Member
12	Shri Atanu Maity, Head (Training and Placement), Kolkata	Member
13	Dr. Alok Kahali, Head, HR BCREC	Invitee Member
14	Prof.(Dr.) Sanjay S. Pawar, Principal	Member-Secretary

Members Absent (due to pre-occupation): Following members regretted attending the meeting due to the personal/profession reasons

1	Prof. (Dr.) Keshab Bhattacharya, Educationist	Member
2	Dr. Aloknath De, Corporate Vice-President, & CTO, Samsung Electronics, Industry Representative	Member
3	Director, CSIR-CMERI	Member
4	Prof K. M. Hossain, Vice- Principal, Faculty Representative, BCREC	Member

At the outset, Prof. (Dr.) Binay K. Dutta, Chairman of the Board of Governors, Dr. B. C. Roy Engineering College, Durgapur welcomed all the members present in the house and requested all the members to give brief self-introduction.

Thereafter the Chairman requested Prof. (Dr.) Sanjay S. Pawar, Principal and Member Secretary, to proceed with the Agenda-wise discussion.

Agenda 45.01: - Confirmation of the minutes of the 44th BoG meeting held on 23rd July, 2022

Minutes of the 44th BoG meeting placed by Prof. (Dr.) Sanjay S. Pawar, Principal and Member-Secretary, were unanimously accepted and confirmed.

Agenda 45.02: - Action Taken Report (ATR) by the Principal (Member Secretary) as per decisions of the 44th BOG Meeting

As per the suggestions in the 44th Board meeting, the action taken report was presented and was accepted in the meeting with minor corrections.

Agenda 45.03: - Report of the Principal on progress of the Institute including Status of NBA & NAAC Accreditation, Semester Examinations and R&D endeavors (Interim period)

Salient activities and achievements of the Institute during the period from July, 2022 to January, 2023 were presented to the Board Members

Discussion: - Based on the report presented by the Principal, following were suggested and discussed.

Discussion: - Board was informed about the measures taken by the Institute to prevent Ragging. There was no such case reported, though some of them were not related to Ragging but interpersonal rivalry. These had been taken care of by the Disciplinary action committee.

Agenda 45.05: Report and Review of Training Placement initiatives in the interim period by TPO (Kolkata)

Discussion: - The interim report of the placement activities was presented by TPO to the Board Members. The placement scenario was promising, but the expert suggested hard time ahead due to slow down and out students should be ready to face the challenges.

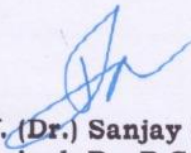
Agenda 45.06: Miscellaneous matters with the permission of the Chair

After completion of presentation of the Principal, esteemed Members were requested by the Chairman to put forward their suggestions for overall improvement of the Institute.

The meeting ended with a vote of thanks to the Chair and the Members present.



**Prof. (Dr.) Binay K. Dutta,
Chairman of the Board of Governors of
Dr. B.C. Roy Engineering College, Durgapur
& Former Visiting Professor,
Dr. B.C. Roy Engg. School of
Env. Science & Engineering,
IIT- Kharagpur**



**Prof. (Dr.) Sanjay S. Pawar
Principal, Dr. B.C. Roy Engg.
College, Durgapur &
Member-Secretary of the
Board of Governors,
Dr. B.C. Roy Engg. College,
Durgapur**

ACADEMIC COUNCIL

Sr. No.	Name	Present Affiliation and Experience
1	Prof (Dr) Sanjay S Pawar	Principal (Chairman), BCREC
2	Dr. Mrinmoy Chakraborty	HOD ECE, BCREC
3	Dr. Suman Bhattacharya	HOD IT
4	Dr. Arindam Ghosh	HOD CSE
5	Dr. Sanjay Sengupta	HOD Civil
6	Dr. Gour Sundar Mitra Thakur	HOD AIML
7	Dr. Raj Kumar Samanta	HOD CSD
8	Dr. Chandan Bandyopadhyay	HoD Data Science
9	Dr. Susanta Dutta	HOD Electrical
10	Dr. Gour Sundar Mitra Thakur	HoD Cyber Security
11	Dr. Chandan Chattaraj	HoD Mechanical
12	Dr. Saurav Ranjan Das	HoD BSH
13	Dr. Somroop Siddhanta	HOD MBA
14	Dr. Pabitra Kumar Dey	HOD MCA
15	Prof. K.M Hossain	Member, BCREC
16	Prof. Arindam Mondal	Member, BCREC
17	Prof. Pradipta Pal	Member, BCREC
18	Prof. Suneeta De	Member, BCREC
19	Dr. Soumen Sen	CMERI Scientist
20	Tandra Pal	Professor, Computer Science, NIT Durgapur
21	Dr. Jaya Bandyopadhyay	Professor, Department of Biotechnology, MAKAUT - University Nomine
22	Dr. Sujit Mukherjee	Professor, Department of Management & Business Administration, MAKAUT - University Nominee
23	Nabendu Chaki	Professor, Department of Computer Science & Engineering, University of Calcutta - University Nominee
24	Prof. (Dr.) Sanjay Sengupta	Faculty, BCREC
	Prof. (Dr.) Susanta Dutta	Faculty, BCREC

DR. B. C. ROY ENGINEERING COLLEGE, DURGAPUR

No. BCR/PR/23.1/11

Date: 11th August, 2023

NOTICE

It has been decided by the authorities of Dr. B. C. Roy Engineering College, Durgapur that, following **21 (Twenty-One)** number of Committees will remain functional to carry out the regular activities of the Institute in smooth manner following the guidelines of various Statutory Bodies like AICTE, MAKAUT, DTE, NAAC, NBA etc. with effect from 14.08.2023.

Committee members will be responsible/ accountable to implement the jobs entrusted on the committees. The responsibilities entrusted upon the Committees are enumerated below. The convenors /coordinators of the comites are requested to plan schedule meeting at least once in a month (may be more in case of exigency).

Name of the Committee	Name of the Members responsible/ accountable to implement the jobs entrusted with	Roles and Responsibilities of the Committees
1. Purchase Committee	➤ Dr. Sanjay S. Pawar, Principal-Chairman ➤ Dr. K. M. Hossain, Vice Principal-Member ➤ Dr. Arindam Mondal , Registrar – Member ➤ Dr. Aloke Kahali, Head (Administration) – Member ➤ Sri Ravi Sharma, Sr. Manager(F)-Member ➤ Sri U. K Sharma, Sr. Manager ,Corporate Affairs and Estate - Member ➤ Sri Bishnu Das, Stores and Maintenance Assistant -Member ➤ Mr. Indranil Sengupta, Sr. System Administrator-Member ➤ Dr. Mrinmoy Chakraborty, AP, ECE - Convenor	• This committee will review and evaluate the purchase proposal for capital and maintenance expenditure raised by the academic departments and recommend accordingly (if Departmental Budget permits). • The committee will coordinate with the academic departments to evaluate the tenders, received by the BCREC Estate Office from the vendors, based on technical and financial ground to recommend the appropriate supplier/service provider. • The Committee, if required, will act as a bridge between the departments and Maintenance office to expedite the repairing/maintenance works related to civil, mechanical, and electrical, EPABX, elevator, generator, AC, plumbing and sanitary, carpentry, etc. as raised by the HODs. • The committee will evaluate the need of thecomputers, printers, computer networking, and computer accessories as asked by thedepartments and generate the necessary indent in consultation with the System Administrator. • The committee will support the



Principal

Dr. B. C. Roy Engineering College

DURGAPUR

		Maintenance Office and regularly inspect the central facilities like Auditorium, canteen, central water tank and surroundings in order to keep infrastructures well maintained.
(2) Internal Quality Assurance Cell (IQAC)	➤ Shri Tarun Bhattacharya, General Secretary, BCREC Society-Member ➤ Dr. Sanjay S. Pawar, Principal-Chairman ➤ Dr. Sanjay Sengupta, HoD, CE- Coordinator ➤ Dr. K. M. Hossain, Vice Principal-Vice Chairman ➤ Dr. Arindam Mondal, Registrar – Member ➤ Dr. Aloke Kahali, Head (Administration) – Member ➤ Dr. N.N. Pathak, Dean(Alumni)-Member ➤ Dr. Rajdeep Ray, Dean (SW)-Member ➤ HoDs (Invited Member) (case to case basis) ➤ Dr. Pabitra Kumar Dey, Assoc. Prof., CSE - Member ➤ Smt. Anandaprova Majumder, AP, CSE – Member ➤ Dr. Jayanta Pal, Asso. Professor, BSH-Member ➤ Dr. Tribeni Prasad Banerjee, Asso. Professor, ECE –Member ➤ Dr. Ritu Rani De (Maity), AP, EE-Member ➤ Sri Saindhab Chattaraj, AP, CSE - Member ➤ Dr. Anirban Bose, AP, CSE – Member ➤ Prof. Arijit Kr. Banerji, AP, CE – Member ➤ Prof. Mou Das Mahapatra, AP, EE, & Member Alumni Association, BCREC ➤ Two Alumni Member (1. Mr. Deepraj Mondal ,2. External) ➤ Two Members from Industry	• IQAC will perform annual academic audit of the academic departments. • It will arrange teaching requirements for successful completion of academic programs of the college and supervise the same periodically. • The cell will promote research culture in the college through collaboration and corroboration among faculty. • It will encourage collaboration with other academic institutes. • IQAC will facilitate and supervise the MAR/MOOCs activities of the students. • It will recommend the Management, through Principal and Vice Principal, for encouraging students with awards, stipends, scholarships, medals and prizes and so on. • IQAC will arrange for feedback response from students, parents and other stakeholders on quality-related institutional processes. • The committee will analyse the feedback and submit a report to the Principal and Vice Principal with plans for the quality assurance. • It would assist the Vice Principal to implement and monitor quality assurance plans approved by the Principal and develop suitable mechanisms for staff motivation through awards for excellence in teaching. • In consultation with Vice Principal, it would also organize or Suggest training / seminars / workshops / technical FDPs for the overall holistic growth of education. • IQAC will support Vice Principal to arrange FDPs for educational technology (ICT), motivational talks and communication skills for the staff. • It will maintain the documentation of the various programmes / activities leading to quality improvement. • It will develop and maintain institutional databases in consultation with Registrar, head (Exam Cell), HODs for the purpose of


 Principal
 Dr. B. C. Roy Engineering College
 DURGAPUR

	➤ Prof. Snehashis Ghoshal, EE, Member ➤ Dr. Manoj Kundu, ME, Member ➤ Prof. Chanchal Das, CE, Member ➤ Prof. Sovan Bhattacharya, Asst. Prof, CSE, Member ➤ Prof. Arnab Banerjee, CSE (AIML), Member ➤ Prof. Swadhin Mondal, Assistant Professor CSE – Member ➤ Prof. Koustav Roy, AP, ECE – Member ➤ Dr. Chaity Sarkar, AP, EE - Member	
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Prof.(Dr.) Sanjay S. Pawar will act as chairman and Dr. K M Hossain, Vice Principal and Dr. Arindam Mondal, Registrar will be members of all the above **21** committees.

All HoDs, faculty / staff members are requested to extend their cooperation to the members of the newly constituted Committees for overall advancement of the college.

This supersedes the earlier Notices regarding several committees constituted on previous occasions. However, in case of exigencies, the Principal may constitute any other committee to execute the specific requirement.


 Prof.(Dr.) Sanjay S. Pawar
 Principal,
 Dr. B. C. Roy Engineering College, Durgapur

Principal
Dr. B. C. Roy Engineering College
DURGAPUR



DR. B. C. ROY ENGINEERING COLLEGE, DURGAPUR

No. BCR/PR/14/2024/54

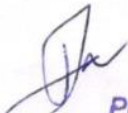
Date: 28th August, 2024

NOTICE

It has been decided by the authorities of Dr. B. C. Roy Engineering College, Durgapur that, following **04 (Four)** number of Committees have been reconstituted to carry out the regular activities of the Institute in smooth manner following the guidelines of various Statutory Bodies like AICTE, MAKAUT, DTE, NAAC, NBA etc. with effect from 28.08.2024.

Committee members will be responsible/ accountable to implement the jobs entrusted on the committees. The responsibilities entrusted upon the Committees are enumerated below. The convenors /coordinators of the comites are requested to plan schedule meeting at least once in a month (may be more in case of exigency).

