PCET'S

Pimpri Chinchwad College of Engineering & Research

SELF ASSESSMENT REPORT

(SAR)

Submitted To

NATIONAL BOARD OF ACCREDITATION,

NEW DELHI

Submitted By



Department of Electronics & Telecommunication Engineering

PCET's

Pimpri Chinchwad College of Engineering & Research

Plot No. B, Survey No. 110,
Laxminagar, Ravet, Haveli, Pune - 412101.
Email Id: pccoer.ravet@gmail.com
Website: www.pccoer.com
Contact Number: 8237238080

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PART A: INSTITUTIONAL INFORMATION

1. Name and Address of the Institution:

Name:	**Pimpri Chinchwad College of Engineering & Research**	
Address:	Plot No. B, Survey no. 110, Laxminagar, Ravet, Haveli, Pune - 412101.	
City: Pune	**Pin Code:** 412101	**State:** Maharashtra

2. Name and Address of Affiliating University

Name:	**Savitribai Phule Pune University**	
Address:	Ganesh khind Road, Pune	
City: Pune	**Pin Code:** 411007	**State:** Maharashtra

3. Year of establishment of the Institution: 2014

4. Type of the Institution:

- ☐ University
- ☐ Autonomous
- ☐ Deemed University
- ☑ Affiliated
- ☐ Government Aided

5. Ownership Status:

- ☐ Central Government
- ☑ Trust
- ☐ State Government
- ☐ Society
- ☐ Government Aided
- ☐ Section 25Company
- ☑ Self financing
- ☐ Any other (Please Specify)

6. Other Academic Institutions of the Trust/Society/Company etc., if any:

Name of Institutions	Year of Establishment	Programs of Study	Location
Pimpri Chinchwad Polytechnic (PCP)	1990	Mechanical Engineering Computer Engineering Electronics and Telecommunication Civil Engineering Automobile Engineering Information Technology	Nigdi Campus, Pune.
Pimpri Chinchwad College of Engineering (PCCOE)	1999	**UG Courses:** Mechanical Engineering, Computer Engineering, Electronics and Telecommunication, Information Technology, Civil Engineering, **PG Courses:** Computer, Mechanical- Heat Power, Mechanical- Design E&TC- Embedded Systems & VLSI, Information Technology, Civil- Construction Management Master Computer Application (MCA), Master Business Administration (MBA)	Nigdi Campus, Pune.
S. B. Patil Institute of Management (SBPIM)	2009	Master of Business Administration (MBA)	Nigdi Campus, Pune.
S. B. Patil Public School (SBPPS) (CBSE)	2012	Nursery, Jr. Kg, Sr.Kg, Up to Std X	Ravet Campus, Pune
S. B. Patil College of Architecture and Design (SBPCOAD)	2014	Bachelor of Architecture	Nigdi Campus, Pune.
S. B. Patil College of Science & Commerce (SBPCSC)	2014	11th & 12th Science & Commerce	Ravet Campus, Pune
Pune Business School	2020-21	Post Graduate Diploma	Nigdi Campus, Pune.

7. Details of all the programs being offered by the institution under consideration:

Name of Program	Program Applied level	Start of year	Year of AICTE approval	Initial Intake	Intake Increase	Current Intake	Accreditation status	From	To	Program for consideration	Program for Duration
Mechanical Engineering	UG	2014	2014	120	No	60	Applying first time	--	--	Yes	4
Computer Engineering	UG	2014	2014	60	Yes	120	Applying first time	--	--	Yes	4
Electronics & Tele-Communication Engineering	UG	2014	2014	60	No	60	Applying first time	--	--	Yes	4
Civil Engineering	UG	2014	2014	60	No	60	Applying first time	--	--	Yes	4

8. Programs to be considered for Accreditation vide this application:

S No	Level	Discipline	Program
1	Under Graduate	Engineering & Technology	Mechanical Engineering.
2	Under Graduate	Engineering & Technology	Computer Engineering
3	Under Graduate	Engineering & Technology	Electronics & Telecommunication Engineering
4	Under Graduate	Engineering & Technology	Civil Engineering

9. Total number of employees in the institution:

A. Regular* Employees (Faculty and Staff):

Items	2020-21		2019-20		2018-19		2017-18	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
Faculty in Engineering (Male)	36	37	37	39	37	37	38	39
Faculty in Engineering (Female)	18	19	19	19	20	21	24	25
Faculty in Maths, Science & Humanities (Male)	6	6	6	6	6	6	6	6
Faculty in Maths, Science & Humanities (Female)	4	4	4	4	4	4	4	4
Non-teaching staff (Male)	32	33	34	34	33	33	34	34
Non-teaching staff (Female)	7	8	8	8	7	7	10	10

B. Contractual* Employees (Faculty and Staff):

Items	2020- 21		2019- 20		2018-19		2016-17	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
Faculty in Engineering (Male)	1	1	1	1	0	0	0	0
Faculty in Engineering (Female)	0	0	0	1	0	1	0	0
Faculty in Maths, Science & Humanities (Male)	0	0	0	0	0	0	0	0
Faculty in Maths, Science & Humanities (Female)	2	2	1	2	1	1	1	1
Non-teaching staff (Male)	0	0	0	0	0	0	0	0
Non-teaching staff (Female)	0	0	0	0	0	0	0	0

10. Total number of Engineering Students:

Engineering and Technology – UG

Items	2020-21	2019-20	2018-19	2017-18
Total number of Boys	824	743	722	738
Total number of Girls	339	326	348	316
Total	**1163**	**1069**	**1070**	**1054**

11. Vision of the Institution:

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

12. Mission of the Institution:

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

Part A: Institutional Information

1. Contact Information of the Head of the Institution:

Head of the Institution	
Name	Dr. H. U. Tiwari
Designation	Principal
Mobile No.	8806461401
Email ID	principal@pccoer.in

2. Contact Information of NBA coordinator:

NBA Coordinator	
Name	Mrs. S. A. Koparde
Designation	Assistant Professor, Computer Engineering Department
Mobile No.	9960614717
Email ID	shweta.koparde@pccoer.in

CRITERION - 1	VISION, MISSION AND PROGRAM EDUCATIONAL OBJECTIVES	60

Total Marks 57

1.1 State the Vision and Mission of the Department and Institute (05) **Institute Marks 5**

DEPARTMENT VISION AND MISSION

VISION

To be a premier department in the field of electronics and telecommunication engineering with emphasis on hands on activities

MISSION

M1: Producing engineers of academic excellence, ready with skill set that are required to handle the state-of-art technologies in the field of electronics and telecommunication engineering

M2: Imparting research and innovative aptitude with moral and professional ethics for overall development of students to achieve desired outcomes

INSTITUTE VISION AND MISSION

VISION

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

MISSION

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

1.2 State the Program Educational Objectives (PEOs) (5)

Institute Marks 5

The PEOs of the programme are,

PEO1: *To provide learning environment and hands on training in the domains of electronics and telecommunication engineering to achieve skill up-gradation of the human capital*

PEO2: *To inculcate research and innovation capabilities in the electronics and telecommunication engineering and allied interdisciplinary domains and adapt themselves to rapidly evolving technology*

PEO3: *To impart moral, professional ethics and required skill set among the students so as to transform them into capable, adaptable and responsible citizens*

1.3. Indicate where the Vision, Mission and PEO's are published and disseminated (10)

Institute Marks 10

1.3. A. Adequacy in respect of publication and dissemination of Vision, Mission and PEOs of the department

The department vision, mission and PEO's are disseminated to the stakeholders of the programme as shown in figure B.1.3a.

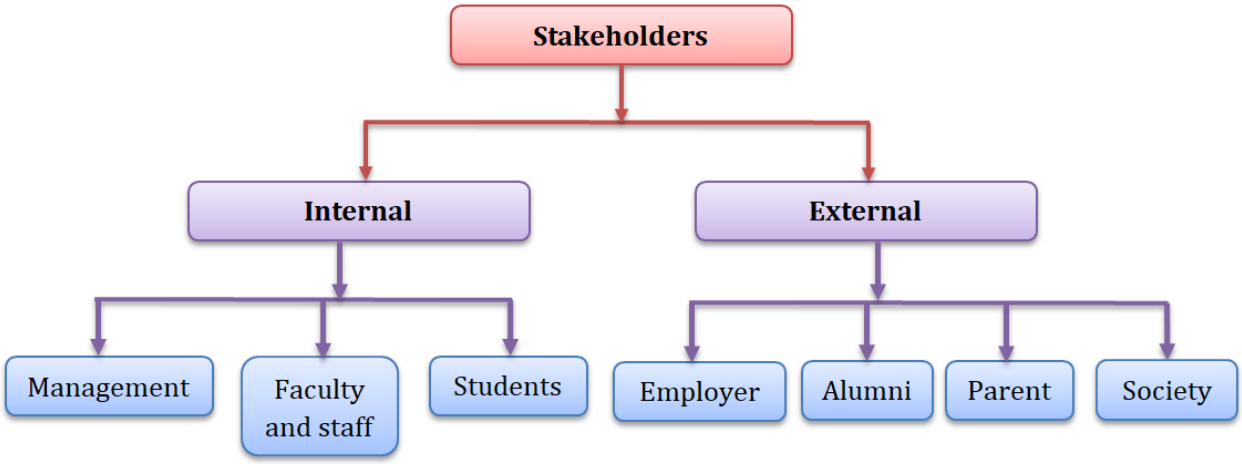


Figure B.1.3a: Flowchart showing the various types of stakeholders

Both internal and external stakeholders have active involvement in defining department Vision and Mission. The involvement of the stakeholders and their overall role is explained below:

Management:

- Management have established the Pimpri Chinchwad Education Trust and are running the Pimpri Chinchwad College of Engineering and Research (PCCOE&R) institute with a very vivid Vision to serve the society.
- Management conveys their views in College Development Committee and Governing Body meetings.
- Management encourages, approve and fund various projects and activities that lead to the development of the Department.

Faculty:

- Plays a vital role in design and execution of the program.
- Is associated with various committees to check the consistency of the program.
- Provides input for establishment of PEOs, PSOs, course outcomes and assessment.

Student:

- Most prominent role as the receiver and beneficiary of the program.
- Their feedback is considered to identify the strengths and weaknesses of the program so as to introduce innovative teaching and learning methodologies.

Employer:

- Represents the end user and assessor of the beneficiary of program.
- Employer's feedback helps in identifying shortcomings in the program.
- Employer's feedback helps in curriculum design to meet the changing trends in Engineering and Technology.

Alumni:

- They are a measure of long term success of the program.
- Alumni feedback helps in curriculum design to meet the changing trends in Engineering and Technology.
- Their association with program enriches the program in many ways, as these may act as advisors, assessors, guides, employers, sponsors, etc.
- They are the ambassadors of the program and the reflection of overall culture of the department/Institute.

Parent:

- One of the most important stakeholders, who is indirectly contributing in running of the program.
- The executors of program are fully responsible and answerable to parents for progress of their ward.

Society:

- One of the most important beneficiaries and end-users of the program.
- E&TC department is creating professionals to serve the society and Nation and hence input from society is invaluable. Through education, internships, industrial sponsored or otherwise projects, department is ultimately trying to serve society.
- Department faculty members approach Corporations formally and express the desire to do consultancy work, conveying expertise, equipment available and areas in which consultancy may be competently handled.
- Department faculty members also identify societal technical issues and technology requirements through informal interactions.

Vision, Mission and PEOs of the department are displayed at prominent places as shown in Table B.1.3a and disseminated among the stakeholders.