Name of the Committee	Name of the Members responsible/ accountable to implement the jobs entrusted with	Roles and Responsibilities of the Committees
(01) Anti-Ragging Committee	➤ Dr. Sanjay S. Pawar, Principal, BCREC - Chairman ➤ Dr. Rajdeep Ray, Dean (SW) - Member Secretary (ARC) ➤ Prof. Saindhab Chattaraj, AP, CSE- Nodal Head, Anti-Ragging Convenor ➤ Prof. Sabbir Reza Tarafdar, AP, CSE – Jt. Convenor ➤ Dr. K. M. Hossain, Vice Principal, BCREC – Member ➤ Dr. Arindam Mondal, Registrar – Member ➤ Dr. Aloke Kahali, Head Administration – Member ➤ Dr. Mrinmoy Chakraborty, HOD, ECE – Member ➤ Dr. Raj Kumar Samanta, HOD, CSD – Member ➤ Dr. Chandan Chatteraj, HOD, ME – Member ➤ Dr. Susanta Dutta, HOD, EE – Member ➤ Dr. Sanjay Sengupta, HOD, CE – Member ➤ Dr. Arindam Ghosh, HOD, CSE – Member ➤ Dr. G. S. Mitra Thakur, HOD, AIML & Cyber Security – Member ➤ Dr. Chandan Bandyopadhyay, HOD, DS – Member	➤ To ensure compliance with the provision of UGC regulation 2009 at the institute level. ➤ To monitor and oversee the performance of the anti-ragging squad in prevention of ragging in the institution. ➤ To adopt various measures for prohibition of ragging in the surrounding areas of the Institute


Principal
Dr. B. C. Roy Engineering College
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	➤ Dr. Suman Bhattacharjee, HOD, IT – Member ➤ Dr. Pabitra Kumar Dey, HOD, MCA – Member ➤ Dr. Somroop Siddhanta, HOD, FMS – Member ➤ Dr. Sourav Ranjan Das, HOD, BS&H – Member ➤ Mr. Shouvik Chandra, Sr. Manager, PR - Member ➤ Mr. Dhrubajyoti Mukhopadhyay, Campus Administrator – Member ➤ Mr. Suwendu Biswas, Guardian Representative – Member ➤ Ms. Aabira Ray, Guardian Representative – Member ➤ Representative of SDM Office – SDM or His/ Her Representative ➤ Shri Subir Roy, (WBPS, Asst. Commissioner of Police) – Member ➤ Police Commissionerate (ASN – DGR) - Member ➤ Local P.S – Office - Incharge NTSPS, MAMC Durgapur or His/ Her Representative ➤ Mr. Subrata Sheet, Media Person, Anandabazar Patrika – Member ➤ Mr. Jayanta Biswas, NGO Person - Member	
(02) Internal Complaint Committee (ICC)	➤ Dr. Sanjay S. Pawar, Principal, BCREC – Member ➤ Pro. Dola Sinha, Associate Professor, EE - Chairperson ➤ Prof. Krishna Roy, AP, FMS- Convenor ➤ Prof. Sayanti Samanta, AP, FMS - Member ➤ Prof. Moutusi Mondal, AP, ECE- Member ➤ Prof. Debipriya Dutta, AP, ECE- Member ➤ Dr. Rupali, AP, ME - Member ➤ Ms. Barnali Das, TA, CE - Member ➤ MS. Indrakshee Sen, Psychological Counsellor – Member ➤ Ms. Oishi Sen, Student Member, CSE ➤ Ms. Shruti Thakkar, Student Member, EE ➤ Mr. Kushagra Kumar Kunnu, Student Member, CSE ➤ Mr. Jayanta Biswas, NGO Person - Member	• Committee will examine complaints of sexual harassment or sexual discrimination pertaining to the female staff members and the female students and submits its findings to the Principal for further actions. • Preventive and remedial measures to be discussed in committee meetings and to be implemented by the committee. • The committee will organize seminars/ webinars by the personnel from National Commission for Women (NCW) to create awareness on women issues and generate an environment in the campus where women feel confident about their safety.


 Principal
Dr. B. C. Roy Engineering College
 DURGAPUR

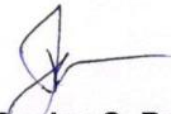


(03) Grievance Redressal Cell(Students)	➤ Dr. Sanjay S. Pawar, Principal, BCREC – Chairperson ➤ Dr. K. M. Hossain, Vice Principal, BCREC – Member ➤ Dr. Arindam Mondal, Registrar – Member ➤ Dr. Rajdeep Ray, Dean (SW) - Member ➤ Dr. Aloke Kahali, Head Administration – Member ➤ Prof. Amit Kotal, AP, CE - Member ➤ Mr. Dhrubajyoti Mukhopadhyay, Campus Administration - Convenor ➤ Prof. Sabbir Reza Tarafdar, AP, CSE - Member ➤ Prof. Prof. Biswajit Mondal, Hostel Super - Member ➤ Prof. Saindhab Chattaraj, AP, CSE - Member ➤ Prof. Sunil Kumar Chaudhary, AP, EE - Member ➤ Prof. Subhasish Pal, Incharge, Examination Cell - Member ➤ Dr. Shashi Bajaj Mukherjee, Hostel Super- Member ➤ Prof. Keka Hazra, Hostel Super - Member ➤ Mr. Santosh Kumar Pal, Dy. Campus Admn. – Member OMBUDSMAN: Prof. Keshab Bhattacharya, Professor, Electrical Engineering Department, Jadavpur University	Grievances Redressal committee receives and redresses grievances reported online or offline for the following issues: • Academic issues: pertaining to teaching learning activities, Student-teacher, student- student, student-parent, teacher-teacher relationship pertaining to harassment etc. • Internal evaluation and in assessment marking in consultation with Heads of the Academic Departments. • Complaint related to library and IT services. • Grievances related to hostel, food, water, electricity, etc. • Grievance related to transport facilities. • Grievances related to sports, cultural and selection process etc. • Grievances related to university examination in consultation with Head, Exam Cell. • Grievances related to delay in issuance of records and documents. • The committee will also redress and send the compliance report for the grievances of students reported to Govt. agencies like AICTE, National Commission for Women (NCW), National Human Rights Commission (NHRC) etc.
(04) SC/ST Committee (as notified by the AICTE)	➤ Dr. Sanjay S. Pawar, Principal, BCREC - Member ➤ Dr. Rajdeep Ray, Dean (SW) - Member ➤ Prof. Biswajit Mondal, AP, CSE- Convenor ➤ Dr. Chandan Das, AP, CSE- Member ➤ Prof. Priyanka Roy, AP, IT - Member ➤ Prof. Amit Kotal, AP, CE - Member	• The committee should take up issues regarding the betterment and welfare of SC/ST students. • To ensure provisions of an environment where all such students feel safe and secure. • To provide prompt counseling for any emotional

		emergencies arising on account of any event at the campus. • To provide the mechanism to redress the grievance of SC/ST students, if any to ensure protection and reservation as provided in the constitution of India. • To arrange for special opportunities to enhance the career growth to aware the SC/ST students regarding various scholarships program of State Govt. and UGC.
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All HoDs, faculty / staff members are advised to extend their cooperation to the members of the newly constituted Committees for overall advancement of the college.

This supersedes the earlier Notices regarding these four committees constituted on previous occasions. However, in case of exigencies, the Principal may constitute any other committee to execute the specific requirement.


Prof.(Dr.) Sanjay S. Pawar
 Principal,
 Dr. B. C. Roy Engineering College, Durgapur
 (An Autonomous Institute)

Principal
Dr. B. C. Roy Engineering College
DURGAPUR



BCR/PR/2024

 25th Nov, 2024

NOTICE

This is for information to all concerned that the Re-structuring of IQAC Cell has been made as per the resolution taken in the 01st Governing Body Meeting under autonomy dated 01st Oct, 2024 of Dr. B. C. Roy Engineering College, An Autonomous Institution. This has been reaffirmed in the 02nd Governing Body Meeting held on 23rd Nov, 2024.

Sl. No.	Name	Designation in IQAC
1.	Prof. (Dr.) Sanjay S. Pawar, Principal, BCREC	Chairperson
2.	Prof. (Dr.) K. M. Hossain, Vice-Principal, BCREC	Vice-Chairperson
3.	Prof (Dr.) Sanjay Sengupta, HOD, Civil Engineering	Coordinator
4.	Prof. (Dr.) Arindam Mondal, Registrar	Representative of Management
5.	Shri Rajesh Chatterjee, General Manager (Admn.)	Member
6.	Shri Ravi Sharma, Chief Financial Officer(CFO)	Member
7.	Dr. Jayanta Pal, Associate Prof., Basic Science & Humanities	Member
8.	Dr. Pabitra Kumar Dey, HOD (MCA)	Member
9.	Dr. Anirban Bose, Asstt. Professor, CSE	Member
10.	Dr. Arijit Kumar Banerji, Asstt. Professor, CE	Member
11.	Dr. Anandaprova Majumder, Asstt. Professor , CSE	Member
12.	Dr. Tribeni Prasad Banerjee, Asso. Professor, ECE	Member
13.	Dr. Ritu Rani De(Maity), Asstt. Professor, EE	Member
14.	Shri Saindhab Chattaraj, Asstt. Professor , CSE	Member
15.	Smt. Mou Das Mahapatra, Asstt. Professor, EE, BCREC & Member of Alumni Association	Member
16.	Mr. Deepraj Mondal, Alumni, BCREC	Member
17.	Mr. Aritra Mondal, Alumni, BCREC	Member
18.	Mr. Sabyasachi Gupta, GE Power India Ltd., Durgapur	Member
19.	Mr. Partha Sinha, Asst. Manager-HR&A, Durgapur Projects Ltd.	Member
20.	Prof. (Dr.) Saikat Maitra, Chief Advisor, BCREC Society	Invited Member
21.	HoDs (Invited Members) (case to case basis)	Invited Member


 Prof. (Dr.) Sanjay S. Pawar
 Principal,
 Dr. B. C. Roy Engineering College, Durgapur

Dr. B. C. Roy Engineering College
 DURGAPUR

Copy to: (i) General Secretary....for kind information
 (ii) All Concerned





Dr. B. C. ROY ENGINEERING COLLEGE, DURGAPUR

(Approved by AICTE & Affiliated to MAKAUT, WB)

CAMPUS : JEMUA ROAD, FULBHORE, DURGAPUR 713206 (WB), INDIA

☎ (0343) 250-1353/4106/4121/4245 6297128554, Fax (0343) 250-4059

E-mail : info@bcrc.ac.in • Website : www.bcrc.ac.in

Minutes of the proceedings of the Eleventh Meeting of Internal Quality Assurance Cell (IQAC) of Dr. B. C. Roy Engineering College, Durgapur

The 11th IQAC Meeting was conducted on 21st June, 2023 at 3.00 pm in the IQAC Room. Prof. (Dr.) Sanjay S. Pawar, Chairperson of IQAC chaired the meeting.

1. Action Taken Report on decisions of previous meeting:

ATR 10/2 - Detailed Agenda Item No. 11/2 and 11/7 placed below for Review of AQAR data and NEP alignment

ATR 10/3 - Approval taken from BOG on submission of AQAR 2021-22

ATR 10/4 - Detailed Agenda Item No. 11/5 placed below

ATR 10/5 - NBA status placed in Agenda Item 11/3 below

ATR 10/6 - Data collection process of events, publications, FDP and patent data made streamlined through the data repository available in website for submission

Institute IQAC coordinator assigned as the mentor for NAAC accreditation for two engineering institutes surrounding Durgapur. Mentoring and physical visit to Asansol Engineering College is done.

Item	Agenda	Minutes of the proceedings
11/1	Confirmation of minutes of previous meeting	Minutes of the 10 th meeting of IQAC was unanimously accepted and confirmed.
11/2	Review of data / documents for AQAR (Cycle 2) for the academic year 2022-23	IQAC Coordinator, Dr. Sanjay Sengupta has briefed about the data collected and consolidated for the academic year 2022-23. The new SSR format as provided by NAAC on 30 th November, 2022 and the benchmarks provided by NAAC for Quantitative metrics are discussed in detail. IQAC coordinator presented the Benchmark achievement summary for the last three academic years. Different discrepancies and scope of improvements are discussed. It has been decided that more focus on improvement will be given on Add-On Courses to bridge the curriculum gaps and on research publications. Conference paper publications also to be given high importance as the benchmark summary provided good weight on the same for affiliated colleges. Also, initiatives should be taken for receiving some research funding.
11/3	Discussion on the progress of NBA re-accreditation of ECE & CSE department and application for CE & MCA department	Pre-qualifier for NBA re-accreditation has been submitted for ECE and CSE On 20 th June, 2023. It has been decided that CE department will apply for NBA after the end of 2023-24 Academic year. Departmental Head confirmed that work has been started in this regard. It has been decided after discussion

Sanjay Sengupta



Principal
Dr. B. C. Roy Engineering College
DURGAPUR



Dr. B. C. ROY ENGINEERING COLLEGE, DURGAPUR

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	➤ Holding of National Seminars/Workshops by IQAC team for other non-NAAC accredited Institutes	been decided that through central repository such data will be collected. • Further discussions and course of actions to be decided for implementation of the features of NEP-2020. In the next IQAC meeting a roadmap will be suggested for approval. • IQAC coordinator has suggested if some seminars / workshops may be organized for some non NAAC accredited institutes to update them about the process of accreditation and its importance. The planning for such activity is to be done through the public relations department of the institute
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The meeting thereafter ended with a vote of thanks to the Chair.

Sanjay Sengupta

Prof. (Dr.) Sanjay Sengupta
Coordinator, IQAC Cell

Sanjay S. Pawar

Prof. (Dr.) Sanjay S. Pawar
Chairperson, IQAC Cell

Principal
Dr. B. C. Roy Engineering College
DURGAPUR





Dr. B. C. ROY ENGINEERING COLLEGE, DURGAPUR

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Dr. B. C. Roy
Engineering
College (BCREC)

Internal Quality Assurance Cell (IQAC)

Agenda of the Twelfth IQAC meeting (IQAC_12) to be held on 16th December, 2023

1. Confirmation of Minutes of previous meeting (11th Meeting of IQAC)
2. Review of data/documents prepared for submission of AQAR (Cycle 2) for the Academic year 2022-23
3. Submission of AQAR data to be placed before the Board of Governors of the Institute for statutory approval
4. Findings of internal Academic-Audit by IQAC Team for all departments for academic year 2022-23
5. Availability of Webpage link for online repository and ICT enabled tools for effective teaching learning process.
6. Course delivery through online LMS tool CANVAS (free version) and maintaining course file through that.
7. Industry institute interaction framework improvement
8. Concerns raised by NAAC data collection team on quality of data / documents provided by different stakeholders.
9. Any other matter with the permission of the chair.

Sanjay Sengupta

Prof. (Dr.) Sanjay Sengupta
Coordinator, IQAC Cell





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Dr. B. C. Roy
Engineering
College (BCREC)

Internal Quality Assurance Cell (IQAC)

Agenda of the Thirteenth IQAC meeting (IQAC_13) to be held on 15th May, 2024

1. Confirmation of Minutes of previous meeting (12th Meeting of IQAC)
2. Discussion on proposed NAAC new framework and deciding on date of application for next cycle of accreditation
3. Status review of Quantitative Metrics after submission of three AQARs (Cycle 2)
4. Planning for External Academic Audit for individual departments and Administrative audit for AY 2023-24
5. Planning for Green, Environment and Energy Audit for AY 2024-25
6. Availability of Webpage link for online repository and ICT enabled tools / LMS tool CANVAS (free version) for effective teaching learning process
7. Improvement suggestions by the Advisor, BCREC Society as per discussion with core IQAC team on 06th May, 2024
8. Any other matter with the permission of the chair.

Sanjay Sengupta
Prof. (Dr.) Sanjay Sengupta
Coordinator, IQAC Cell





Dr. B. C. ROY ENGINEERING COLLEGE, DURGAPUR

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Minutes of the proceedings of the Thirteenth Meeting of Internal Quality Assurance Cell (IQAC) of Dr. B. C. Roy Engineering College, Durgapur

The 13th IQAC Meeting was conducted on 15th May, 2024 at 3.00 pm in the IQAC Room. Prof. (Dr.) Sanjay S. Pawar, Chairperson of IQAC chaired the meeting.

1. Action Taken Report on decisions of previous meeting:

ATR 12/2 - Detailed Agenda Item No. 13/3 placed below Review of data / documents for AQAR (Cycle 2) for the academic year 2023-24

ATR 12/2 – Green, Energy and Environment Audit as per NAAC Advisory started by Auditing Agency mentioned in 13/5

ATR 12/4 – Resolution regarding External Academic Audit for individual department separately by experts taken from 2023-24 AY. Details placed in 13/4

ATR 12/5 & 12/6 – Detailed Agenda Item No. 13/6 placed below

ATR 12/9 – NBA Re-accreditation of ECE & CSE received till the end of 2025-26 AY i.e. 30th June, 2026

Item	Agenda	Minutes of the proceedings
13/1	Confirmation of Minutes of previous meeting (12 th Meeting of IQAC)	Minutes of the 12 th meeting of IQAC was unanimously accepted and confirmed.
13/2	Discussion on proposed NAAC new framework and deciding on date of application for next cycle of accreditation	IQAC coordinator, Dr. Sanjay Sengupta presented the new draft framework of NAAC. He mentioned that during attending different online meetings as organized by NAAC, the draft format has been discussed and made available to the IQAC coordinators. The major area of change will be from seven criteria in the new draft framework ten criteria are proposed which are still under review and discussion. Although many parameters may be matched with the existing criteria parameters some very specific parameters may have to be looked into. One such parameter is improvement process in teaching learning system and more structured way of different modes of course delivery through different methods e.g. experiential learning, flip classroom learning and mandatory use of Learning Management system in course delivery. As the framework is still under revision, IQAC will keep a track of it and try to implement changes as suggested in the new framework. Dr. Jayanta Pal, IQAC member mentioned that the expiry of

Sanjay Sengupta



Dr. Jayanta Pal



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DR. B.C.ROY ENGINEERING COLLEGE, DURGAPUR

ATTENDANCE OF 13th INTERNAL QUALITY ASSURANCE CELL (IQAC) MEETING HELD ON 16th MAY, 2024

Sl. No.	Name	Designation in IQAC	Signature
1	Shri Tarun Bhattacharya, General Secretary, BCREC Society	Management	
2	Prof. (Dr.) Sanjay S. Pawar, Principal	Chairperson	
3	Prof. (Dr.) K. M. Hossain, Vice-Principal	Vice Chairperson	
4	Dr. Sanjay Sengupta, HOD, CE	Coordinator	
5	Dr. Arindam Mondal, Registrar	Member	
6	Dr. Aloke Kahali, Head (Administration)	Member	
7	Shri Rajesh Chatterjee, ^{General} Sr. Manager (Admn.)	Member	
8	Shri Ravi Sharma, Sr. Manager (Finance) CPO	Member	
9	Prof. (Dr.) Narendra Nath Pathak, Dean (Alumni)	Member	
10	Dr. Rajdeep Ray, Dean (SW)	Member	
11	Dr. Pabitra Kumar Dey, Assoc. Prof., CSE	Member	
12	Prof. Anandapova Majumder, Asstt. Professor, CSE	Member	
13	Dr. Jayanta Pal, Associate Prof., Basic Science & Humanities	Member	
14	Dr. Tribeni Prasad Banerjee, Assoc. Professor, ECE	Member	
15	Dr. Ritu Rani De (Maity), Asstt. Professor, EE	Member	
16	Sri Saindhab Chattaraj, Asstt. Professor, CSE	Member	
17	Dr. Anirban Bose, Asstt. Professor, CSE	Member	
18	Prof. Arijit Kumar Banerji, Asstt. Professor, CE	Member	
19	Prof. Mou Das Mahapatra, Asstt. Professor, EE	Member	
20	Mr. Deepraj Mondal, Alumni, BCREC	Member	
21	Mr. Aritra Mondal, Alumni, BCREC	Member	
22	Mr. Sabyasachi Gupta, GE Power India Ltd., Durgapur	Member	
23	Mr. Partha Sinha, Asst. Manager-HR&A, Durgapur Projects Ltd.	Member	
24	Prof. (Dr.) Chandan Chatteraj, HOD (ME)	Invited Member	
25	Dr. Arindam Ghosh, HOD (CSE)	Invited Member	
26	Dr. Minmoy Chakraborty, HOD (ECE)	Invited Member	
27	Dr. Saurav Ranjan Das, HOD (BSH)	Invited Member	
28	Dr. Susanta Dutta, HOD (EE)	Invited Member	
29	Dr. Suman Bhattacharjee, HOD (IT)	Invited Member	
30	Prof. (Dr.) Raj Kumar Samanta, HOD (CSD)	Invited Member	
31	Dr. Chandan Bandyopadhyay, HOD (CSE-DS)	Invited Member	
32	Dr. G. S. Mitra Thakur, HOD (CSE-AIML)	Invited Member	
33	Dr. Somroop Siddhanta, HoD (MBA)	Invited Member	
34	Prof. Prabal Sahu, In-Charge, T&P (Campus)	Invited Member	
35	Dr. Dola Sinha, Convener (R&D)	Invited Member	
36	Mr. Upendra Kr. Sharma, Sr. Manager (CA&E)	Invited Member	
37	Dr. Manoj Kundu, Asstt. Professor (ME)	Invited Member	

ANTI RAGGING COMMITTEE

Name of the Committee	Name of the Members responsible / accountable to implement the jobs entrusted with
Anti-Ragging Committee	➤ Dr. Sanjay S. Pawar, Principal, BCREC - Chairman ➤ Prof. Saindhab Chattaraj, AP, CSE- Nodal Head, Anti-Ragging Convenor ➤ Prof. Sabbir Reza Tarafdar, AP, CSE – Jt. Convenor ➤ Dr. K. M. Hossain, Vice Principal & DSW, BCREC – Member ➤ Dr. Arindam Mondal, Registrar – Member ➤ Dr. Aloke Kahali, Head Administration – Member ➤ Dr. Mrinmoy Chakraborty, HOD, ECE – Member ➤ Dr. Raj Kumar Samanta, HOD, CSD – Member ➤ Dr. Chandan Chattoraj, HOD, ME – Member ➤ Dr. Susanta Dutta, HOD, EE – Member ➤ Dr. Sanjay Sengupta, HOD, CE – Member ➤ Dr. Arindam Ghosh, HOD, CSE – Member ➤ Dr. G. S. Mitra Thakur, HOD, AIML & Cyber Security – Member ➤ Dr. Chandan Bandyopadhyay, HOD, DS – Member ➤ Dr. Suman Bhattacharjee, HOD, IT – Member ➤ Dr. Pabitra Kumar Dey, HOD, MCA – Member ➤ Dr. Somroop Siddhanta, HOD, FMS – Member ➤ Dr. Sourav Ranjan Das, HOD, BS&H – Member ➤ Mr. Shouvick Chandra, Sr. Manager, PR - Member ➤ Mr. Dhrubajyoti Mukhopadhyay, Campus Administrator – Member ➤ Mr. Suwendu Biswas, Guardian Representative – Member ➤ Ms. Aabira Ray, Guardian Representative – Member ➤ Representative of SDM Office – SDM or His/ Her Representative ➤ Shri Subir Roy, (WBPS, Asst. Commissioner of Police) – Member ➤ Police Commissionerate (ASN – DGR) - Member ➤ Local P.S – Office - Incharge NTSPS, MAMC Durgapur or His/ Her Representative ➤ Mr. Subrata Sheet, Media Person, Anandabazar Patrika – Member ➤ Mr. Jayanta Biswas, NGO Person – Member



Dr. B. C. ROY ENGINEERING COLLEGE, DURGAPUR

(Approved by AICTE & Affiliated to MAKAUT, WB)

CAMPUS : JEMUA ROAD, FULJHORE, DURGAPUR-713206 (W.B.), INDIA

☎ (0343) 250-1353/4106/4121/4245, 6297128554, Fax : (0343) 250-4059

E-mail : info@bcrec.ac.in • Website : www.bcrec.ac.in

Anti-Ragging Cell

The Hon'ble Supreme Court of India *verdict in the SLP* (SLP No(s) 24295 of 2006 University of Kerala vs. Council Principals, Colleges, Kerala & Ors (with SLP(C) No. 24296-99/2004 & W.P. (Crl) No. 173/2006 and SLP (C) No. 14356/2005) to curb the menace of ragging in Technical Institutions/Colleges/Universities in the country, *and compliance thereof, all Technical Institutions/ Colleges and Universities in the country have been directed to constitute and observe recommendations of the Raghavan Committee which inter – alia stipulates:*

Scope and Functions:

1. Primary responsibility for curbing the menace of “Ragging” rests with academic institutions themselves.
2. Ragging adversely impacts the values the higher education.
3. Behavioural patterns among the students, particularly potential “raggers”, need to be identified.
4. Measures against the ragging must deter/discourage its recurrence.
5. Concerted action is required at the level of institutions, district administration.
6. Media and civil society should be involved in this exercise.