Table B.1.3a: Dissemination of Vision, Mission and PEOs of the Department

Sr. No.	Vision, Mission and PEOs
1.	College website: http://pccoer.com/vision-mission.php
2.	Department website: http://www.pccoeretc.com/visionnmission.html
3.	College Broachers
4.	Departmental e-magazine
5.	HoD Office
6.	Display Board at the passage of department
7.	Departmental Notice Boards
8.	Classrooms of the Department
9.	Display at Laboratories in the Department
10.	Students Journals and Faculty Course files
11.	Departmental Library
12.	Email signature of Department faculties
13.	Mentor Meeting
14.	Parent – Teacher Meeting
15.	Faculty Development Programme (FDP), Seminar, Workshop, etc.
16.	Orientation / Induction Programme
17.	Departmental faculty Meetings

1.3. B. Process of Dissemination:

- The Vision, Mission and PEOs of the program are published at the institutional website (http://pccoer.com/vision-mission.php) and department website (http://www.pccoeretc.com/visionnmission.html). All the stakeholders and future students can have the access.

- The vision and mission are displayed at prominent locations in the campus and the department which can be viewed by students, parents, faculty members and others.
- The vision and mission are propagated during induction/orientation program organized by the institute and department for the fresher students where they are informed with institutional profile along with some dos and don'ts.
- Students are our internal stakeholders, head of the department gives presentation to the students on first day of commencement of semester in which department vision, mission and PEOs are discussed and they can also see on the lab files, notice boards, classrooms, laboratories, department library etc.
- Parents and employers are our external stakeholders; department vision, mission and PEOs are communicated to them through the parents meetings and employer meetings. Email signature of department vision, mission and PEOs are used by the faculties while communicating with parents and employers. During the visit to institute they can see department vision, mission and PEOs which are displayed on notice boards, classrooms, laboratories, department library, corridors etc.
- Vision and mission of the department are conveyed to management through College Development Committee (CDC) and Governing Body (GB) meetings.
- Reviews of department vision, mission and PEOs are discussed in the department advisory board (DAB) meeting to check the accomplishment status.
- The dissemination of vision, mission and PEOs with IEEE and IETE professional bodies is made through the email signature of faculty.

1.4 State the process for defining the Vision and Mission of the Department and PEO's of the programme (25)

Institute Marks 23

1.4. A. Process for defining Vision and Mission of the Department:

The Department established its vision and mission through a consultative process involving the stakeholders of the Institute/Department such as Management, Industry representative, Parent representative, Alumni, Faculty and Students. It is explained using figure B.1.4a. The process for establishing the Vision and Mission of the Department involved the following steps:

Step 1) Vision and mission of the institute are considered for defining vision and mission of the department.

Step 2) Views of department stakeholders such as faculties, alumni, industry experts, parents, professional body members and students are taken as input to set vision and mission.

Step 3) Views of stakeholders are collected and a draft of Vision and Mission is prepared by PAC and is put before Departmental Advisory Board (DAB).

Step 4) Vision and Mission statements are discussed and approved in the DAB meeting.

Step 5) Approved vision and mission statements are disseminated and communicated to all stakeholders.

Step 6) If department vision and mission need to be revised, these statements are referred back to the department PAC.

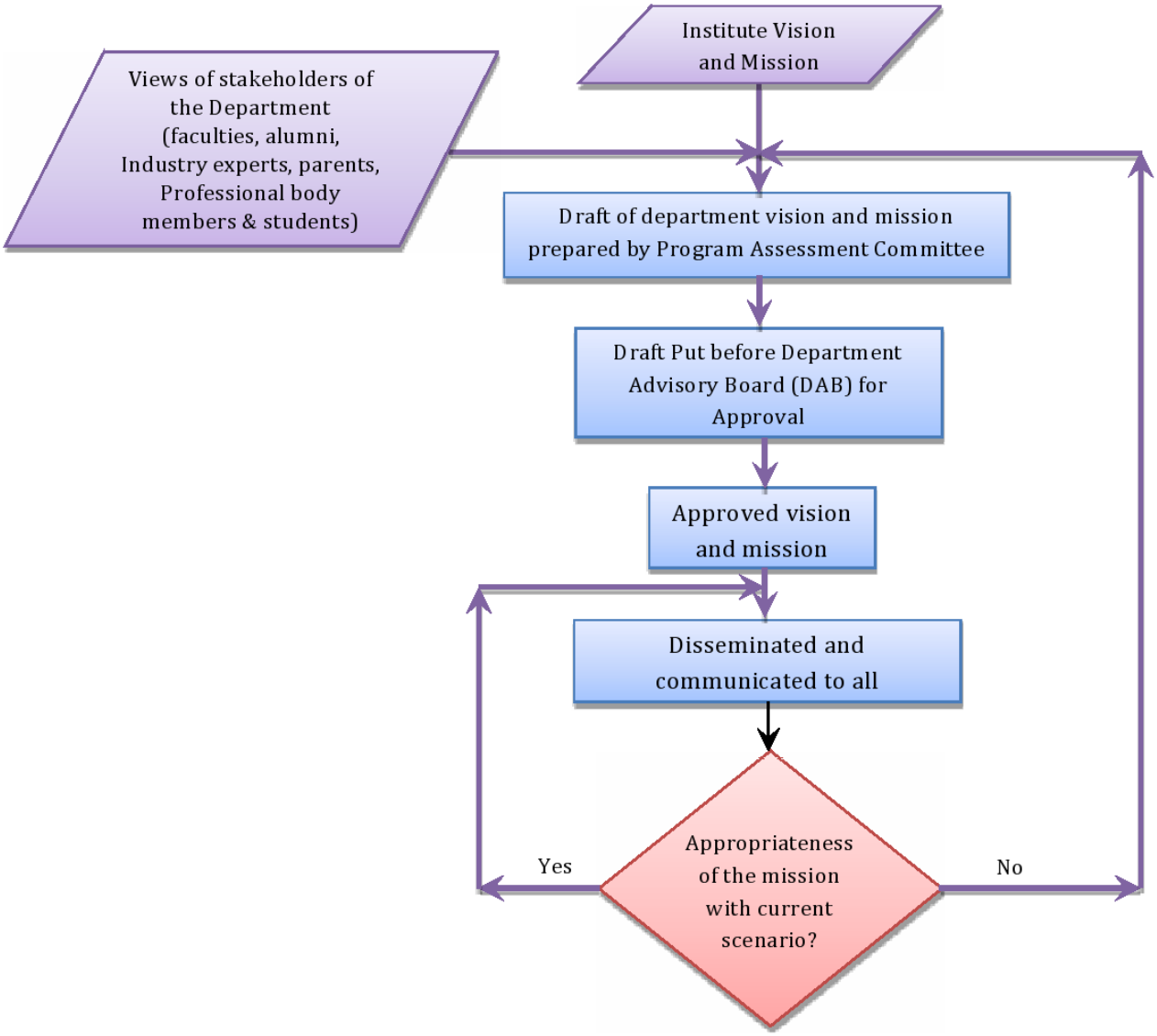


Figure B.1.4a: Process for defining vision and mission

1.4. B. Process for defining Program Educational Objectives (PEOs) of the program:

The Program Educational Objectives (PEOs) are established through a consultation process involving the core constituents such as students, alumni, Industry, faculties and employers. Figure B.1.4b shows the process of establishing PEOs. The PEOs are established through the following process steps:

Step 1) Department interacts with the stakeholders and collects the data in reference with vision and mission statement of the institute and graduate attributes given by NBA.

Step 2) Based on the suggestions from all stakeholders, PAC prepare draft of PEOs.

Step 3) Draft is forwarded to DAB for approval.

Step 4) Approved PEOs are disseminated to all stakeholders.

Step 5) If Department PEOs need to be revised due to the current scenario, these statements are referred back to the department PAC.

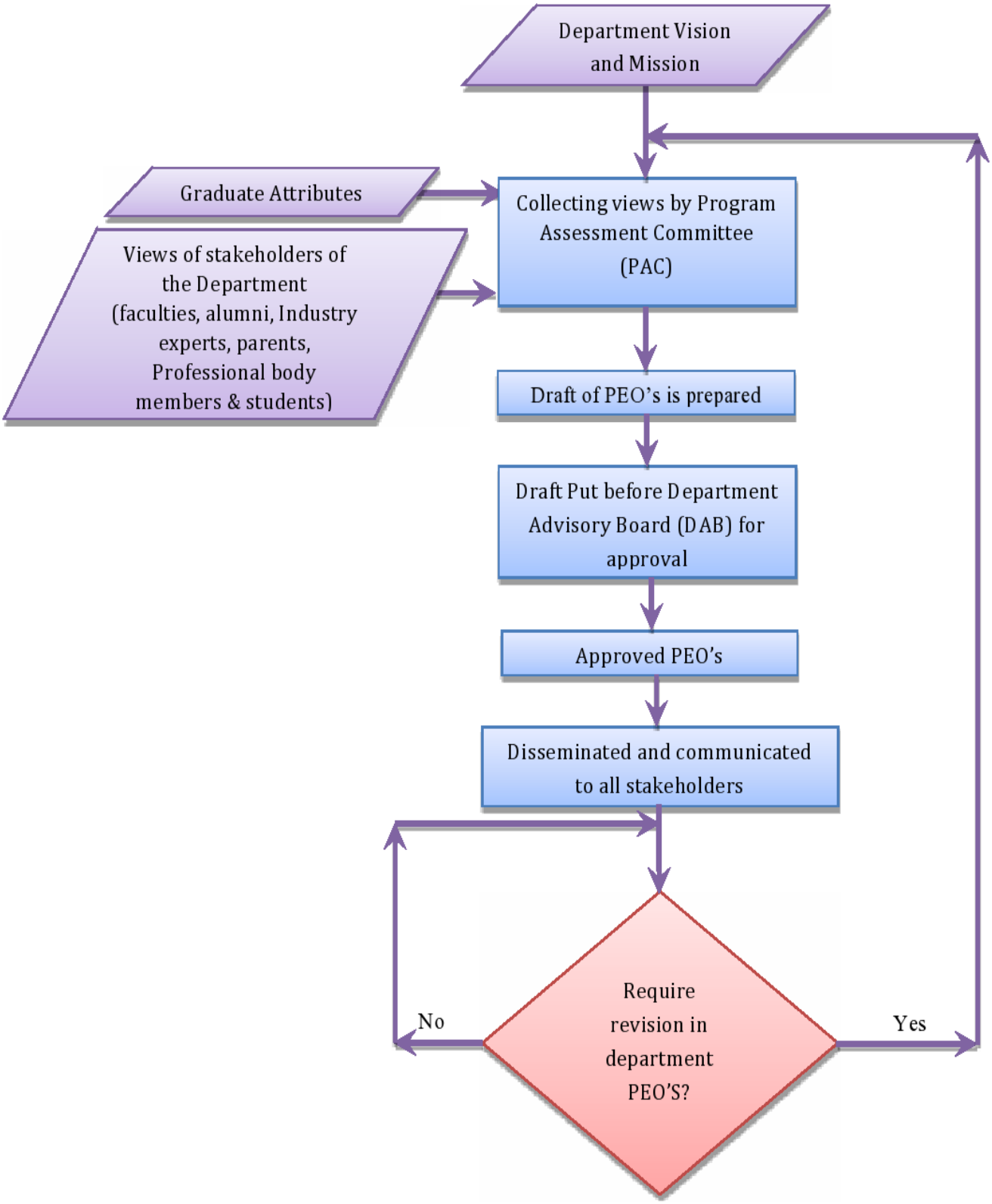


Figure B.1.4b: Process for Establishing PEOs

About the Institute

Pimpri Chinchwad Education Trust (PCET) was established by Late Shri. S. B. Patil in the year 1990 with a vision to provide value added educational platform to society in multiple dimensions right from Nursery to Doctoral programs in all professional streams enabling all our students to achieve Freedom through Education. The Trust and Institute Logos with their significance are given in table B.1.4a and table B.1.4b respectively.