Anti-Ragging Cell

As per the mandate of the University Grants Commission (UGC), the College (BCREC) has constituted the **Anti-Ragging Cell** to avert any form of ragging on and off the BCREC campus. The Anti-Ragging cell is the constitutional Body to ensure that Campus is free from any sort of Ragging.





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The main functions of the committee are:

- To educate and disseminate specific information relating to (a) what constitutes as “Ragging”, and the consequences thereof; indulging in any sort of “ragging” shall and must invite severe deterrent measures that The Honourable Supreme Court of India, The Honourable High Court of West Bengal and the UGC / AICTE specifies. Dr. B.C. Roy Engineering College, Durgapur must strictly adhere to the specific guidelines proactively.
- To hold and disseminate awareness amongst students on gender equity, human rights and dignity, moral and ethical standards.
- To scrutinize the complaints lodged by the students on any kind of Ragging and to conduct/ elicit responses from the “aggrieved” and the “perpetrators” for information without any delay.
- To formulate strategies to prevent and discourage menace of Ragging on and off the campus. Immediate punitive action as per Dr. B.C. Roy Engineering College, Durgapur Students Code of Conduct Rules must be taken to mitigate aggrieved Student’s fear.

Objectives of the Anti-Ragging Cell

- To prevent any form of Ragging on and off Campus.

The following actions come under the purview of Ragging:

- Any act that violates the Fundamental Right guaranteed by the Indian constitution.
- Any act of abuse by spoken words, emails, SMS, public insult or through Social Media Platforms.
- Any act of molesting or any unlawful conspiracy or assembly with intent for ragging.
- Any act of indiscipline on the College campus.
- Mockery or behaving in rude and intimidating approach.





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- Acts that disrupts the regular academic, co-curricular and extra-curricular activities of the college.
- Acts of creating hardship, physical or mental stress or fear, which disturbs the learning atmosphere for the students.
- Financial extortion or forceful expenditure from students.
- Any act of physical abuse or assault causing harm or danger to life and health.

Compass of the Anti- Ragging Cell

The Anti-Ragging Cell functions in the following areas.

- Receive complaints on any substances related to Ragging.
- Conduct enquiry in accordance to the guidelines lay down by the UGC and Dr. B.C Roy Engineering College, Durgapur.
- Recommend actions to be initiated against the culprits including suggestions to forward the matter to the ARC Member Secretary (ARCM) and Nodal Head (Anti-Ragging), Campus Administrator (CA) and Head Admin(BCREC).

Procedure of the Anti-Ragging Cell

The Anti-Ragging Cell will follow the following procedure:

- Receive the complaints in writing from the concerned students.
- Examine the matter in detail on the basis of available documents and incident reports.
- Recommend to the Principal to forward the matter to the ARC Member Secretary (ARCM), Nodal Head (Anti-Ragging), Campus Administrator (CA) and Head Admin (BCREC) if there is any merit in the substance.
- Recommend to the Principal to initiate disciplinary action against the culprit.





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Punishments

Any student who has been responsible of Ragging on College Campus and the incidence has been established after due process of Enquiry is liable to one or more of the following punishments.

- Suspension from the College.
- Debarring from appearing in Internal and University Examinations.
- Cancellation of Admission and compulsory Transfer Certificate. Any punishment or fine composed by the Legal Authority.

The Anti-Ragging Committee works as the Disciplinary Committee of the College

- The Anti-Ragging Committee also functions as the Disciplinary Committee of the College as it has to mandatorily ensure maintenance of discipline on the College campus and to bring about congenial academic ambience in the College.
- The Committee is also authorized to look into the complaints un-folding to the breach of discipline, students' disturbances, unlawful activities disturbing the peaceful functioning of the College, and other forms of indiscipline among the students.
- The Committee is empowered to conduct enquiry on the matters of student's indiscipline and suggest appropriate disciplinary and corrective measures.





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CORE COMMITTEE OF THE ANTI-RAGGING CELL, BCREC

Sl. No	Name of the Member	Designation
1.	Prof. (Dr.) Sanjay S. Pawar	Chairman
2.	Prof. (Dr.) Rajdeep Ray, Dean (SW)	Member Secretary (ARC), Convener
3.	Prof. Saindhab Chattaraj, AP, CSE	Nodal Officer, BCREC
4.	Prof. (Dr.) K.M Hossain	Vice Principal, BCREC (Member)
5.	Prof. (Dr.) Arindam Mondal	Registrar (Member)
6.	Prof. (Dr.) Aloke Kahali	Campus Administrator (Acting), Head Admin (Member)


Prof. Saindhab Chattaraj
Nodal Officer, BCREC


Principal
Dr. B. C. Roy Engineering College
DURGAPUR
Prof. (Dr.) Sanjay S. Pawar
Principal & Chairman (Anti Ragging Cell)
BCREC


Prof. (Dr.) Rajdeep Ray, Dean (SW)
Member Secretary (ARC), Convener
BCREC





Dr. B. C. ROY ENGINEERING COLLEGE, DURGAPUR

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NO.BCR/PR/19.08

DATE: 08-08-2023

OFFICE ORDER

As per the order enclosed in the UGC regulation F.1-16/2007 (CPP-II) dated June, 2009 read with the AICTE notification F.No. 37/3/Legal/AICTE/2009 dated 01.07.2009 and Regulation notification vide AICTE notification F.No. 37/3/Legal/2012 dated 25.05.2012, Anti-Ragging –Committee (ARC) of Dr. B. C. Roy Engineering College Durgapur is being constituted with the following members for the academic year 2023-2024.

1. Institute level Anti Ragging Committee (ARC):

Prof. (Dr.) Sanjay S. Pawar, Principal, BCREC	-- Chairman
Prof. (Dr.) Rajdeep Ray, Dean (SW)	-- Member Secretary (ARC)
Prof. Saindhab Chattaraj, AP, CSE, Nodal Head- Anti-Ragging	-- Convenor
Prof. (Dr.) K.M Hossain, Vice Principal, BCREC	-- Member
Prof. (Dr.) Arindam Mondal, REGISTRAR	-- Member
Prof. (Dr.) Aloke Kahali, HEAD (ADMN)	-- Member
Prof. (Dr.) Narendra Nath Pathak, HOD, ECE	-- Member
Prof. (Dr.) Raj Kumar Samanta, HOD, CSD	-- Member
Prof. (Dr.) Chandan Chattoraj, HOD, ME	-- Member
Prof. (Dr.) Susanta Dutta, HOD, EE	-- Member
Prof. (Dr.) Sanjay Sengupta, HOD, CE	-- Member
Prof. (Dr.) Arindam Ghosh, HOD, CSE	-- Member
Prof. (Dr.) Gour Sundar Mitra Thakur, HOD, AI ML	-- Member
Prof. (Dr.) Chandan Bandyopadhyay, HOD, DS	-- Member
Prof. (Dr.) Suman Bhattacharjee, HOD, IT	-- Member
Prof. (Dr.) Pabitra Kumar Dey, HOD, MCA	-- Member
Prof. (Dr.) Somroop Siddhanta, HOD, FMS	-- Member
Campus Administrator	-- Member
Guardian Representative (Two)	-- Member
Representative of SDM Office	-- SDM or His/ Her Representative
Shri. Tathagata Pandey, (WBPS, Assistant Commissioner of Police)	-- Member
Police Commissionerate (ASN-DGP)	-- Officer-In-Charge, NTPS, MAMC
Local P.S	-- Durgapur or His/ Her representative





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E-mail : info@bcrec.ac.in • Website : www.bcrec.ac.in

2. Anti-Ragging Roving Squad: To take active part under the guidance of ARC

Prof. Md. Keramot Hossain Mondal	--	Convenor
Prof. Keka Hajra	--	Jt. Convenor
Prof. Sabbir Reza Tarafdar	--	Jt. Convenor
Prof. Sarabjeet Lahiri	--	Member
Prof. Amit Kotal	--	Member
Prof. (Dr.) Sourav Paul	--	Member
Prof. Chitta Sahana	--	Member
Prof. Sunil Kumar Choudhary	--	Member
Prof. Soumyadip Das	--	Member
Prof. Chandan Das	--	Member
Prof. Surajit Batabyal	--	Member
Shri. Santanu Roy	--	Member
Shri. Bappaditya Chandra	--	Member
Shri. Indranil Bhattacharyya	--	Member
Shri. Samar Nath Rajak	--	Member
Shri. Santosh Pal, Asst. CA	--	Member


Prof. (Dr.) Sanjay S. Pawar
Principal

Dr. B.C. Roy Engineering College, Durgapur

Principal
Dr. B. C. Roy Engineering College
DURGAPUR



Distribution:

Copy to – General Secretary – for kind information
All HODs – are requested to inform all the concerned faculty members in their respective departments to contact the member secretary, Anti-Ragging Committee forthwith.

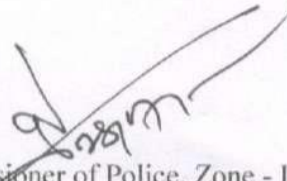
**Office of the Deputy Commissioner of Police, Zone- I, (East),
Asansol-Durgapur Police Commissionerate**

Memo. No 1442 / E/DCP/ ZONE-I,(East) ADPC

Dated 28/07/2023.

To,
Prof. (Dr.) Sanjoy S Pawar,
Principal, Dr. B.C Roy Engineering College, Durgapur.

With reference Memo No. BCR/PR/19.08 dtd. 25.07.2023 of Dr. B.C Roy Engineering College, Durgapur, I would like to inform you that Shri Tathagata Pandey, WBPS, Assistant Commissioner of Police (Durgapur), ADPC (Mob No. 9147889419) (Email Id- acpdurgapur@gmail.com) is nominated as the Member of Anti-Ragging Committee of your Institution.


Dy. Commissioner of Police, Zone - I (East),
Asansol-Durgapur Police Commissionerate.

Memo. No _____ / E/DCP/ ZONE-I,(East) ADPC

Dy. Commissioner of Police
ZONE-I (EAST) / 28/07 /2023
Asansol-Durgapur Police Commissionerate

Copy to:-

1. Ld. Commissioner of Police---for kind information
2. Assistant Commissioner of Police (Durgapur), ADPC.
3. O/C New Township PS, ADPC.

-----for information and necessary action.

Dy. Commissioner of Police, Zone - I (East),
Asansol-Durgapur Police Commissionerate.

DR. B. C. ROY ENGINEERING COLLEGE, DURGAPUR
&
DR. B. C. ROY ACADEMY OF PROFESSIONAL COURSES, DURGAPUR

ANTI-RAGGING HELP-LINE NUMBER --

(+91) 8637387183

99338
5348



Dr. B. C. ROY ENGINEERING COLLEGE, DURGAPUR

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E-mail : info@bcrec.ac.in • Website : www.bcrec.ac.in

The Sub- Divisional Magistrate,
Durgapur Sub – Division,
City Centre – 713 216.

The Dy. Commissioner of Police, Zone I (East),
Asansol –Durgapur Police Commissionerate,
Aurobindo Avenue,
Durgapur - 713 204.

The Officer-in-Charge,
New Township Police Station,
MAMC Township,
VK Nagar,
Durgapur - 713 210.

BCR/ PR/ 19.08/

25th July, 2023.

Sir,

Sub: Formation of “Anti Ragging Committee” at Dr. B. C. Roy Engineering College, Durgapur.

In view of the directions of the Hon’ble Supreme Court in SLP No. 24295 of 2006 dated 16-05-2007 and in Civil Appeal number 887 of 2009, dated 08-05-2009, all Institutions are mandated to form an Anti- Ragging Committee with representatives from Civil Administration and Police Authorities.

The Anti – Ragging Committee is to be formed with the Head of the Institution as the Chairman of the Committee.

We are approaching you for being a distinguished Member of the Committee for the Academic Year 2023 – 24. In case you would like to nominate any member in lieu, kindly let us have your Nominee’s Name, Designation and Contact Number and e-mail ID. A meeting of the Committee shall be held on receipt of your nomination(s).