Table B.1.4a Connotation of PCET-Trust Logo

Aspect	Description/Reflections
Symmetry @ vertical axis	Balanced design, balanced mind
Trust name letters in Capital	Dominance, Confidence, Leadership
Agni (Flame) immersing from a book	Enlightenment, Leadership through Education
Enveloping design	Protecting Shield
Catchphrase in Sanskrit	Pride and pursuit of Ancient Traditions, (That's education, which liberates)
Devnagari Scripture	Salutations and closeness to local custom
Gear wheel enveloped in book	Engineering education



Table B.1.4b Connotation of PCCOE&R Logo

Aspect	Description/Reflections
Symmetry @ vertical axis	Balanced design, balanced mind
Letters PCET's PCCOER forming base of *Yajna*	Sacrifice Devotion Worship
All letters in Capital	Dominance Confidence Leadership
Agni (Flame) of *Yajna*	Enlightenment Leadership Warmth Valor
Enveloping and Gradient Bright Gear Wheel	Engineering Rising Sun Protecting Shield
Catchphrase in Sanskrit	Pride and pursuit of Ancient Traditions
Devnagari Scripture	Salutations and closeness to local custom
Golden crops	Wealth and Prosperity through Education

9001:2015 certified Institution. The focus of PCCOE&R has always been outcome-based education. PCCOE&R believes in student-centric Four-Pillar philosophy which includes academic excellence, research and innovations, training and placement, ethics and values. In academics, the University results are among the best five at the SPPU level. PCCOE&R has a Research and Innovation conducive environment. PCCOE&R holds three world records for filing maximum copyrights and patents. Some products have also been developed and some are in pipeline through student projects. The placement has been more than 75% for the passed out

batches. Further, the focus of the institute is on producing engineering professionals with high moral and ethical values.

PCCOE&R Four-Pillar philosophy is aligned with NBA Outcome Based Education (OBE) attributes. It is summarized in table B.1.4c.

Table B.1.4c: Correlation of PCCOE&R Four-Pillar philosophy with NBA (OBE) attributes.

Sr. No.	PCCOE&R Pillar	OBE Attribute
1.	Academics excellence	Knowledge
2.	Research and innovations	Skill and attitude
3.	Training and placement	Skill and attitude
4.	Ethics and values	Behavior and attitude

Innovative Representation of Institute Philosophy as a Clock

Innovative Representation of Institute outcome based education inline with NBA philosophy is represented as a Clock and is as shown in the Figure B.1.4.e below. Program outcomes, OBE attributes and PCCOE&R Vision, Mission, Quality policy & Four-Pillar philosophy is mapped with the parts of the clock and it is summarized in table B.1.4c. The clock is displayed in the institute right at the entrance.

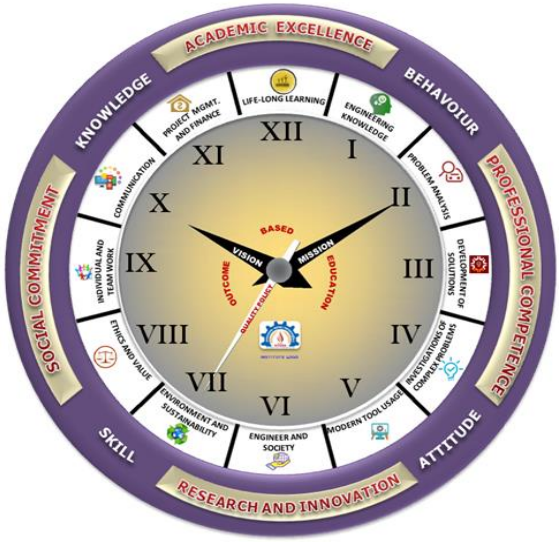


Figure B.1.4c: Innovative Representation of Institute Philosophy as a Clock

Table B.1.4.d: Clock parts and their description

Sr. No.	Clock parts	Description/Reflections
1.	12 hours	12 program outcomes
2.	Hour hand	Vision
3.	Minute hand	Mission
4.	Second hand	The quality policy of the institute
5.	Edge of a clock	Four pillars of our institute : Academic excellence, professional competencies, research and innovation and social commitment
6.	Edge of a clock	Knowledge, Behavior, Skill and Attitude attributes of Outcome based education

About E&TC Department

The Department of Electronics and Telecommunication Engineering at PCCOE&R was established in the year 2014-2015 with an intake of 60 students. The college campus is situated near the MIDC area of Talawade, Talegaon, Chakan, Bhosari and IT Park of Hinjewadi Pune which helps to maintain Industry Institute Interaction. The Department Logo is given in the figure B.1.4d.

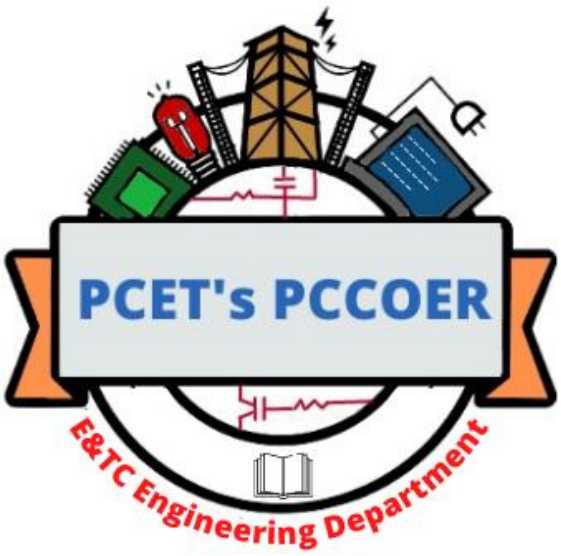


Figure B.1.4d: Department Logo

- Department has motivated, dedicated and qualified faculties.
- The Department has eleven laboratories with all necessary experimental setups and equipments to conduct the experiments prescribed by Savitribai Phule Pune University (SPPU) curriculum.

- Project Based Learning (PBL) is a regular practice of the department in which all the students are involved. The curriculum prescribed by SPPU and program outcomes is the guideline for defining the PEO of the department in view of attaining the POs.
- The department also conducts a number of workshops, seminars, industrial training programs, alumni interactions, guest lectures, expert lectures and conferences to enhance the knowledge and to gain awareness among the students with the latest technologies and recent trends in E&TC engineering.
- The department has IEEE and IETE professional student chapters under which technical programs like drone workshop, expert talks of eminent personalities from technical fields, survey of villages, school survey, sessions on how to write research papers and thesis etc. are organized.
- The department also focuses on overall personality development of students through student association club ETeSA (Electronics and Telecommunication Student Association).

The Department has well-structured Department Advisory Board (DAB) and Programme Assessment Committee (PAC), which play a very important role in establishing policies of the Department.

1. **Program Assessment Committee (PAC):**

The Program Assessment Committee (PAC) has been formed for monitoring of E&TC Engineering Departmental activities.

The roles and responsibilities of PAC are as follows.

- Interacting with stakeholders to collect the views on department Vision, Mission and PEOs.
- Monitoring the progress of Program Outcomes (POs), Program Specific Outcomes (PSO) and Program Educational Objectives (PEOs).
- Evaluating program effectiveness and proposing necessary changes.
- Preparing periodic reports on program activities, progress, status or other special reports for Department Advisory Board (DAB).

2. **Department Advisory Board (DAB):**

The DAB is composed of members from eminent institutions as well as members from industry, alumni and members of faculty of the department.

- The Departmental Advisory Board (DAB) gives approval to actions taken by Program Assessment Committee.
- The DAB develops and recommends new or revised goals and objectives of the program.
- The committee also reviews and analyzes the gap between curriculum and Industry requirement and gives necessary feedback or advice actions.

The Vision and mission of the department is in line with the vision and mission of the institute table B.1.4e and table B.1.4f shows the correlation between them.

Table B.1.4e: Correlation of Institute and Department Vision

Institute Vision Keywords	Department Vision Keywords
To be a Premier Institute of technical education & research	To be a premier department in the field of electronics and telecommunication engineering
Serving the need of society and all the stakeholders	With emphasis on hands on activities students and faculties develop various projects used for the society

Table B.1.4f: Correlation of Institute and Department Mission

Institute Mission Keywords	Department Mission Keywords
State-of-the-art facilities	state-of-art technologies
Creating technically sound individuals having professionalism, research and innovative aptitude	Academic excellence , research and innovative aptitude
High moral and ethical values	moral and professional ethics

1.5 Establish consistency of PEOs with Mission of the Department (15) **Institute Marks 14**

Program Educational objectives:

PEO1: To provide a learning environment and hands on training in the domain of Electronics and Telecommunication Engineering to achieve skill up-gradation of the human capital.

PEO2: To inculcate research and innovation capabilities in the electronics and telecommunication engineering and allied interdisciplinary domains and adapt themselves to rapidly evolving technology.

PEO3: To impart moral, professional ethics and required skill set among the students so as to transform them into capable, adaptable and responsible citizens.

Mission:

M1: Producing engineers of academic excellence, ready with skill set required to handle the state-of-art technologies in the field of Electronics and Telecommunication Engineering.

M2: Imparting research and innovative aptitude with moral and professional ethics for overall development of students to achieve desired outcomes.

Mapping of PEO's versus Mission of the Department

Table B.1.5a shows the matrix of Mapping of PEO's versus Mission of the Department and table B.1.5b gives the detailed justification For PEO'S mapping with department mission.

Table B.1.5a: Consistency of PEOs with Mission of the Department

Mission / PEO	MISSION OF THE DEPARTMENT	
	M1	M2
PEO1	3	2
PEO2	3	2
PEO3	2	3

Table B.1.5b: Justification for PEO'S mapping with department mission

PEO's	Missions	M1	M2
	Keywords	academic excellence, state-of-art technologies	research and innovative aptitude, moral and professional ethics
PEO1	provide a learning environment, hands on training, skill up-gradation	**3** **PEO1 mapped substantially with M1** as institute provide good learning environment to achieve academic excellence. Various hands-on workshops on recent trends are organized, students are motivated to do industrial trainings and internships for skill up-gradation.	**2** **PEO1 moderately consistent with M2** as students develop prototype models of social needs, use plagiarism checker for project report, file patents, copyrights and publish research work in reputed journals.
PEO2	research and innovation capabilities, evolving technology	**3** **PEO2 mapped substantially with M1** as research and innovation conducive environment, availability of funds to students for special projects like humanoid robot, SETU robot, drones, electric bike, priority based smart lift etc, to make them compatible with recent technologies.	**2** **PEO2 moderately mapped with M2** as department has started PBL activity for first year students to inculcate research and innovative aptitude. Department always encourages students to do industrial training and internships in reputed industries to get acquainted with professional ethics.
PEO3	impart moral and professional ethics, skill set, capable, adaptable and responsible	**2** **PEO 3 moderately mapped with M1** as department arranges industrial visits, encourage students for industrial trainings and internships for required skill set to adapt with state-of-the art technologies.	**3** **PEO3 substantially mapped with M2** as research and innovative aptitude makes the students adaptable with recent trends. Moral and professional ethics make them capable and responsible. Follows ethical practices like plagiarism, standards of engineering practices while developing the products etc.

CRITERION - 2	PROGRAM CURRICULUM AND TEACHING LEARNING PROCESSES	120

Total Marks 102

2.1 Program Curriculum (20)

2.1.1 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 AnnexureI. Also mention the identified curricular gaps, if any (10) **Institute Marks 8**

Pimpri Chinchwad College of Engineering and Research (PCCOE&R) is affiliated to Savitribai Phule Pune University (SPPU), Pune (Maharashtra - INDIA) (SPPU) since 2014, hence the syllabus/curriculum prescribed by the University is strictly followed. SPPU curriculum contains Basic Science, Humanities and Social Science, Engineering Science, Professional Core and Professional Elective Courses. The curriculum is framed and reviewed by the university once in 4 years by the board of studies, which comprises of chairman, senior faculties and representative from industry.

By referring to University curriculum all the courses are mapped with twelve Program Outcomes (POs) and two Program Specific Outcome (PSOs) and assessment of all the POs and PSOs is done. E&TC Program faculty members actively contribute in designing and implementing the University curriculum. Academic flexibility is achieved by arranging different skill oriented activities i.e. conducting guest/expert lectures and certified add-on and value added courses to meet industry requirements and expectations. In addition, student's participation in State/National level technical events/competitions also helps in overall development of the students to the great extent.

Program Outcomes (POs)

Electonics and Telecommunication Engineering Graduates will be able to:

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

2. 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. Environment and sustainability: understand the impact of the professional engineering solutions in societal and environmental contexts, demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics, responsibilities, and norms of the engineering practice.
9. Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinaryenvironments.
12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program specific outcomes PSO's:

1. Graduate will be able to identify, design, prototype and test electronics and communication systems using software and hardware tools.
2. Graduate will be able to develop and support systems based on embedded, automation, microwave, signal and image processing.

2.1.1 A. Process used to identify extent of compliance of university curriculum for attaining the POs and PSOs and gap idetification:

Following process is used to identify extent of compliance of the University curriculum for attaining the Program Outcomes (POs) and Program Specific Outcomes (PSOs) and identification of gaps is shown in figure B.2.1.1a.:

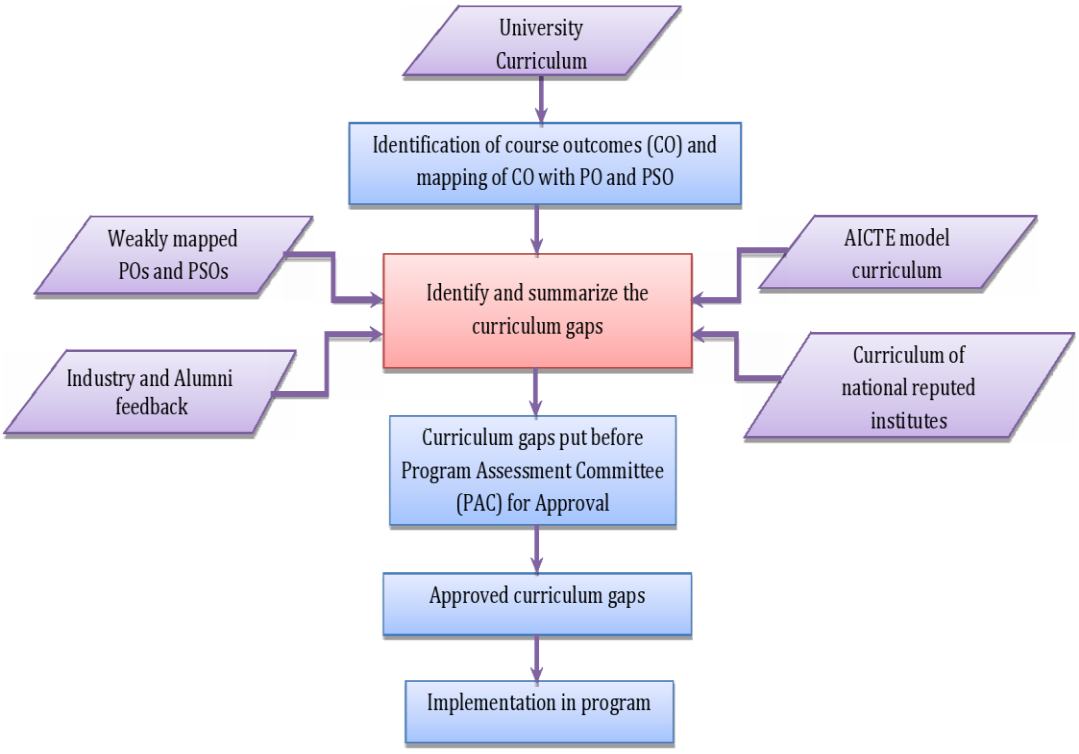


Figure B.2.1.1a: Process used to identify extent of compliance of University curriculum

1. Course outcomes (COs) are defined for each course in the curriculum with the help of University syllabus.
2. Each CO and other curricular activities are mapped with POs and PSOs and verify it by Module Coordinator (as shown in table B.2.1.1a) and Program assessment committee (PAC). The courses prescribed by the University comply with all the POs and PSOs shown in table B.2.1.1.

Table B.2.1.1: Program curriculum mapping with POs and PSOs

Course Component	POs	PSOs
Mathematics	PO1, PO2, PO4, PO12	---
Science	PO1, PO2, PO3, PO5, PO6, PO12	---
Computing	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO11, PO12	PSO1, PSO2
Humanities and Social Science	PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	---
Professional Core	PO1 to PO12	PSO1, PSO2
Projects	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	PSO1, PSO2

3. Weakly mapped POs and PSOs are used for finding the curricular gaps.
4. Feedbacks and Surveys on POs and PSOs are taken from stakeholders like Employers, Alumni, Industry experts etc.
5. Curriculum of national repute institutes are considered to identify curricular gaps.
6. Curricular gaps are summarized and reported to Program assessment committee for further action.

As per the expertise and thrust area of subject, groups (modules) are defined and senior faculties are assigned as a Module Coordinator for each group.

Table B.2.1.1a: List of Modules and Module coordinators

Sr. No.	Module coordinator	Module Name	Course Name
1	Mrs. Rupali Kawade	Circuits Design and Systems	1. Electronic Devices and Circuits/ Electronic circuits
			2. Electrical Circuits and Machines/ Electrical Circuits
			3. Integrated Circuits
			4. Electronics System Design
			5. Power Electronics/ Power Devices and Circuits
			6. Electronics Product Design
			7. Digital Electronics/ Digital Circuits
			8. VLSI Design and Technology
			9. Basic Electronics Engineering
2	Mrs. Triveni Dhamale	Communication Engineering	1. Analog Communication/ Principles of Communication Systems.
			2. Digital Communication
			3. Electromagnetics/ Electromagmanetic Field Theory
			4. Radiation and Microwave Techniques
			5. Computer Networks and Security
			6. Audio Video Engineering

			7. Mobile Communication
			8. Wireless Sensor Networks
			9. Broadband Communication Systems
			10. Electronic Measuring Instruments and tools/ Employbility Skill Development
			11. Cellular Networks
3	Mrs. M. S. Andhare	Signal Processing and Controlling	1. Signals and Systems
			2. Control Systems
			3. Digital Signal Processing
			4. Advanced Processors
			5. Information Theory, Coding and Communication Networks
			6. Digital Image and Video Processing/ ESRTOS
			7. Microcontrollers
			8. Engineering Mathematics III
4	Mr. Kishor Wane	General PurPOse Computing	1. Data Structures and Algorithms
			2. Object Oriented Programming
			3. System Programming and Operating Systems/ DBMS
			4. Machine Learning
			5. Artificial Intelligence
			6. Fundamentals of JAVA Programming/ Advanced JAVA Programming
			7. IOT
5	Mrs. A.A.Tekade	Employability Skills and Project Management	1. Business Management/ Project Management
			2. Employability Skills and Mini Project
			3. Audit Course
			4. Project Based Learning
			5. Project Phase-I and Phase-II/ Internship

Table B.2.1.1b shows a comparison of curriculum suggested by AICTE (as per the AICTE curriculum model (https://www.aicte-india.org/education/model-syllabus), COEP and curriculum designed by SPPU, figure B.2.1.1b gives comparison of AICTE, COEP and SPPU Percentage Credits and table B.2.1.1c shows relation between number of contact hours and credits assigned to a course.

TableB.2.1.1b: Comparison of curriculum of AICTE, COEP and SPPU

Sr. No.	Types of Courses	AICTE Courses	Credits	COEP Courses	Credits	SPPU Courses	Credits
1	Core Subjects	23	51	45	87	30	91
2	Humanities and Social Science	5	12	4	4	2	6
3	Basic Science	7	25	9	27	5	24
4	Engineering Science	7	22	7	20	13	44
5	Elective + Open Elective Subjects	12	36	9	24	4	14
6	Project Work and Seminar	2	14	3	10	3	11
Total		56	160	77	172	57	190

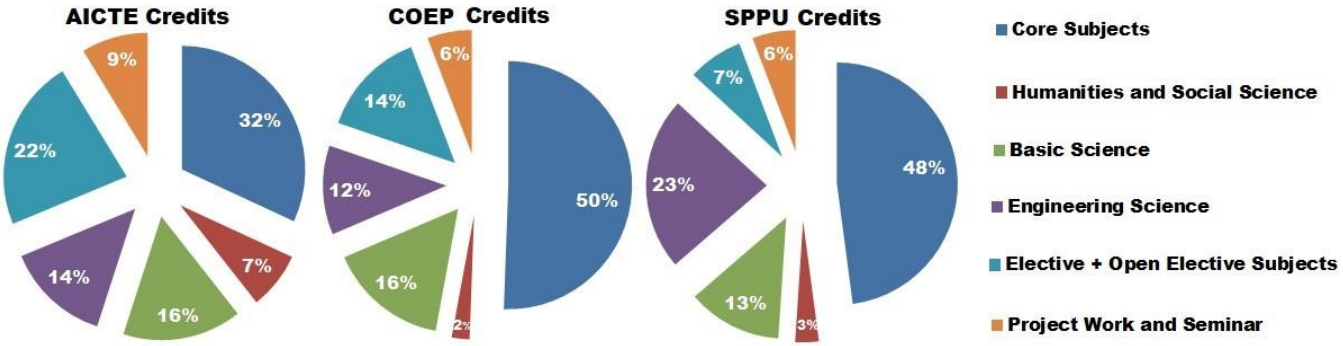


Figure B.2.1.1b: Comparison of AICTE and SPPU Percentage Credits

Table B.2.1.1c: Credit Calculation

Number of Hours	Credits
1 Hr. Lecture (L) per week	1 credit
1 Hr. Tutorial (T) per week	1 credit
1 Hr. Practical (P) per week	0.5 credits
2 Hours Practical(Lab)/week	1 credit

Following are the observations from the comparison of SPPU curriculum with AICTE model curriculum:

1. Professional Core subject are highly emphasized to attain the required breadth.
2. Professional (electives) Courses also carries required weightage to attain the depth.
3. Exposure is expected to Humanities, Social Science and Basic Sciences.
4. Adequate weight is given to, Engineering Sciences and Project /Seminar**.**

As per observation, there exists a curriculum gap, which is bridged by taking adequate efforts at different levels are shown in table B.2.1.1d.

Table B.2.1.1d: Activities conducted to bridge the credit gap

Sr. No.	Course	AICTE Credits	SPPU Credits	Remarks	
				Justification	Activities conducted to bridge the gap
01	Humanities and Social Science	12	06	In AICTE curriculum credits are assigned for the English and Management courses	1. Non-credit courses such as Japanese language Module I and II, Cyber Crime and law, Human Behavior, Environmental issues and Disaster Management are the audit courses in SPPU curriculum. 2. Aptitude training for TE students of 60 hours is conducted to improve the verbal and non-verbal communication skills.

				In SPPU curriculum credits are assigned for Soft Skill and Management courses.	3. Soft skill training (18 hours), life skills (6 hours) and aptitude training (18 hours)conducted by Zensar for TE students. 4. GD and PI sessions are conducted to clear HR rounds. 5. 2-week Induction program for FE students is conducted under which activities like Yoga sessions, lecture on human values, stress management, diet and fitness are taken. 6. Various activities related to soft skills, team spirit, bonding, expression etc. are conductedunder literary club. 7. Various activities like tree plantation, Swachha Bharat Abhiyan, Blood Donation etc.are conducted under NSS.

The curriculum of SPPU for Bachelor of Engineering in Electronics and Telecommunication Engineering of 2019 Pattern is given in table B.2.1.1e, Engineering of 2019 Pattern is given in table B.2.1.1f and 2012 Pattern is given in table B.2.1.1g.