Thanking you,

Yours faithfully,

(Prof.(Dr.) Sanjay S Pawar),
Principal,
Dr. B. C. Roy Engineering College,
Durgapur. *Principal*
Dr. B. C. Roy Engineering College
DURGAPUR

Received not verified

New Township Police Station
(East) ASN-DGP Police Commissionerate



DR. B. C. ROY ENGINEERING COLLEGE, FULJHORE, DURGAPUR - 06

ANTI-RAGGING DUTY ROSTER

VENUE: 1ST YEAR BOYS HOSTEL (SATYEN BOSE BOYS HOSTEL)

Date	Name of the Staff	Department	Time	MOBILE NO.
14-08-2023	PROF. SUVOBRATA SARKAR	CSE	6 PM - 10 PM	9434648373
	PROF. BISWAJIT SAHA			9433153984
16-08-2023	SRI LAKSHMI KANTA PAUL	ME	6 PM - 10 PM	9749449063
	SRI SATYAJIT DAS			9474120977
17-08-2023	SRI KOUSTAV ROY	ECE	6 PM - 10 PM	9434480714
	DR. ALOKE SAHA			9647263460
18-08-2023	DR. SOURAV MOITRA	ECE	6 PM - 10 PM	9584669036
	SRI NILKAMAL BHUNIA			9433389447

IF ANY STAFF MEMBERS HAVE THEIR ANY PROBLEM ON THEIR SCHEDULE DUTY TIME, SHE/HE MUST INFORM THEIR RESPECTIVE HoD's AND ARRANGE SUBSTITUTION

CONCERNED FACULTY /STAFF MEMBERS MUST SIGN IN THE REISTER PRESENT IN SATYEN BOSE BOYS HOSTEL

**Note: Staff Members who are assigned in the hostel duty, take their dinner at Satyen Bose Boy's Hostel

MEMBER SECRETARY, ANTI-RAGGING COMMITTEE, BCRC

Prof. (Dr.) Sanjay S. Pawar
Principal, BCRC

Principal
Dr. B. C. Roy Engineering College
DURGAPUR



ONLINE STUDENT GRIEVANCE SYSTEM (AVAILABLE IN WEBSITE www.bcrec.ac.in)



The screenshot shows the "Grievance Redressal" form on the website. The form includes fields for Name, Email, Grievance Title, Date, Department, College Roll No., University Roll No., and Grievance Details. A "Submit" button is located at the bottom left. The URL in the browser is <http://www.bcrec.ac.in/grievance-redressal>.

Grievance Redressal

[Home](#) / [Grievance Redressal](#)

Name*

Department*

Email*

College Roll No.*

Grievance Title*

University Roll No.*

Date:

Grievance Details*

**OFFLINE GRIEVANCE CAN BE DROPPED AT BOXES AVAILABLE IN
FRON OF THE DEPARTMENT**



Anti Ragging Committee

Prof. (Dr.) Sanjay S. Pawar, Principal, BCREC-- Chairman
Prof. (Dr.) Rajdeep Ray, Dean (SW)--Member Secretary (ARC)
Prof. Saindhab Chattaraj, AP, CSE, Nodal Head-Anti Ragging--Convenor
Prof. Sabbir Reza Tarafdar, AP, CSE--Jt. Convenor
Prof. (Dr.) K.M. Hossain, Vice Principal, BCREC--Member
Prof. (Dr.) Arindam Mondal, REGISTRAR --Member
Dr. Alope Kahali, Head, (ADMN)-- Member
Prof. (Dr.) Mrinmoy Chakraborty, HOD, ECE--Member
Prof. (Dr.) Raj Kumar Samanta, HOD, CSD--Member
Prof. (Dr.) Chandan Chattaraj, HOD, ME--Member
Prof. (Dr.) Susanta Dutta, HOD, EE--Member
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Prof. (Dr.) Gour Sundar Mitra Thakur, HOD, AI ML & Cyber Security--Member
Prof. (Dr.) Chandan Bandyopadhyay, HOD, DS--Member
Prof. (Dr.) Suman Bhattacharjee, HOD, IT--Member
Prof. (Dr.) Pabitra Kumar Dey, HOD, MCA--Member
Prof. (Dr.) Somroop Siddhanta, HOD, FMS--Member
Prof. (Dr.) Saurav Ranjan Das, HOD, BSH--Member
Shri. Shouvik Chandra, Sr. Manager, PR--Member
Shri. Dhruva Jyoti Mukhopadhyay, Campus Admin--Member
Smt. Aabira Ray, Guardian Representative --Member
Shri. Suvendu Biswas, Guardian Representative --Member

Representative of SDM Office--SDM or His/ Her Representative
Shri. Subir Roy, (WBPS, Assistant Commissioner of Police)--Member
Police Commissionerate (ASN-DGP)--Member
Local P.S-- Officer-In-Charge, NTSPS, MAMC Durgapur or
His/Her Representative
Shri. Subrata Sheet, Media Person, Anandabazar Patrika--Member
Shri. Jayanta Biswas, NGO--Member

Anti-Ragging Roving Committee

Prof. Soumyadip Das--Convenor
Prof. Md. Keramot Hossain Mondal-- Jt. Convenor
Prof. Keka Hajra--Jt. Convenor
Prof. Amit Kotal--Member
Prof. Biswajit Mondal--Member
Prof. (Dr.) Shashi Bajaj Mukherjee--Member
Prof. (Dr.) Sourav Paul--Member
Prof. Chitta Sahana--Member
Prof. Chandan Das--Member
Prof. Surajit Batabyal--Member
Shri. Santanu Roy--Member
Shri. Bappaditya Chandra--Member
Shri. Indranil Bhattacharyya--Member
Shri. Samar Nath Rajak--Member
Shri. Santosh Pal, Deputy CA--Member

College Anti Ragging Helpline: 9832676880 Email: bcrc.antiragging@bcrc.ac.in
UGC Anti Ragging Helpline: 1800-180-5522 State(W.B) Anti Ragging Helpline: 1800-345-5678



DR. B. C. ROY ENGINEERING COLLEGE, DURGAPUR

STUDENTS GRIEVANCE REDRESSAL CELL

Prof. (Dr.) Sanjay S. Pawar, Principal
Prof. (Dr.) Keshab Bhattacharya, Professor (J.U.) -OMBUDSMAN
Prof. (Dr.) K. M. Hossain, Vice-Principal
Prof. (Dr.) Arindam Mondal, Registrar
Prof. (Dr.) N. N. Pathak, HOD (ECE)
Prof. (Dr.) Rajdeep Ray, DSW, Convenor
Prof. Subhashish Pal, Exam In-Charge
Prof. Sabbir Reza Tarafdar, Assistant Professor, CSE
Prof. Saindhab Chattaraj, Assistant Professor, CSE
Prof. Sarabjit Lahiri, Assistant Professor, BSH
Prof. Keka Hazra, Assistant Professor, ECE
Sri. Dhruva Jyoti Mukhopadhyay, Campus Administrator
Sri. Santosh Pal, Deputy Campus Administrator

Emergency Contact Number: 8637387183
Email: info@bcrc.ac.in



SAY NO TO RAGGING

BEFORE YOU EVEN THINK OF RAGGING

Download ANTI RAGGING App

THINK OF

- Humiliation
- Suspension
- Ruined Career
- Blacklisting
- Expulsion
- Possible Prosecution

Don't just stand and watch. Stop Ragging! Show Character

Remember RAGGING is for LOSERS

Visit UGC Website i.e. www.ugc.ac.in & www.antiragging.in to see UGC Anti Ragging regulations.

Are You Being Ragged?

Immediately call UGC Anti Ragging Helpline- 1800-180-5522 (24x7 toll free)
Or Send an E-mail to helpline@antiragging.in

विश्वविद्यालय अनुदान आयोग
University Grants Commission
quality higher education for all

शिक्षा मंत्रालय
MINISTRY OF EDUCATION

SAY NO TO RAGGING

YES TO JOYFUL CAMPUS

DR. B. C. ROY ENGINEERING COLLEGE
www.bcrec.ac.in

DR. B. C. ROY ENGINEERING COLLEGE (323)
ACADEMY OF PROFESSIONAL COURSES
www.brecapc.ac.in

What is Ragging?
Any Act Resulting in:

- Mental/physical/sexual Abuse
- Verbal Abuse
- Indecent Behaviour
- Criminal Intimidation/wrongful Restraint
- Undermining Human Dignity
- Financial Exploitation/extortion
- Use Of Force

A STUDENT INDULGING IN RAGGING CAN BE SUBJECT TO:

- Cancellation of admission.
- Suspension from attending classes.
- Withholding/withdrawing Scholarship/Fellowship and other benefits.
- Debarring from appearing in any test/ examination or other evaluation process.
- Withholding results.
- Debarring from representing the institution in any regional, national or international meet, tournament or youth festival, placement activities etc.
- Collective punishment: when the persons committing or abetting the crime of ragging are not identified, the institution shall resort to collective punishment as a deterrent to ensure community pressure on potential ragger.

Immediately Call: UGC Anti-Ragging Helpline 1800-180-5522 (24X7 toll free)
or send e-mail to helpline@antiragging.in

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MINISTRY OF EDUCATION

DON'T RAG, JUST INTERACT



Visit UGC website i.e. www.ugc.ac.in & www.antiragging.in to see UGC Anti Ragging Regulations

RAGGING IN ANY FORM IS PUNISHABLE

Are you being ragged ?
Immediately call UGC Anti Ragging Helpline 1800-180-5522 (24x7 Toll Free)
Or send an e-mail to helpline@antiragging.in

Download **ANTI RAGGING** App

Join hands to make your campus ragging free

शिक्षा मंत्रालय
MINISTRY OF EDUCATION

विश्वविद्यालय अनुदान आयोग
University Grants Commission
quality higher education for all

Foolishly I ragged & got suspended

Will I get prosecuted?
What about my Job prospects?

SAY NO TO RAGGING

Download **ANTI RAGGING** App

MY FUTURE IS A BIG ?

Remember RAGGING is for LOSERS

Visit UGC Website i.e. www.ugc.ac.in & www.antiragging.in to see UGC Anti Ragging regulations.
Are You Being Ragged ?
Immediately call UGC Anti Ragging Helpline- 1800-180-5522 (24x7 Toll Free)
Or Send an E-mail to helpline@antiragging.in

शिक्षा मंत्रालय
MINISTRY OF EDUCATION

विश्वविद्यालय अनुदान आयोग
University Grants Commission
quality higher education for all

STUDENTS GRIEVANCE REDRESSAL COMMITTEE

Grievance Redressal Cell (Students)	➤ Dr. Sanjay S. Pawar, Principal, BCREC – Chairperson ➤ Dr. K. M. Hossain, Vice Principal, BCREC – Member ➤ Dr. Arindam Mondal, Registrar – Member ➤ Dr. Alope Kahali, Head Administration – Member ➤ Prof. Amit Kotal, AP, CE - Member ➤ Mr. Dhrubajyoti Mukhopadhyay, Campus Administration - Convenor ➤ Prof. Sabbir Reza Tarafdar, AP, CSE - Member ➤ Prof. Prof. Biswajit Mondal, Hostel Super - Member ➤ Prof. Saindhab Chattaraj, AP, CSE - Member ➤ Prof. Sunil Kumar Chaudhary, AP, EE - Member ➤ Prof. Subhasish Pal, Incharge, Examination Cell - Member ➤ Dr. Shashi Bajaj Mukherjee, Hostel Super- Member ➤ Prof. Keka Hazra, Hostel Super - Member ➤ Mr. Santosh Kumar Pal, Dy. Campus Admn. – Member OMBUDSMAN: Prof. Keshab Bhattacharya, Professor, Electrical Engineering Department, Jadavpur University
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INTERNAL COMPLAINT COMMITTEE

Internal Complaint Committee (ICC)	➤ Dr. Sanjay S. Pawar, Principal, BCREC – Member ➤ Prof. Dola Sinha, Associate Professor, EE - Chairperson ➤ Prof. Sayanti Samanta, AP, FMS - Member ➤ Prof. Moutusi Mondal, AP, ECE-Member ➤ Prof. Debipriya Dutta, AP, ECE-Member ➤ Dr. Rupali, AP, ME - Member ➤ Ms. Barnali Das, TA, CE - Member ➤ Ms. Indrakshee Sen, Psychological Counsellor – Member ➤ Ms. Oishi Sen, Student Member, CSE ➤ Ms. Shruti Thakkar, Student Member, EE ➤ Mr. Kushagra Kumar Kunnu, Student Member, CSE ➤ Mr. Jayanta Biswas, NGO Person - Member
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**Dr. B. C. Roy Engineering College
Internal Complaint Committee**

21st September, 2023

NOTICE

All the members of the Internal Complaint Committee (ICC) are requested to attend a meeting on **22nd September, 2023 at 4 p.m.** in the Digital room of FMS (3rd Floor, Main Building).