Table B.2.1.1e: SPPU Curriculum-2019 Pattern

TABLE -1 First Engineering _Structure for Semester-I														
Course Code	**Course Name**	**Teaching Scheme (Hours/Week)**			**Examination Scheme and Marks**						**Credits**			
		Theory	**Practical**	**Tutorial**	**ISE**	**ESE**	**TW**	**PR**	**OR**	**Total**	**TH**	**PR**	**TUT**	**Total**
107001	Engineering Mathematics-I	03	--	01	30	70	25	--	--	125	03	--	01	04
107002/ 107009	Engineering Physics / Engineering Chemistry	04	02	--	30	70	--	25	--	125	04	01	--	05
102003	Systems in Mechanical Engineering	03	02	--	30	70	--	25	--	125	03	01	--	04
103004 / 104010	Basic Electrical Engineering / Basic Electronics Engineering	03	02	--	30	70	--	25	--	125	03	01	--	04
110005/ 101011	Programming and Problem Solving / Engineering Mechanics	03	02	--	30	70	--	25	--	125	03	01	--	04
111006	Workshop[@]	--	02	--	--	--	--	25	--	25	--	01	--	01
	Total	16	10	01	150	350	25	125	--	650	16	05	01	22
101007	Audit Course 1[&]	02	Environmental Studies-I											
Induction Program : 2 weeks at the beginning of semester-I and 1 week at the beginning of semester-II														
TABLE -2 First Engineering_ Structure for Semester-II														
Course Code	**Course Name**	**Teaching Scheme (Hours/Week)**			**Examination Scheme and Marks**						**Credits**			
		Theory	**Practical**	**Tutorial**	**ISE**	**ESE**	**TW**	**PR**	**OR**	**Total**	**TH**	**PR**	**TUT**	**Total**
107008	Engineering Mathematics-II	04	--	01	30	70	25	--	--	125	04	--	01	05
107002/ 107009	Engineering Physics/ Engineering Chemistry	04	02	--	30	70	--	25	--	125	04	01	--	05
103004 / 104010	Basic Electrical Engineering / Basic Electronics Engineering	03	02	--	30	70	--	25	--	125	03	01	--	04

110005/ 101011	Programming and Problem Solving / Engineering Mechanics	03	02	--	30	70	--	25	--	125	03	01	--	04
102012	Engineering Graphics $^{\Omega}$	01	02	01	--	50	25		--	75	01	01		02
110013	Project Based Learning§	--	04	--	--	--	25	50	--	75	--	02	--	02
Total		15	12	02	120	330	75	125	--	650	15	05	02	22
101014	Audit Course 2$^{\&}$	02	Environmental Studies-II											
107015		--	Physical Education-Exercise and Field Activities											

Savitribai Phule Pune University, Pune
S.E. (Electronics / E&TC Engineering) 2019 Course
(With effect from Academic Year 2020-21)
Semester-III

Course Code	Course Name	Teaching Scheme (Hours/Week)			Examination Scheme and Marks						Credit			
		Theory	Practical	Tutorial	In-Sem	End-Sem	TW	PR	OR	Total	TH	PR	TUT	Total
207005	Engineering Mathematics III	04	-	01	30	70	25	-	-	125	04	-	01	05
204181	Electronic Circuits	03	-	-	30	70	-	-	-	100	03	-	-	03
204182	Digital Circuits	03	-	-	30	70	-	-	-	100	03	-	-	03
204183	Electrical Circuits	03	-	-	30	70	-	-	-	100	03	-	-	03
204184	Data structures	03	-	-	30	70	-	-	-	100	03	-	-	03
204185	Electronic Circuit Lab	-	02	-	-	-	-	50	-	50	-	01	-	01
204186	Digital circuits Lab		02					50		50		01		01
204187	Electrical Circuit Lab	-	02	-	-	-	25	-	-	25	-	01	-	01
204188	Data Structures Lab	-	02	-	-	-	-	-	25	25	-	01	-	01
204189	Electronic Skill Development	-	02	-	-	-	25	-	-	25	-	01	-	01

204190	Mandatory Audit Course	-	-	-					-	-	-	-	-	-
Total		**16**	**10**	**01**	**150**	**350**	**75**	**100**	**25**	**700**	**16**	**05**	**01**	**22**

Savitribai Phule Pune University, Pune

S.E. (Electronics / E&TC Engineering) 2019 Course

(With effect from Academic Year 2020-21)

Semester-IV

Course Code	**Course Name**	**Teaching Scheme (Hours/Week)**			**Examination Scheme and Marks**						**Credit**			
		Theory	**Practical**	**Tutorial**	**In-Sem**	**End-Sem**	**TW**	**PR**	**OR**	**Total**	**TH**	**PR**	**TUT**	**Total**
204191	Signals & Systems	03	-	01	30	70	25	-	-	125	03	-	01	04
204192	Control Systems	03	-		30	70		-	-	100	03	-	-	03
204193	Principles of Communication Systems	03	-	-	30	70	-	-	-	100	03	-	-	03
204194	Object Oriented Programming	03	-	-	30	70	-	-	-	100	03	-	-	03
204195	Signals & Control System Lab		02				50			50		01		01
204196	Principle of Communication Systems Lab	-	02	-	-	-	-	50	-	50	-	01	-	01
204197	Object Oriented Programming Lab	-	02	-	-	-	-	-	50	50	-	01	-	01
204198	Data Analytics Lab		02				-		25	25		01		01
204199	Employability Skill Development	02	02	-	-	-	50	-	-	50	02	01	-	03
204200	Project Based Learning [ŋ]	-	04				50		-	50		02		02
204201	Mandatory Audit Course 4[&]	-	-	-	-	-	-	-	-	-	-	-	-	-
Total		**14**	**14**	**01**	**120**	**280**	**175**	**50**	**75**	**700**	**14**	**07**	**01**	**22**

Abbreviations:
In-Sem: In semester End-sem: End semester TH : Theory TW : Term Work
PR : Practical OR : Oral TUT : Tutorial

Note: Interested students of S.E. (Electronics/E&TC) can opt any one of the audit course from the list of audit courses prescribed by BoS (Electronics & Telecommunications Engineering)

Savitribai Phule Pune University, Pune
T.E. (Electronics& Telecommunication Engineering) 2019 Course
(With effect from Academic Year 2021-22)

Semester-V

Course Code	Course Name	Teaching Scheme (Hours/Week)			Examination Scheme and Marks						Credit			
		Theory	Practical	Tutorial	In-Sem	End-Sem	TW	PR	OR	Total	TH	PR	TUT	Total
304181	Digital Communication	03	-	-	30	70	-	-	-	100	03	-	-	03
304182	Electromagnetic Field Theory	03	-	01	30	70	25	-	-	125	03	-	01	04
304183	Database Management	03	-	-	30	70	-	-	-	100	03	-	-	03
304184	Microcontrollers	03	-	-	30	70	-	-	-	100	03	-	-	03
304185	Elective - I	03	-	-	30	70	-	-	-	100	03	-	-	03
304186	Digital Communication Lab	-	02	-	-	-	-	50	-	50	-	01	-	01
304187	Database Management Lab	-	02	-	-	-	-	-	25	25	-	01	-	01
304188	Microcontroller Lab	-	02	-	-	-	-	50	-	50	-	01	-	01
304189	Elective I Lab	-	02	-	-	-	-	25	-	25	-	01	-	01
304190	Skill Development	-	02	-	-	-	25	-	-	25	-	01	-	01
304191 A	Mandatory Audit Course 5 &	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	**15**	**10**	**01**	**150**	**350**	**50**	**125**	**25**	**700**	**-**		-	-
										Total Credit	**15**	**05**	**01**	**21**

Savitribai Phule Pune University, Pune

T.E. (Electronics& Telecommunication Engineering) 2019 Course
(With effect from Academic Year 2021-22)

Semester-VI

Course Code	Course Name	Teaching Scheme (Hours/Week)			Examination Scheme and Marks						Credit			
		Theory	Practical	Tutorial	In-Sem	End-Sem	TW	PR	OR	Total	TH	PR	TUT	Total
304192	Cellular Networks	03	-	-	30	70	-	-	-	100	03	-	-	03
304193	Project Management	03	-	-	30	70	-	-	-	100	03	-	-	03
304194	Power Devices & Circuits	03	-	-	30	70	-	-	-	100	03	-	-	03
304195	Elective-II	03	-	-	30	70	-	-	-	100	03	-	-	03
304196	Cellular Networks Lab	-	02	-	-	-	-	-	50	50	-	01	-	01
304197	Power Devices & Circuits Lab	-	02	-	-	-	-	50	-	50		01		01
304198	Elective-II Lab	-	02	-	-	-	-	25	-	25	-	01	-	01
304199	Internship**	-	-	-	-	-	100	-	-	100	-	-	04	04
304200	Mini Project	-	04	-	-	-	25	-	50	75	-	02	-	02
304191B	Mandatory Audit Course 6[&]	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tota	**12**	**10**	**00**	**120**	**280**	**125**	**75**	**100**	**700**				
										Total Credit	**12**	**05**	**04**	21

Abbreviations:
In-Sem: In semester End-Sem: End semester TH: Theory TW : Term
Work PR: Practical OR: Oral TUT: Tutorial**Note: Students of T.E.**
(Electronics & Telecommunications) have to opt any one of the audit course from the list of audit courses prescribed by BoS (Electronics & Telecommunications Engineering)

Elective I (Sem I)	Elective II (Sem II)
1. Digital Signal Processinf	1. Digital Image Processing
2. Electronic Measurements	2. Sensors in Automation
3. Fundamentals of JAVA Programming	3. Advance JAVA Programming
4. Computer Networks	4. Embedded Processors
--	5. Network Security

Table B.2.1.1f: SPPU Curriculum-2015 Pattern

Course Code	Course 2015	Teaching Scheme Hours/week			Semester Examination Scheme					Total	Credit	
		TH	TUT	PR	In Sem	End Sem	PR	OR	TW			
I Semester											TH	PR/ OR
107001	Engineering Mathematics-I	04	1	-	50	50	-	-	25	125	5	
107002/ 107009	Engineering Physics OR Engineering Chemistry	04	-	02	50	50	-	-	25	125	5	
102006	Engineering Graphics I	03	-	02	50	50	-	-		100	4	
103004 / 104012 #	Basic Electrical Engineering OR Basic Electronics Engineering	03	-	02	50	50	-	-	25	125	4	
101005	Basic Civil and Environmental Engineering	03	-	02	50	50	-	-	25	125	4	
110003 #	Fundamentals of Programming Languages I	1	-	02	-	-	50*	-	-	50	2	
111007	Workshop Practice	-	-	02	-	-	-	-	50	50	1	
Total of Semester I										**700**	**25**	

II Semester												
107008	Engineering Mathematics-II	04	-	-	50	50	-	-	-	100	4	
107009/ 107002 #	Engineering Chemistry OR Engineering Physics	04	-	02	50	50	-	-	25	125	5	
102013	Basic Mechanical Engineering	03	-	02	50	50	-	-	25	125	4	
101011	Engineering Mechanics	04	--	02	50	50	-	-	25	125	5	
103004 / 104012 #	Basic Electronics Engineering OR Basic Electrical Engineering	03	-	02	50	50	-	-	25	125	4	
110010	Fundamentals of Programming Languages II	01	-	02	-	-	50 *	-	-	50	2	
102014	Engineering Graphics II	-	-	02	-	-	-	-	50	50	1	
Total of Semester II										**700**	**25**	
* for FPL-I and FPL-II: S.P. Pune University Online Practical Examination shall be conducted at the semester end. # Every student should appear for Engineering Physics, Engineering Chemistry, Basic Electronics Engineering and Basic Electrical Engineering during the year.												
III Semester												
204181	Signals & Systems	3	1	-	50	50	-	-	25	125	4	
204182	Electronic Devices & Circuits	4	-	2	50	50	50	-		150	4	1
204183	Electrical Circuits and Machines	3	-	2	50	50	-	-	25	125	3	1
204184	Data Structures and Algorithms	4	-	2	50	50	-	50	-	150	4	1
204185	Digital Electronics	4	-	2	50	50	50	-	-	150	4	1
204186	Electronic Measuring Instruments & Tools	1	-	2	-	-	-	-	-	50	1	1

204192	**Audit Course 1**	1. Japanese Language module-I 2. Road Safety Management										
Total of Semester III										**750**	**25**	
IV Semester												
207005	Engineering Mathematics III	4	1	-	50	50	-	-	25	125	5	-
204187	Integrated Circuits	4	-	2	50	50	50	-	25	175	4	1
204188	Control Systems	3	-	-	50	50	-	-		100	3	
204189	Analog Communication	3	-	2	50	50	50			150	3	1
204190	Object Oriented Programming	3	-	4	50	50		50		150	3	2
204191	Employability Skill Development	2	-	2	-	-	-	-	50	50	2	1
204193	Audit Course 2	-	1. Japanese Language module II 2. Cyber Crime and law									
Total of Semester IV										**750**	**25**	
V Semester												
304181	Digital Communication	3	-	-	30	70	-	-	-	100	3	-
304182	Digital Signal Processing	3	-	-	30	70	-	-	-	100	3	-
304183	Electromagnetics	3	1	-	30	70	-	-	-	100	4	-
304184	Microcontrollers	3	-	-	30	70	-	-	-	100	3	-
304185	Mechatronics	3	-	-	30	70	-	-	-	100	3	-
304191	Signal Processing and Communications Lab (DC/DSP)	-	-	4	-	-	50	-	50	100	-	2
304192	Microcontrollers and Mechatronics Lab	-	-	4	-	-	50	-	50	100	-	2
304193	Electronics System Design	2	-	2	-	-	-	50		50	2	1
	Audit Course 3	-	1. Japanese Language 2. Cyber and Information Security								-	-
Total of Semester V										**750**	**23**	
VI Semester												
304186	Power Electronics	3	-	-	30	70		-	-	100	3	-
304187	Information Theory, Coding and	4	-	-	30	70	-	-	-	100	4	-

	Communication Networks											
304188	Business Management	3	-	-	30	70	-	-	-	100	3	-
306189	Advanced Processors	3	-	-	30	70	-	-	-	100	3	-
304190	System Programming and Operating Systems	3	-	-	30	70	-	-	-	100	3	-
304194	Power and ITCT Lab	-	-	4	-	-	50		50	100		2
304195	Advanced Processors and System Programming Lab	-	-	4	-	-	50	-	50	100		2
304196	Employability Skills and Mini Project	2	-	2	-	-	-	50	-	50	2	1
	Audit Course 4	-	1. Japanese Language 2. Embedded System Design using MSP430								-	-
Total of Semester VI										**750**	**23**	
VII Semester												
404181	VLSI Design& Technology	3	-	-	30	70	-	-	-	100	3	-
404182	Computer Networks & Security	4	-	-	30	70	-	-	-	100	4	-
404183	Radiation & Microwave Techniques	03	-	-	30	70	-	-	-	100	3	-
404184	Elective I	03	-	-	30	70	-		-	100	3	-
404185	Elective II	03	-	-	30	70	-	-	-	100	3	-
404186	Lab Practice –I (CNS+ RMT)	-	-	04	-	-	50	50	-	100	-	Tw 01 + O

												R 01
404187	Lab Practice –II (VLSI + Elective I)	-	-	04	-	-	50		50	100	-	TW 01 + PR 01
404188	Project Stage I	-	02	-	-	-		50		50	-	02
	Audit Course 5	1. Green Energy 2. Human Behaviour									-	-
Total of Semester VII										**750**	**22**	
VIII Semester												
404189	Mobile Communication	03	-	-	30	70	-	-	-	100	3	-
404190	Broadband Communication Systems	04	-	-	30	70	-	-	-	100	4	-
404191	Elective III	03	-	-	30	70	-	-	-	100	3	-
404192	Elective IV	03	-	-	30	70	-	-	-	100	3	-
404193	Lab Practice –III (MC+BCS)	-	-	04	-	-	50		50	100		Tw 01 + PR 01
404194	Lab Practice –IV (Elective III)	-	-	02	-	-		50		50		01
404195	Project Stage II	-	06	-	-	-	150	50		200		Tw 04 + OR 02
	Audit Course 6		1. Team Building, Leadership and Fitness 2. Environmental issues and Disaster Management								-	-
Total of Semester VIII										**750**	**22**	

Elective I	Elective II	Elective III	Elective-IV
1. Digital Image and Video Processing	1. Wavelets	1. Machine Learning	**1. Robotics**
2. Industrial Drives and Control	**2. Electronics Product Design**	**2. PLC s and Automation**	2. Biomedical Electronics
3. Embedded Systems & RTOS	3. Optimization Techniques	3. Audio and Speech Processing	**3. Wireless Sensor Networks**
4. Internet of Things	**4. Artificial Intelligence**	4. Software Defined Radio	4. Renewable Energy Systems
--	5. Electronics in agriculture	**5. Audio Video Engineering**	5. Open Elective*

*Any one course from the list of Elective IV of computer/IT/Electrical/Instrumentation or Institute can offer elective IV based on any industry need with prior approval from BoS(Electronics & Telecommunication). Repetition of course or topics should be avoided.

Table B.2.1.1g: SPPU Curriculum-2012 Pattern

Course Code	Course 2012	Teaching Scheme			Semester Examination Scheme					Total
		TH	TUT	PR	InSem/ online	End Sem	PR	OR	TW	
I Semester										
107001	Engineering Mathematics-I	04	1	-	50	50			25	125
107002/ 107009 #	Engiwneering Physics / Engineering Chemistry	04	-	02	50	50			25	125
110003	Fundamental of Program ming Language I	01	0	2	-	-	50*			50
103004 / 104012 #	Basic Electrical Engineering / Basic Electronics Engineering	03	-	02	50	50			25	125
101005	Basic Civil & Environmental Engineering	03	-	02	50	50			25	125
102006	Engineering Graphics I	03		02	50	50				100

111007	Workshop Practices	-	-	02	-	-			50	50
Total of Semester I										**700**
II Semester										
107008	Engineering Mathematics-II	04	-	00	50	50	-	-		100
107002/ 107009 #	Engineering Physics/ Engineering Chemistry	04	-	02	50	50			25	125
110010	Fundamental of Programming Language II	01	0	2	-	-	50*			50
101011	Engineering Mechanics	04	-	02	50	50			25	125
103004 / 104012 #	Basic Electrical Engineering / Basic Electronics Engineering	03	-	02	50	50			25	125
102013	Basic Mechanical Engineering	03	-	02	50	50			25	125
102014	Engineering Graphics II			02					50	50
107015		-	Physical Education-Exercise and Field Activities							
Total of Semester II										**700**
* for FPL-I and FPL-II: S.P. Pune University Online Practical Examination shall be conducted at the semester end. # Every student should appear for Engineering Physics, Engineering Chemistry, Basic Electronics Engineering and Basic Electrical Engineering during the year.										
III Semester										
204181	Signals & Systems	4	1	-	50	50			25	125
204182	Electronic Devices & Circuits	4	-	2	50	50	50			150
204183	Network Theory	3	1	-	50	50			25	125
204184	Data Structures and Algorithms	4	-	2	50	50		50		150
204185	Digital Electronics	4	-	2	50	50		50		150
204186	Electronic Measuring Instruments &	1	-	2	-	-			50	50

	Tools									
Total of Semester III										**750**
IV Semester										
207005	Engineering Mathematics III	4	1	-	50	50			25	125
204187	Integrated Circuits	3	-	2	50	50	50			150
204188	Control Systems	3	1	-	50	50			25	125
204189	Analog Communication	4	-	2	50	50		50		150
204190	Computer Organization	3	-	-	50	50				100
204191	Object Orientated Programming	2	-	2	-	-		50	25	75
204192	Soft Skills	1	-	2	-	-			25	25
Total of Semester IV										**750**
V Semester										
304181	Digital Communication	4	-	-	30	70	-			100
304182	Digital Signal Processing	4	-	-	30	70	-			100
304183	Micro Controller and Applications	3	-	-	30	70	-			100
304184	Electromagnetics and Transmission Lines	3	1	-	30	70	-			100
304185	System Programming and Operating System	3	-	-	30	70	-			100
304186	Digital Communication and Signal Processing Lab	-	-	4	-	-	50		50	100
304187	System Programming and Microcontroller Applications Lab	-	-	4	-	-	50		50	100
304188	Employability Skills in Electronics Design	2	-	2	-	-		50		50
Total of Semester V										**750**

VI Semester										
304189	Information Theory and Coding Techniques	4	-	-	30	70	-			100
304190	Antenna and Wave Propagation	4	-	-	30	70	-			100
304191	Embedded Processors	4	-	-	30	70	-			100
306192	Industrial Management	3	-	-	30	70	-			100
304193	Power Electronics	3	-	-	30	70				100
304194	Communication Lab	-	-	4	-	-	50		50	100
304195	Power Electronics and Embedded Lab	-	-	4	-	-	50		50	100
304196	Mini project and Seminar		-	4	-	-		50	-	50
Total of Semester VI										**750**
VII Semester										
404181	VLSI Design & Technology	3	-	-	30	70	-			100
404182	Computer Networks	3	-	-	30	70	-			100
404183	Microwave Engineering	04	-	-	30	70	-			100
404184	Elective I	03	-	-	30	70	-			100
404185	Elective II	03	-	-	30	70	-			100
404186	Lab Practice –I (CN+ MWE)	-	-	04	-	-		50	50	100
404187	Lab Practice –II (VLSI + Elective I)	-	-	04	-	-	50		50	100
404188	Project Stage I	-	02	-	-	-		50		50
Total of Semester VII										**750**
VIII Semester										
404189	Mobile Communication	04	-	-	30	70	-			100
404190	Broadband	04	-	-	30	70	-			100

	Communication Systems									
404191	Elective III	03	-	-	30	70	-			100
404192	Elective IV	03	-	-	30	70	-			100
404193	Lab Practice –III (MC+BCS)	-	-	04	-	-		50	50	100
404194	Lab Practice –IV (Elective III)	-	-	02	-	-	50		50	100
404195	Project Stage II	-	06	-		-	50		100	150
Total of Semester VIII										**750**

Elective I	**Elective II**	**Elective III**	**Elective-IV**
1. Digital Image Processing	1. Multirate and Adaptive Signal Processing	1. Speech and Audio Signal Processing	1. Biomedical Signal Processing
2.Embedded Systems & RTOS	2. Electronics Product Design	2. RF Circuit Design	2. Nano Electronics & MEMS
3.Software Defined Radio	3. PLCs and Automation	3. Audio Video Engineering	3. Detection and Estimation Theory
4. Industrial Drives and Control	4. Artificial Intelligence	4. Soft Computing	4. Wireless Networks
--	--	5. Audio Video Engineering	5. Open Elective*

*Any one subject from the list of Elective IV of computer/IT/Electrical/Instrumentation or Institute can offer elective IV based on any industry need with prior approval from BoS (Electronics). Repetition of subjects or topics is to be avoided.

2.1.1. B. List the curricular gaps for attainment of defined PO and PSOs:

As described above the syllabus of SPPU is compared on different grounds. It is observed that the curriculum is having sufficient breadths and depths and is mapping with all the POs. To further strengthen the POs and to achieve E&TC department Missionand Vision following gaps have been identified and attained during the course. To attain E&TC program PEOs, two PSOs are also added. The identified gaps are related to the courses and are described as follows.