Agenda:

- I:** Review of minutes of the previous meeting
- II:** Discussion on the complaint received from a lady faculty, dated 20th September, 2023.
- III:** Action plan for enquiry against the above complaint.
- IV:** Any other matter


Prof. Krishna Roy
Convenor – ICC Committee

Minutes of the meeting of the ICC
Date: September 22, 2023
Time: 4:00 pm
Meeting held at Digital Class Room, FMS

Attendees:

Prof. Krishna Roy	Assistant Professor	Convenor	
Dr. Dola Sinha	Associate Professor	Member	
Dr. Rupali	Assistant Professor	Member	
Prof. Sayanti Samanta	Assistant Professor	Member	
Prof. Moutusi Mondal	Assistant Professor	Member	
Prof. Debipriya Dutta	Assistant Professor	Member	

The meeting of ICC was held on 22.11.2023 at 04:00 PM with the members of ICC in the Digital room of FMS. The meeting commenced with the welcome note of the Convenor, ICC, who also thanked all the members for their cooperation and valuable suggestions for the proper functioning of the ICC.

1. All members were informed about a complaint raised by a lady faculty against a workshop instructor of another department for misbehaviour. All members unanimously agreed that an inquiry should be conducted on the matter.
2. The members discussed the procedure that would be laid down for conducting the inquiry. It was decided that all members of ICC would be present in the committee. The complainant, the defendant, the witnesses, and others involved will be interviewed on camera.
3. Each of the person interviewed will provide their views in writing.
4. It was decided that the findings of the inquiry would be handed over to the higher authorities for necessary decisions and actions.

Since there were no other points to discuss, the meeting ended



Prof. Krishna Roy

Convenor - ICC Committee



Dr. B. C. Roy Engineering College, DURGAPUR

(Approved by AICTE & Affiliated to MAKAUT, WB)

CAMPUS : JEMUA ROAD, FULJHORE, DURGAPUR-713206 (W.B.), INDIA

☎ : (0343) 250-1353/4106/4121/2449 Fax : (0343) 250-4059 / 3424

E-mail : info@bcrec.ac.in • Website : www.bcrec.ac.in

BCR/NOT/17/6592

Date: -24.07.2019

Office Order

The authorities of Dr. B. C. Roy Engineering College, Durgapur are now pleased to introduce the **Revised Service Rules** applicable to its employees of the college with effect from 1st July, 2019.

This is for information of all concerned.

(T. Bhattacharya)
General Secretary

Copy forwarded for information to: -

1. Director/BCREC
2. Principal/APC
3. All HODs
4. Registrar
5. Head (Admn.)
6. Campus Administrator
7. Sr. Manager (Finance)
8. Office Copy

Prepared by Registrar



DR. B. C. ROY ENGINEERING COLLEGE DURGAPUR

Jemua Road, Fuljhore, Durgapur-713206, West Bengal, India



1ST REVISION OF THE **SERVICE RULES**

☎ +91 0343-2504106 / 2501353 / +91-6297128554

✉ info@bcrec.ac.in

🌐 www.bcrec.net.in / www.bcrec.ac.in



Our Vision

**TO TRANSFORM THE INSTITUTION INTO A
GLOBAL CENTRE OF LEARNING THROUGH
SYNERGIC APPLICATION OF CREATIVITY,
INNOVATION AND DISCIPLINE.**

Our Mission

- ✓ **CREATE IDEAL AMBIENCE FOR LEARNING AND GROWTH.**
- ✓ **HELP STUDENTS INHERIT VALUE SYSTEMS, BE CREATIVE AND AGILE THINKERS.**
- ✓ **ESTABLISH DISCIPLINE, VALUE ADDED EDUCATION AND TRAINING & PLACEMENT AS THREE CORE VALUES.**
- ✓ **BUILDING CAPABILITIES AMONG STUDENTS TO LEAD FROM THE FRONT AS ALSO BE A TEAM PLAYER.**
- ✓ **DEVELOP A SYMBIOTIC RELATIONSHIP BETWEEN THE INSTITUTION, SOCIETY AND THE COMMUNITY, FOR MUTUAL BETTERMENT.**
- ✓ **EXPAND THE VISTAS OF HIGHER LEARNING IN TECHNOLOGY AND MANAGEMENT FIELDS, INCLUDING POST GRADUATE STUDIES AND RESEARCH.**
- ✓ **ENCOURAGE GLOBAL VISION AND INTEGRATION WITH INTERNATIONAL BEST PRACTICES FOR LOCAL, REGIONAL AND NATIONAL DEVELOPMENT.**



Quality Policy

**WE ARE COMMITTED TO IMPART
QUALITY "EDUCATION AND TRAINING"
THAT SATISFY THE REQUIREMENT OF
OUR STUDENTS IN THE FIELD OF
"ENGINEERING & MANAGEMENT"
AND OUR AIM IS TO BE AN INSTITUTE OF
EXCELLENCE IN TECHNICAL EDUCATION
THROUGH CONTINUAL IMPROVEMENT.**

**WE FACILITATE OUR FACULTY AND
SUPPORT STAFF TO UPDATE THEIR
KNOWLEDGE AND SKILL TO MATCH THE
INDUSTRIAL AND TECHNOLOGICAL
DEVELOPMENT.**

SERVICE RULES OF DR. B.C.ROY **ENGINEERING COLLEGE, DURGAPUR**

(Approved in the 39th meeting of the B.O.G. held on 16.02.2019 and effected from 01.07.2019)

CONTENTS

CHAPTER 1	PREAMBLE
CHAPTER 2	APPOINTMENTS
CHAPTER 3	PAY SCALES/ALLOWANCES & PROMOTION/UPGRADATION
CHAPTER 4	LEAVE RULES
CHAPTER 5	JOB RESPONSIBILITIES
CHAPTER 6	CONDUCT, DISCIPLINE & REVIEW RULES

Dr. B.C. Roy Engineering College, Durgapur is the outcome of vision and enterprise of a team of philanthropic entrepreneurs who dreamt to help boost promotion of Engineering, Management, Technology and Pharmaceutical education in the sylvan surroundings of Durgapur and stop exodus of students from West Bengal to other parts of the country in quest of higher studies. Guided by the noble thoughts of Swami Vivekananda, Rabindranath Tagore and workmanship of Dr. Bidhan Chandra Roy to develop modern men and women with universal values, Dr. B. C. Roy Engineering College, Durgapur is determined to build brick by brick, an Institute of truly global standard to train and provide excellent quality '**human resource**' to our society in the fields of Engineering, Computer Science and Management.

Vision of the institute [Dr. B.C Roy Engineering College, Durgapur] :

To transform the Institution into a global centre of learning through synergic application of creativity, innovation and discipline.

Mission of the institute [Dr. B.C Roy Engineering College, Durgapur] :

- ❖ Create ideal ambience for learning and growth.
- ❖ Help students inherit value systems, be creative and Agile Thinkers.

- ❖ Establish discipline; value added education and training & placement as three core values.
- ❖ Building capabilities among students to lead from the front as also be a Team Player.
- ❖ Develop a symbiotic relationship between the Institution, Society and the Community, for mutual betterment.
- ❖ Expand the vistas of higher learning in Technology and Management fields, including post graduate studies and research.
- ❖ Encourage global vision and integration with international best practices for Local, Regional and National Development.

Quality Policy of the institute [Dr. B.C Roy Engineering College, Durgapur]:

- ❖ Dr. B.C Roy Engineering College, Durgapur is committed to impart quality **“Education and Training”** that satisfy the requirements of our students in the field of **“Engineering & Management”** and our aim is to be an Institute of Excellence in global terms in the field of quality technical education through continual improvement.
- ❖ The college facilitates its Faculty and Support Staff to update their knowledge and skill to match the dynamics of industrial and technological development.

In exercise of the powers conferred by the Society of Dr. B. C. Roy Engineering College, Durgapur, the Board of Governors of Dr. B. C. Roy Engineering College, Durgapur, **makes the following modifications in the Service Rules in harmony with the Vision, Mission and Quality Policy of the college.**

PART – I

CHAPTER 1: PREAMBLE

1.1 Short Title and Commencement :

1.1.1 These service Rules shall be called the **“DR. B. C. ROY ENGINEERING COLLEGE, DURGAPUR, EMPLOYEES SERVICE RULE”**, and shall be applicable to all the employees of the DR. B. C. ROY ENGINEERING COLLEGE, DURGAPUR, JEMUA ROAD, FULJHORE, DURGAPUR – 713206 and which shall come into force with effect from 1st April, 2019.

1.1.2 This is the First Official version of the revised Service Rules. The Service Rules may be changed in future based on the various enabling Acts, Government Rules and

regulations, Stakeholders' input and other parameters which will evolve over the time frame.

1.2 APPLICABILITY

1.2.1 These Service Rules will be applicable to all full-time employees as well as such employees who are appointed on consolidated basis.

1.2.2 **These service rules will supersede all other Service Rule(s) created for DR. B. C. ROY ENGINEERING COLLEGE, DURGAPUR earlier.**

1.3. Definitions :

In these Service Rules, unless there is anything repugnant to the context, the following terms shall mean and denote:

1.3.1 **"College"** means Dr. B.C. Roy Engineering College, Durgapur, having its Corporate office at Jemua Road, Fuljhore, Durgapur – 713206.

1.3.2 **"Society"** means the Dr. B.C. Roy Engineering College, Durgapur, Society, established under West Bengal Societies Registration Act, XXVI of 1961 (Registration No. S/93521 of 1998-99)

1.3.3 **"Board"** means the Board of Governors of Dr. B.C. Roy Engineering College formed as per guidelines of AICTE, Department of Higher Education, Government of West Bengal.

1.3.4 **"Chairman"** means the Chairman of the Board of Governors of Dr. B.C. Roy Engineering College, Durgapur.

1.3.5 **"Secretary"** means the Member-Secretary of the Board of Governors of Dr. B. C. Roy Engineering College, Durgapur.

1.3.6 **"Director/Principal"** means the Head of the college of Dr. B.C. Roy Engineering College, Durgapur.

1.3.7 **"Registrar"** means the Registrar of Dr. B.C. Roy Engineering College, Durgapur.

1.3.8 **"Rules"** and **"Regulations"** mean the rules and regulations of Dr. B. C. Roy Engineering College, Durgapur.

1.3.9 **'Employee'** means any person appointed by or deputed to the college as whole-time employee and includes all categories of staff.

1.3.10 **"Teaching staff"** means Professor, Associate Professor and Assistant Professor of the college.

1.3.11 **"Technical & Administrative staff"** means all categories of technical & supporting staff including administrative other than the teachers.

1.3.12 **'HOD'** means Head of the Department of any academic discipline.

6.10.2 If the Disciplinary Authority having regard to his findings on all or any of the charges is of the opinion that major penalties specified in Rule 6.5 should be imposed on the employee, then he shall make an order imposing such penalty.

6.10.3 If the Disciplinary Authority having regard to his findings on all or any of the charges is of the opinion that a major penalty is not called for, then he may pass an order imposing any of the other penalties if called for, or exonerate the employee concerned.

6.10.4 If the employee is acquitted, then he may be entitled to get pay and allowances for the interim period

6.11 Communication of orders

Orders made by the Disciplinary Authority under Rule 6.10 shall be communicated to the employee concerned in writing.

6.12 Review

6.12.1 The Disciplinary Authority or the next higher authority may, on his own, review the order of punishment imposed.

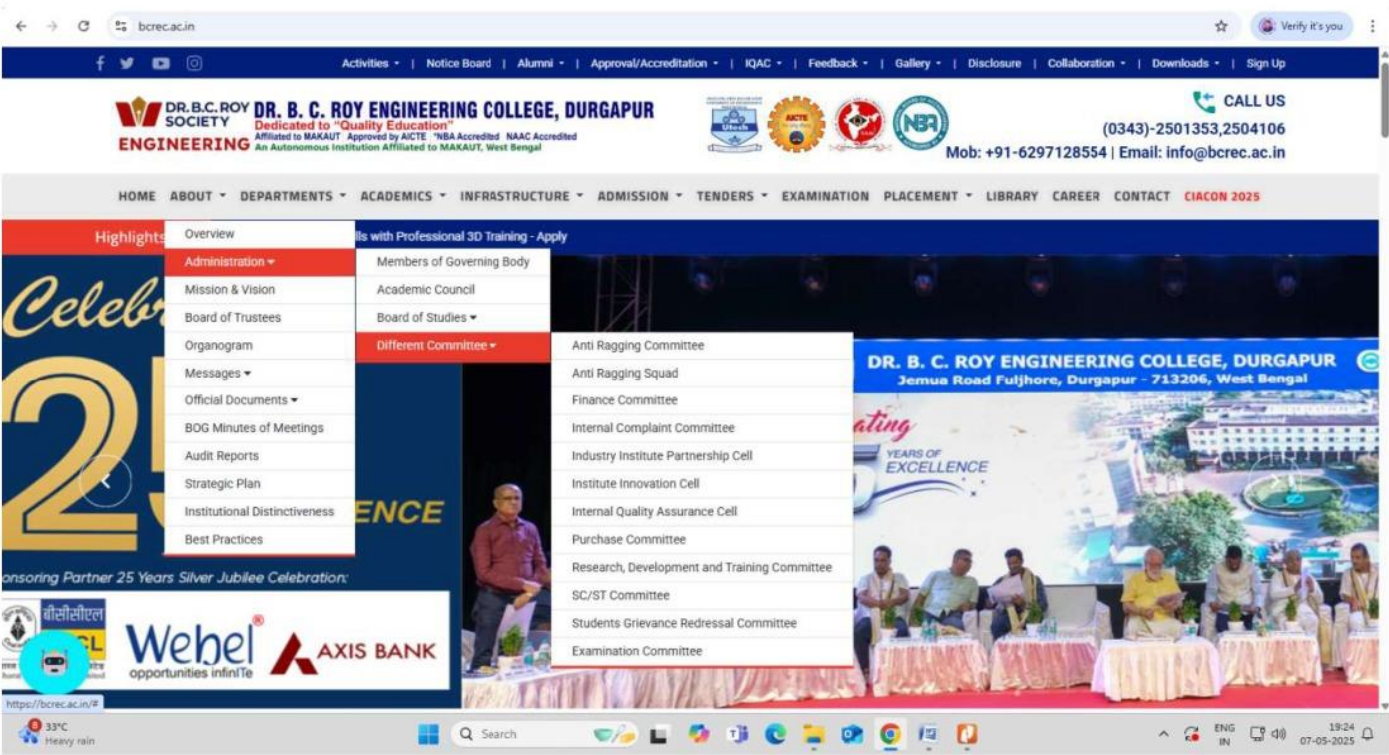
6.12.2 An employee may make a request to the Disciplinary Authority or the next higher authority, for a review of the order imposing upon him any of the penalties specified in Rule 6.5 along with a written statement containing the grounds on the basis of which he wishes to get his case reviewed.

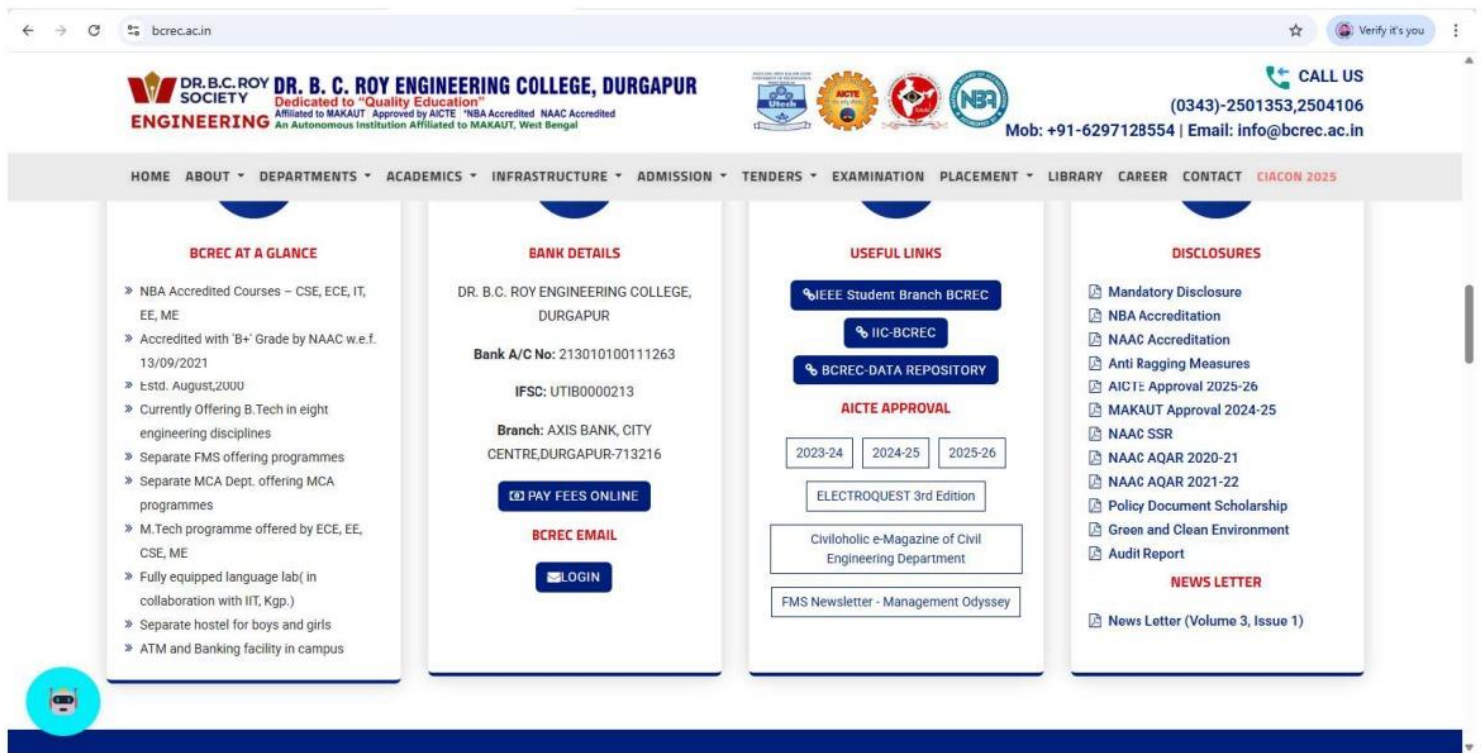
6.12.3 Request for a review of penalty shall be made within one month from the date of the communication of the order against which review is requested.

6.12.4 The authority reviewing the case may pass an order confirming, enhancing, reducing or setting aside the penalty or remitting the case to the authority which imposed the penalty or to any other authority with such direction as he may deem fit in the circumstances of the case.

6.12.5 The appeal for review will be time-barred by limitation after six months from the date of order of punishment.

Annexure for 9.6.2.





DR. B.C. ROY ENGINEERING COLLEGE DURGAPUR

Registered under Societies of West Bengal Act XXVI of 1961
(Registration Number : S/93521 of 1998 - 99)

Office : Dr. B. C. Roy Engineering College Campus, Management House, Jemua Road,
Fuljhore, Durgapur 713206, Ph : 0343 - 2504106 / 2501353

BCR/ GS/ NOT- 17/ 9663

18th June, 2021

Sub : Delegation of Financial Powers to Director/Principal/Vice Principal and Head of Departments of the constituent Colleges under the management of Dr. B. C. Roy Engineering College, Durgapur [Society].

Preamble : In terms of resolution adopted at the 13th Meeting of the Board of Governors held on 10th April, 2007, it was resolved that the Principal and HoDs were delegated the authority to make urgent and emergency purchases as per the following limit:

Position	Revenue purchases (Rs.)	Capital purchases (Rs)	Maximum permissible limit in a financial year
Principal	Rs. 20,000/=	-----	Rs. 1,00,000/=
Head of Departments	Rs. 10,000/=	-----	Rs. 50,000/=

In the light of experience gained and the present scenario, it has been decided that the following Officials may make Capital / Revenue Expenditure upto the limits specified against each:

Position	Capital Expenditure and Revenue Expenditure per Fin. Year.
Principal/ Director	Rs. 2,00,000/=
Vice Principal/ Head of Departments	Rs. 1,00,000/=

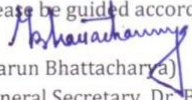
Routing of Sanctions:

1. Purchases made by Principal/Director may be regularized with due justification through Post - facto sanctions from the Society.
2. Purchases made by Head of Departments may be sent for post facto sanctions as per the following routing:

HOD to Vice Principal to Principal / Director to Society with due justification .

Applicability : Effective Financial Year 2021 - 22.

Please be guided accordingly.


(Tarun Bhattacharya)
General Secretary, Dr. B. C. Roy Engineering College [Society]

Copy to 1. Principal/ Director of Constituent Colleges

2. HOD of Engineering departments/ Faculty of Management Studies/
Department of Computer Applications, BCREC
3. Sr. Manager, Finance, Dr. B. C. Roy Engineering College.

SAMPLE RESULT ANALYSIS

Dr. B C Roy Engineering College
Department of Electronics and Communication Engineering
2ND SEM Result Analysis
Session: RESULT NBA 24-25
 Generated on 2026-02-15 22:09:49

Context

- Session: RESULT NBA 24-25
- Academic year folder: 24-25 (EVEN)
- Result file path: 24 -25/EVEN SEM/2ND SEM.xlsx
- Result source: 2ND SEM.xlsx (sheet: ECE)
- Regular student source: STUDENTS 2024-2028.xlsx (sheet: ECE, roll column: University Roll)
- Output folder: results_nba/result_nba_24_25/24_25/even_sem/2nd_sem

Executive Summary

- Total result records analyzed: 126
- PASS records: 34 (26.98%)
- NON-PASS records: 92 (73.02%)
- Regular records identified: 0
- Backlog/repeat records identified: 126
- Students with at least one failed subject (F): 92 (73.02%)

Performance Snapshot

Group	Total	PASS	NON-PASS	PASS %	SGPA Mean	SGPA Median	SGPA Min	SGPA Max
Overall	126	34	92	26.98%	6.29	6.31	4.56	7.54
Regular	0	0	0	0.00%	-	-	-	-
Backlog/Repeat	126	34	92	26.98%	6.29	6.31	4.56	7.54

Granular Breakdown**Pass/Non-Pass by Group**

Group	Total	PASS	PASS %	NON-PASS	NON-PASS %
Regular	0	0	0.00%	0	0.00%
Backlog/Repeat	126	34	26.98%	92	73.02%
Combined	126	34	26.98%	92	73.02%

Backlog Severity Bands

Group	Total	0 Failed	1 Failed	2 Failed	3 Failed	4+ Failed
Regular	0	0	0	0	0	0
Backlog/Repeat	126	34	64	27	1	0
Combined	126	34	64	27	1	0

SGPA Band Distribution

Group	Band	Count	% of Group
Regular	SGPA ≥ 8.00	0	0.00%
Regular	7.00-7.99	0	0.00%
Regular	6.00-6.99	0	0.00%
Regular	< 6.00	0	0.00%
Regular	Missing/—	0	0.00%
Backlog/Repeat	SGPA ≥ 8.00	0	0.00%
Backlog/Repeat	7.00-7.99	20	15.87%
Backlog/Repeat	6.00-6.99	64	50.79%
Backlog/Repeat	< 6.00	42	33.33%
Backlog/Repeat	Missing/—	0	0.00%
Combined	SGPA ≥ 8.00	0	0.00%
Combined	7.00-7.99	20	15.87%
Combined	6.00-6.99	64	50.79%
Combined	< 6.00	42	33.33%
Combined	Missing/—	0	0.00%

Subject Gap (Backlog vs Regular)

Subject	Regular Fail %	Backlog Fail %	Gap (B-R)
BSM202	0.00%	46.83%	+46.83%
BSPH201	0.00%	42.86%	+42.86%
ESCS201	0.00%	5.56%	+5.56%
HMHU201	0.00%	0.79%	+0.79%
BSPH291	0.00%	0.00%	+0.00%
ESCS291	0.00%	0.00%	+0.00%
ESME292	0.00%	0.00%	+0.00%
HMHU291	0.00%	0.00%	+0.00%