Table B.2.1.1h ,table B.2.1.1i and table B.2.1.1j lists the identified gaps in the curriculum for 2012 and 2015 patterns respectively.

Table B.2.1.1h: Identified Curricular Gaps for 2012 pattern

Course Code	Course	Class	Module/Domain	Gap in the syllabus
C401	VLSI Design & Technology	BE	Circuits Design & Systems	CMOS Fabrication Flow
C402	Computer Networks	BE	Communication Engineering	Transmission methods underlying LAN and WAN technologies
C403	Microwave Engineering	BE	Communication Engineering	Microwave System Design and Testing
C415	Project Stage II	BE	Employability Skills & Project Management	Drafting Project report in Latex Document tool
C213	Soft Skills	SE	Employability Skills & Project Management	Enhancing verbal and nonverbal skills

Table B.2.1.1i: Identified Curricular Gaps for 2015 pattern

Course Code	Course	Class	Module/Domain	Gap in the syllabus
C401	VLSI Design & Technology	BE	Circuits Design & Systems	Recent Trends In VLSI Design And Verification Technology Using EDA Tools Workshop
C404a	Embedded Systems & RTOS	BE	Signal Processing and Controlling	Advanced Embedded Linux for industry use
C412	Audio Video Engineering	BE	Communication Engineering	Live Recording and low frequency broadcasting
C304	Microcontrollers	TE	Signal Processing and Controlling	Recent Microcontrollers used in industries
C311	Information Theory, Coding Techniques &	TE	Signal Processing and Controlling	Practical Approaches in coding techniques

	Computer Networks			
C313	Advanced Processors	TE	Signal Processing and Controlling	Applications of DSP in industries
C303	Electronic System Design	TE	Circuits Design & Systems	Design issues of SMPS
C208	Employability Skill Development	SE	Employability Skills & Project Management	Enhancing verbal and nonverbal skills

Table B.2.1.1j: Identified Curricular Gaps for 2019 pattern

Course Code	Course	Class	Module/Domain	Gap in the syllabus
C203	Digital Circuits	SE	Circuits Design & Systems	How to read Datasheets
C204	Electrical Circuits	SE	Circuits Design & Systems	Utilization of motors in electric vehicle
C202	Electronic Circuits	SE	Circuits Design & Systems	Design of SMPS

2.1.2: State the delivery details of the content beyond the syllabus for the attainment of POs and PSOs (10)

Institute Marks 8

Table B.2.1.2a: Mapping of Content beyond Syllabus with POs and PSOs for (2020-21)

Sr. No.	Gap	Action Taken	Date	Resource Person with designation	% Students	Relevance to PO's and PSO's
1	High frequency circuit measurements	Industry Expert Lecture	20/10/2020	Mr. Anirudha Kulkarni, CEO, RF Labs Pvt. Ltd, Pune	80%	PO6,PO7, PO12
2	Leading technology of Artificial Intelligence in industry	Industry Expert Lecture	22/10/2020	Mr. Bhushan Garware Senior Data Scientist Persistent Systems	79%	PO5, PO6, PO12

3	Implementation of Networks Security Protocol	Industry Expert Lecture	22/10/2020	Rakhee Sonawane, Tata Communications Ltd, , Pune,	80%	PO6, PO7, PO8, PO12
4	Microelectronics: Advances & exciting career opportunities	Industry Expert Lecture	21/10/2020	Dr. B. Satynarayana	80%	PO5, PO8, PO9, PO12
5	How to read Datasheets	Industry Expert Lecture	08/10/2020	Mr. Anand S Gharpure, CEO, Sonic Multitech Pvt Ltd, Nashik	85%	PO8, PO9, PO10,PO12
6	Utilization of motors in electric vehicle	Industry Expert Lecture	11/12/2020	Mr.Omkar Harishchandra Thigale Associate Manager, Engineering Ather Energy, Bangalore	75%	PO6,PO7, PO8,PO12
7	Design of SMPS	Industry Expert Lecture	23/10/2020	Mr. S.S. Kendre, CTO, PERI Solutions,Shivane,Pune	90%	PO1,PO2, PO3, PO4, PO5, PO12, PSO1
8	Applications of Electromagnetics in the era of Telecommunication Field	Expert Lecture	28-10-2020	Dr. Ashutosh Marathe, Dean Academics, VIT Pune	90%	PO6,PO7
10	GUI Creation in MATLAB	Industry Expert Lecture	16/10/2020	R. Jishnu, Senior Engineer, Embedded Developer, Pantechsolutions, Pvt., Ltd., Chennai	70%	PO3, PO5, PO12
13	Applications of DSP in AI, Professional Ethics, Project Management and Role of Engineer to Help the Society	Industry Expert Lecture	20/10/2020	Mr. Parag Hirulkar, Data Scientist, TABSquare, Banglore	80%	PO6, PO8, PO11
14	DSP Applications	Projects assigned to	--	Prof.Dr.R.G.Mapari	100%	PO2,PO3, PO4,PO5,PO12, PSO1, PSO2

		Students				
15	Embedded Design & Product Development.	Industry Expert Lecture	21/10/20	Mr. Abhay Panshikar	80%	PO5, PO7, PO12, PSO1, PSO2

Table B.2.1.2b: Mapping of Content beyond Syllabus with POs and PSOs for CAYm1 (2019-20)

Sr. No.	Gap	Action Taken	Date	Resource Person with designation	% Students	Relevance to PO's and PSO's
1	Antenna Design & Fabrication process	Workshop	7&8/08/2019	Mr. Anirudha Kulkarni, CEO, RF Labs Pvt. Ltd, Pune	90%	PO3,PO5,PO7, PO9,PO12, PSO2
2	Upcoming features in AI	Guest Lecture	09/08/2019	Dr.Dhiraj M.Dhane Associate Professor at the PVPIT,Pune	76%	PO5,PO6, PO12
3	Studying the open source codecs of video compression like AVC & Studying the open source audio codec like AAC	NPTEL Video	26/02/2020	Engineer	65%	PO1, PO2, PO8, PO9, PO10, PO12
4	Television Fault Finding and Troubleshooting	Workshop	31/01/2020	Mr. Sanjay Auti Proprietor, PROCOM Enterprises	85%	PO2, PO3, PO4, PO5, PO12
5	Implementation client server model and Security	Expert Lecture	25/9/2019	Dr. Vijay M. Birari Prof. & Head Dept. of E & TC Engg N.D.M.V.P.S'S, K.B.T.C.O.E	75%	PO6, PO7, PO8, PSO1
6	ASIC Design & challenges	Expert Lecture	28/09/2019	Dr. V. V. Deotare	90%	PO3, PO5, PO12

7	Five Variable K-map Example	Extra Class	21/06/2019	Prof. Kumbhar V S	70%	PO1, PO2, PO3,PSO1
8	Control System Components- tachometer, DC and AC Servomotors, Stepper Motors	Extra Class	10/01/2020	Prof. Kumbhar V S	80%	PO1, PO2, PO3, PO12
9	Utilization of different types of motor in industries	Guest Lecture	31/07/2019	Guest lecture by Prof.Vilas Bugade, Associate Professor Padmashree at Dr.DYPIET. Pimpri, Pune	77%	PO6,PO7,PO12
10	Practical Approaches in Signals and System	Guest Lecture	14/09/2019	Dr Jayant J Jagtap SIT Lavale Pune	85%	PO1, PO4, PO12
11	Practical Approaches in Transmission line at radio frequency	Guest Lecture	28/09/2019	Mr. Swanand Dongare, Assistant Professor, KKWCOE,Nashik	95%	PO6,PO7
12	Importance of microcontroller in designing embedded application	Expert Lecture	-	by Dr. D.S.Mantri	72%	PO7, PO12, PSO1
13	Electric & Hybrid vehicle drive System	NPTEL video Lecture	18/03/2020	-	88%	PO6, PO7, PO8, PO12, PSO1

Table B.2.1.2c: Mapping of Content beyond Syllabus with POs and PSOs for CAYm2 (2018-19)

Sr. No.	Gap	Action Taken	Date	Resource Person with designation	% Students	Relevance to PO's and PSO's
1	RF Transmission of sound & vision signals	Industrial Visit to Doordarshan	9/6/2018	Mr. Walmik Gawhale (Assistant Director (Engineering) Doordarshan, Mumbai)	87%	PO5,PO12
2	Recent Trends In VLSI Design And Verification Technology Using EDA Tools Workshop	Workshop	19/09/2018 to 20/09/2018	Mr. Shrikant R. Atkarne (Application Engineer (Microwind), ni logic Pvt. Ltd. (ni2designs)	88%	PO5, PO12
3	Advanced Embedded Linux for industry use	Workshop	21/09/2018 to 22/09/2018	Mr. Mangesh Edake (Technical Engineer, Johnson Controls India Pvt. Ltd. Pune)	87%	PO5,PO12
4	Programming in Python	Workshop	18/12/2018 to 21/12/2018	Mr.Avinash Pathak (Director of I2I specialist)	84%	PO3, PO4, PO5, PSO1
5	Raspberry pi with IOT	Workshop	18/12/2018 to 21/12/2018	Mr.Tushar Kate(Researcher in MITU Skillologies ,Pune)	85%	PO1,PO5,PO12, PSO1
6	Live Recording and low frequency broadcasting	Industrial Visit to Akashwani	8/2/2019	Engineers of All India Radio, Pune	82%	PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO12
7	Working of AM Super heterodyne receiver	Industrial Visit to GMRT	29/02/2019	Site Engineer of Communication Section, at GMRT, Pune	85%	PO3, PO5,PO12, PSO1
8	Enhancing verbal and nonverbal skills	Aptitude training	June 2019-March 2020	EthnusConsultancy Services Pvt.Ltd , Pune	85%	PO8,PO10, PO12

Table B.2.1.2d: Mapping of Content beyond Syllabus with POs and PSOs for CAYm3 (2017-18)

Sr. No.	Gap	Action Taken	Date	Resource Person with designation	% Students	Relevance to PO's and PSO's
1	Microwave System Design and Testing	Workshop	28/07/2017	Mr. Anirudhha Kulkarni (RF Design Head , Academica Labs Pvt.Ltd)	89%	PO5, PO9, PO12
2	Design issues of SMPS	Workshop	18/08/2017-19/08/2017	Mr. Sanjay Jogalekar (Director of Kanad Industry)	95%	PO12,PSO1
3	Transmission methods underlying LAN and WAN technologies	Expert Lecture	21/09/2017	Dr. Mrunal Dixit (Assistant Professor, Cummins COE, Pune)	90%	PO1,PO2
4	CMOS Fabrication Flow	Expert Lecture	25/09/2017	Dr. Madan Mali (Professor & H.O.D. E&TC SKN COE Vadgaon)	90%	PO1,PO2,PO3
5	"Industrial Approach to Electronics"	Workshop	23/01/2018 to 25/01/2018	Sanjay Chaudhari	91%	PO1, PO3,PSO1
6	Practical Approaches in coding techniques	Expert Lecture	24/03/2018	DR. G.R.Patil (HOD E&TC Dept., Army Institute of Technology, Dighi)	95%	PO3, PO12
7	Drafting Project report in Latex Document tool	Workshop	23/04/2018	Mr. Ashok Shinde (Assistant Prof. E&TC Dept. I^2IT, Hinjewadi Pune)	95%	PO5,PO9,PO11, PO12

2.2 Teaching Learning Process (100)

Institute Marks 86

2.2.1 Described Process to followed to improve quality of teaching learning (25)

Institute Marks 21

Academic Monitoring Committee (AMC) is centralized (Institutelevel) committee responsible for planning and implementing different academic activities. It is for smooth & uniform conduction of academics through out the institute. AMC works on (Plan-Do-Check-Act) P-D-C-A as shown in figure B.2.2.1a-1.