Visualizations

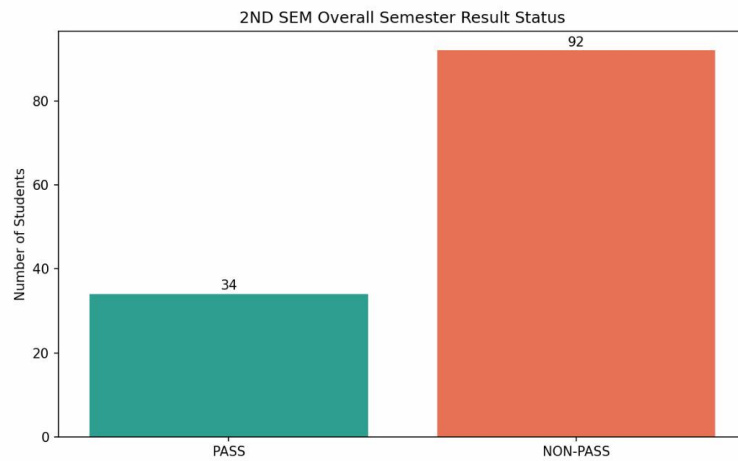


Figure 1: Overall pass status

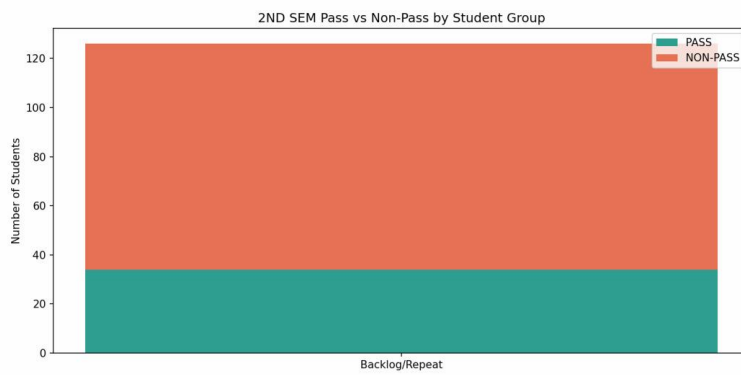


Figure 2: Pass status by regular and backlog/repeat groups

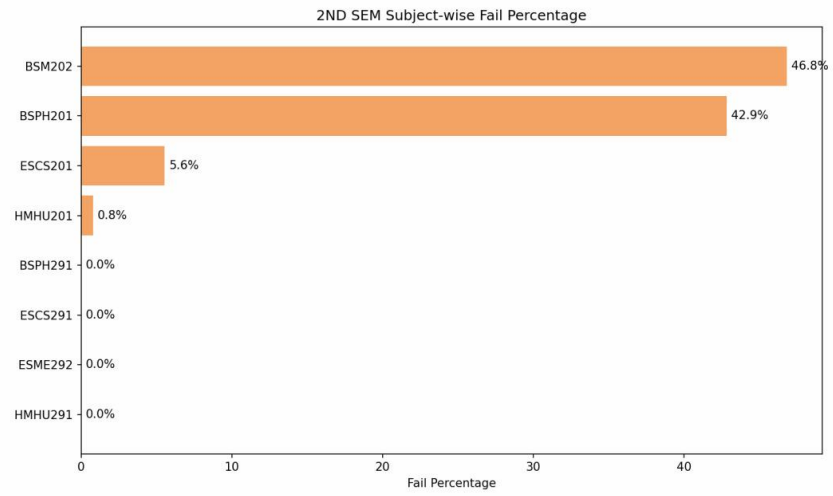


Figure 3: Subject-wise fail percentages

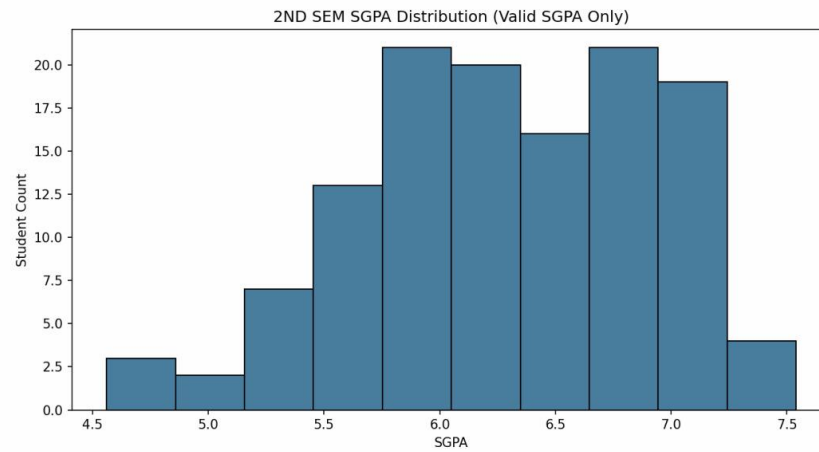


Figure 4: SGPA distribution for valid SGPA entries

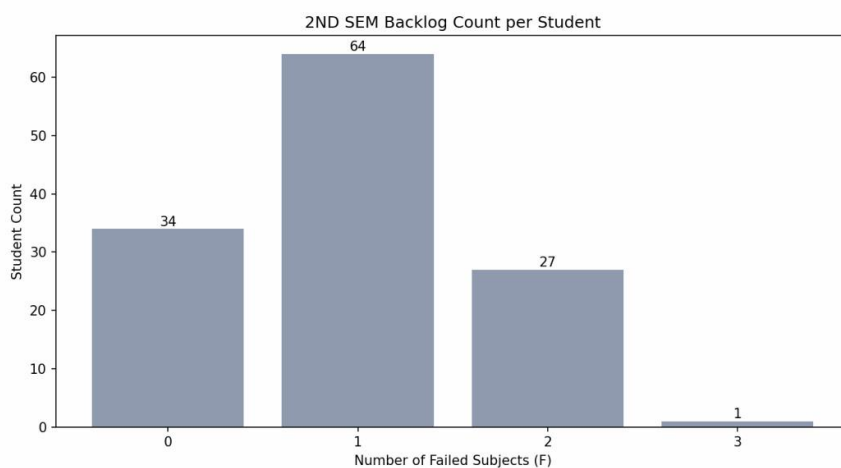


Figure 5: Backlog count distribution

Subject-wise Analysis

Regular Students

Subject	Total	Fail	Pass	Fail %	Pass %
BSPH201	0	0	0	0.00%	0.00%
BSM202	0	0	0	0.00%	0.00%
ESCS201	0	0	0	0.00%	0.00%
HMHU201	0	0	0	0.00%	0.00%
BSPH291	0	0	0	0.00%	0.00%
ESCS291	0	0	0	0.00%	0.00%
ESME292	0	0	0	0.00%	0.00%
HMHU291	0	0	0	0.00%	0.00%

Backlog/Repeat Students

Subject	Total	Fail	Pass	Fail %	Pass %
BSM202	126	59	67	46.83%	53.17%
BSPH201	126	54	72	42.86%	57.14%
ESCS201	126	7	119	5.56%	94.44%
HMHU201	126	1	125	0.79%	99.21%
BSPH291	126	0	126	0.00%	100.00%
ESCS291	126	0	126	0.00%	100.00%
ESME292	126	0	126	0.00%	100.00%
HMHU291	126	0	126	0.00%	100.00%

Combined

Subject	Total	Fail	Pass	Fail %	Pass %
BSM202	126	59	67	46.83%	53.17%
BSPH201	126	54	72	42.86%	57.14%
ESCS201	126	7	119	5.56%	94.44%
HMHU201	126	1	125	0.79%	99.21%
BSPH291	126	0	126	0.00%	100.00%
ESCS291	126	0	126	0.00%	100.00%
ESME292	126	0	126	0.00%	100.00%
HMHU291	126	0	126	0.00%	100.00%

High Risk Subjects

Subject	Fail Count	Total	Fail %
BSM202	59	126	46.83%
BSPH201	54	126	42.86%
ESCS201	7	126	5.56%
HMHU201	1	126	0.79%
BSPH291	0	126	0.00%

Top SGPA Records

Roll	Name	Group	SGPA	Semester Result
12000322055	TANIYA SULTANA	Backlog/Repeat Records	7.54	PASS
12000322100	SHAMBHABI SEN	Backlog/Repeat Records	7.49	PASS
12000322124	ARUSHREE DAS	Backlog/Repeat Records	7.29	PASS
12000323073	RISHAV KUMAR	Backlog/Repeat Records	7.29	—
12000322081	SACHIN KUMAR	Backlog/Repeat Records	7.24	PASS
12000322054	ANURIMA DUTTA	Backlog/Repeat Records	7.22	PASS
12000323117	SUJOYA GHOSH	Backlog/Repeat Records	7.20	—
12000323008	ANAND MOHAN PRASAD	Backlog/Repeat Records	7.17	PASS
12000323024	ARADHANA RANI	Backlog/Repeat Records	7.15	PASS
12000323043	DEEPSHIKHA CHEL	Backlog/Repeat Records	7.12	PASS

Students with Highest Backlog Count

Roll	Name	Group	Failed Subjects	Semester Result
12000322117	PARTHIB BANERJEE	Backlog/Repeat Records	3	—
12000322040	SHYAMAPRASAD RAY	Backlog/Repeat Records	2	—
12000322066	ANINDYA SUNDAR PRADHAN	Backlog/Repeat Records	2	—
12000322084	SAMANNOY SHOME	Backlog/Repeat Records	2	—
12000322106	GOPAL KUMAR	Backlog/Repeat Records	2	—
12000322108	ARKA DIP HALDER	Backlog/Repeat Records	2	—
12000322112	AMAR KANT	Backlog/Repeat Records	2	—
12000322126	MAYANK KUMAR SINGH	Backlog/Repeat Records	2	—
12000323006	AMAN BHANDARI	Backlog/Repeat Records	2	—
12000323012	ANIKET DAS	Backlog/Repeat Records	2	—
12000323031	AYAN BHATTACHARYA	Backlog/Repeat Records	2	—
12000323034	BIJOY KUMAR ADITYA	Backlog/Repeat Records	2	—
12000323044	DIPANJANA GHORUI	Backlog/Repeat Records	2	—
12000323045	DIVYANSHU RANJAN	Backlog/Repeat Records	2	—
12000323051	JYOTIRMOY GHOSH	Backlog/Repeat Records	2	—

Subject Grade Distribution

Subject	Grade	Count
BSM202	F	59
BSM202	D	44
BSM202	C	20
BSM202	B	3
BSPH201	F	54
BSPH201	D	53
BSPH201	C	16
BSPH201	B	3
BSPH291	A	54
BSPH291	E	37
BSPH291	B	24
BSPH291	O	10
BSPH291	C	1
ESCS201	D	49
ESCS201	C	37
ESCS201	B	19
ESCS201	A	11
ESCS201	F	7
ESCS201	E	3
ESCS291	E	78
ESCS291	A	36
ESCS291	O	10
ESCS291	B	1
ESCS291	C	1
ESME292	E	68
ESME292	A	32
ESME292	O	21
ESME292	B	4
ESME292	C	1
HMHU201	B	37

Subject	Grade	Count
HMHU201	C	35
HMHU201	D	24
HMHU201	A	17
HMHU201	E	11
HMHU201	F	1
HMHU201	O	1
HMHU291	A	62
HMHU291	E	51
HMHU291	B	7
HMHU291	O	6

Method and Assumptions

- Backlog candidates (previous-year repeaters) are identified as rows whose roll numbers are absent in the semester student-list file.
- Current unresolved backlogs are measured as failed subjects (F) in the present semester result sheet.
- Backlog count per student is computed as the number of subject cells containing F.
- When semester-result column exists, PASS is treated as pass and all other values as non-pass.
- When semester-result column is missing, pass/non-pass is derived from failed-subject count (0 failed => PASS).
- SGPA statistics use only numeric SGPA values (rows with — are excluded).
- Schema harmonization aligns every semester to 5th-sem baseline subject slots and stores mapping in subject-slot-mapping.csv.

Data Quality and Reconciliation

- Unique rolls in regular list: 90
- Duplicate roll entries in regular list: 0
- Unique rolls in result records: 126
- Regular rolls matched in result file: 0
- Regular rolls missing in result file: 90
- Extra rolls in result file (treated as backlog/repeat): 126
- Result roll column used: ROLL NO
- Semester result column used: SEMETER RESULT
- SGPA column used: SGPA2
- Baseline schema subject-slot count (from 5th sem): 10
- Detected subject count in 2ND sem: 8