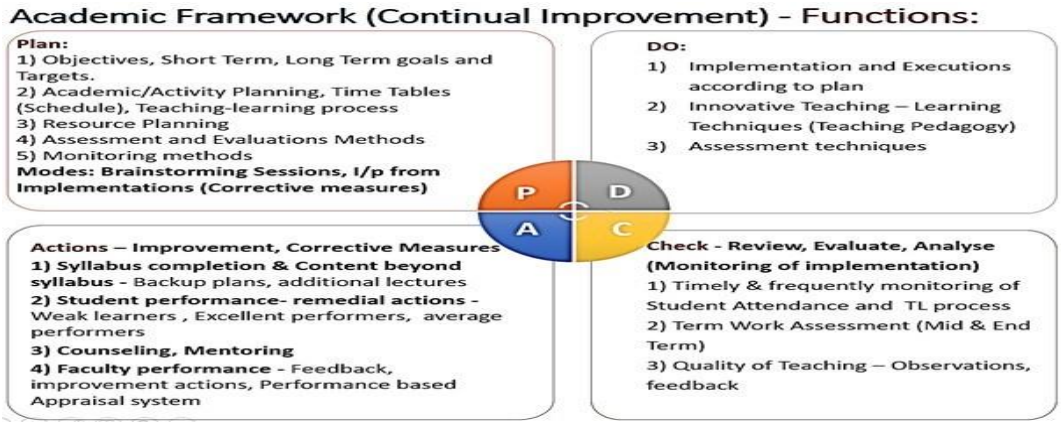


Figure B.2.2.1a-1: PDCA Cycle

Planning

- Design of academic excellence policy of the institute – Objectives and Goals Teaching learning methodology.
- Implementation of MOOCs, E-learning.
- Student assessment, evaluation and remedial methodsInitiatives towards improvement in teaching learning process Standardization of academic process–NBA,NAAC, ISOetc.

Monitoring and control

- Quality of content delivery
- Performance of students – Internal and University exams
- Performance of faculty – through student feedbacks and other factors
- Utilization of academic resources
- Overall student development activities

E&TC Engineering department follows the process of teaching– learning as shown in following figure B.2.2.1a-2.

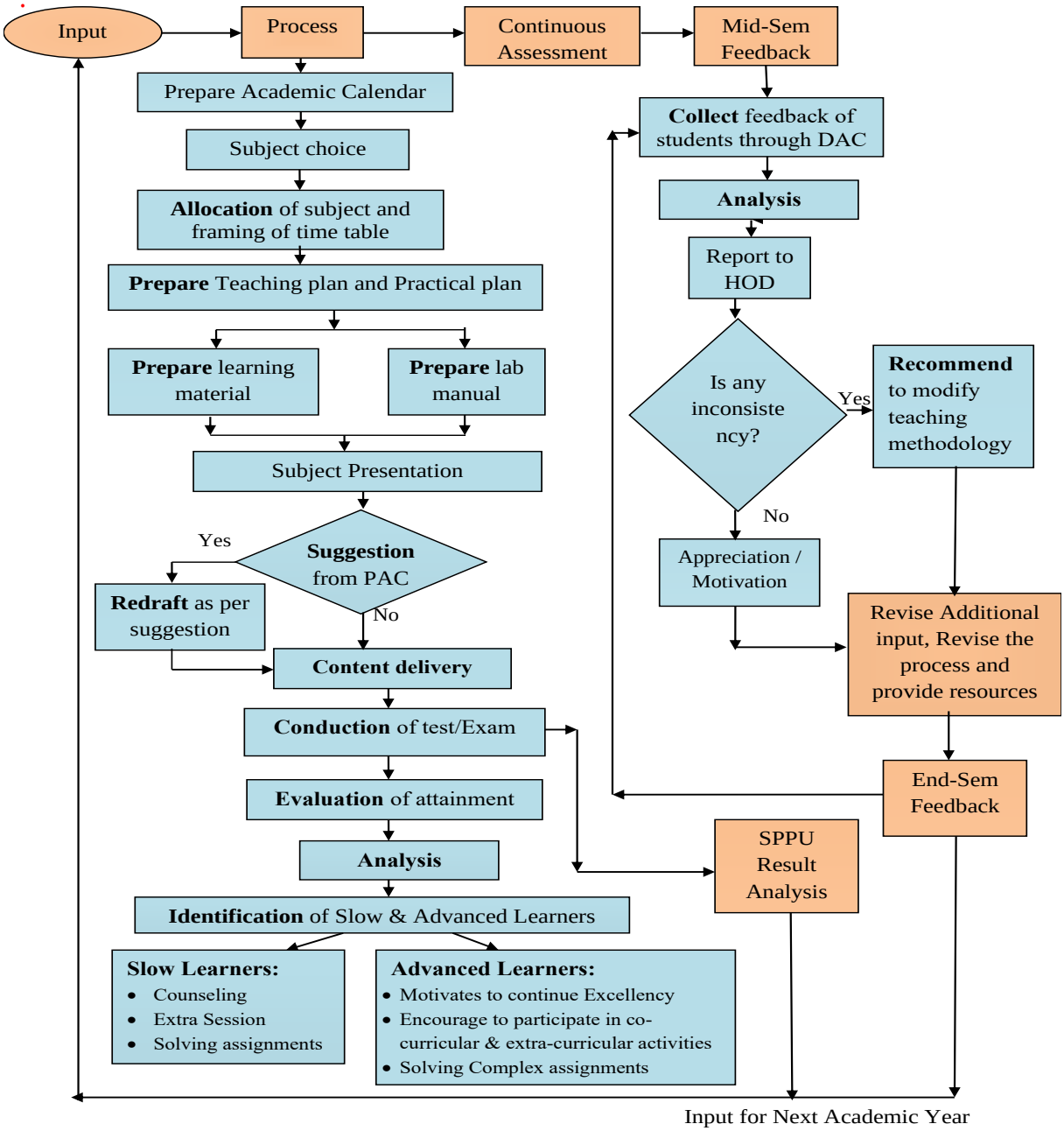


Figure B.2.2.1a-2: Teaching-Learning process

2.2.1 A. Adherence to Academic Calendar:

- Institute's academic calendar is prepared by taking the inputs of university academic calendar, Circulars regarding holidays, SPPU Exam Time Table, MOM of IQAC/CDC/GB/Review meetings and Event Plans of other committees.
- Get the correct on time input from all the concerned before the start of the semester. Plan institute level activities with HOD's and other committee members, including –
    - Internal test
    - University Examinations, Curricular activities
    - Co-Curricular and Extra-curricular
    - ARM, HOD meetings, Mentor meetings etc.
    - Internal Monitoring
    - FDP (STTP, Workshop, Conference, Seminar, Personality development programs)
    - IndustrialVisits
- All the planned activities in the calendar are executed as per the schedule. In case of not conduction of any activity on scheduled date due to some reason alternate arrangement is done.
- Academic Review Meetings (ARM) are conducted in each month to take the academic review by Principal and academic coordinator. Also at the end of semester internal and external ISO audits are conducted to check adherence of activity calendar.Teaching plan for each course is designed by the course coordinators adhering to the calendar of events of the department.

Savitribai Phule Pune University
(Formerly University of Pune)

ACADEMIC CALENDAR FOR VARIOUS ACTIVITES FOR ENGINERRING COURSES FOR THE YEAR 2018-19

FIRST TERM

Sr. No	Courses	Details of Activites	Date
01	S.E./T.E./ B.E. & MCA – II / III Year	Commencement of Teaching	15/06/2018
		Conclusion of Teaching	17/10/2018
		Practical/Oral /Project Examination	20/10/2018 to 03/11/2018
		Theory Examination	14/11/2018 to 08/12/2018
02	M. E. II Year	Commencement of Teaching	02/07/2018
		Conclusion of Teaching	24/10/2018
		Practical Examination	26/10/2018 to 03/11/2018
		Theory Examination	12/12/2018 to 28/12/2018

SECOND TERM

Sr. No	Courses	Details of Activites	Date
01	F.E./S.E./T.E./ B.E. & MCA – I/II / III Year	Commencement of Teaching	17/12/2018
		Conclusion of Teaching	09/04/2019
		Practical/Oral /Project Examination	11/04/2019 to 25/04/2019
		Theory Examination	02/05/2019 to 27/05/2019
02	M. E. I & II Year	Commencement of Teaching	15/01/2019
		Conclusion of Teaching	11/05/2019
		Practical Examination	13/05/2019 to 20/05/2019
		Theory Examination	23/05/2019 to 08/06/2019

(*) Project examniations will start three days later from conclusion of theory examination.

23/4/2018
Deputy Registrar
(P.G. Admission)

Ganeshkhind, Pune-07
Ref. No. PGS/1345
Date: 23/04/2018

Figure B.2.2.1b: SPPU calendar CAYm1 (2018-19)

PIMPRI CHINCHWAD EDUCATION TRUST'S
Pimpri Chinchwad college of engineering & Research, Ravet, Pune

Record No.: **ACAD/R/03**

Academic Year: 2018-19 | **Academic Calendar** | **Semester** - II

Department will prepare **Departmental Activity/Event calendar**/Schedule inline to Academic Calendar. *(Departmental activities like Parent Teacher Meet, Departmental Meetings, Students association activities, Guest lectures, Industrial visit, Add-on/Certificate courses, Project/poster competition, T&P mock (Aptitude, GD, Interviews etc), BE/TE Project/Seminar (Stage) Review, Result Analysis, NSS/Sport/Cultural activities etc should include in Departmental Activity calendar in addition to common college level activities/events)*

Note: 1) Mention dates for all activities in department academic calendar, where slots are given in academic calendar.

2) Pre-presentation should be conducted before every ARM at department.

Department will circulate to the students before commencement of Semester also need to display on Notice board and Web site.

Month	Dates		Activities	Details of Activities/Events	Documents
	FE Dept	Core Dept			
Dec - 2018	17/12/2018	03/12/2018	Department meeting (HOD and Dept Faculties)	Review of Academic progress and plans for coming SEM-II. Review of Dept portfolio and planning for activities Result Analysis and Comparison of Past three years (Quality and Quantitative), Target setting, identification of slow learners and fast learners and action plan, Identification of Gap in curriculum (procedure), critical students from last semester etc.	Agenda, MOM and other supporting documents, List of Slow learners and advanced learners and activities for support and encourage.
	18/12/2018	04/12/2018	Meeting of Course Faculties with course Coordinators	Finalize Course Outcomes, Content beyond syllabus, Assessment methods, Revision/preparation of lab manuals, Revision /restructuring / prepare the contents of Teaching/practical plans, CO-PO mapping, target setting for subject result and CO-attainments, Assignments, Class tests, remedial planning, planning for subject related guest lectures, visit, Prerequisite Test plans etc	Agenda, MOM, CO-PO mapping, Teaching and Practical Plans, Action Plan and taken of last Meeting, pending & closed issues records.
	19/12/2018	05/12/2018	Meeting of Mentor In-charge with Mentor Faculties	Identification of special cases from slow learners (need special attentions) and advanced learner from last academics from internal assessments and observations, students' issues – action taken, pending, resolved, corrective actions, planning for counseling for all slow learners by mentor inchrage and team, planning of meeting with advanced learner to know requirements, suggestions, understanding all formats to be prepare.	
	21/12/2018	08/12/2018	Review meeting	A review of activities conducted on 03/12/2018 (For FE 17/12/2018) and 05/12/2018 (For FE 18/12/2018) and conduct a Pre-presentation by (Presentation by HOD) at department for Review and Planning meeting.	

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	17/12/2018 to 22/12/2018	03/12/2018 to 08/12/2018	Update Notice Board and Web site (communicate information to stakeholders)	SEM Commencement Notice, Display Time Table, Dept Activity/Event calendar, Course Outcomes & Assessment tools and Instructions, TW calculation Formula, Notices for students, Result Analysis and department achievements on Respective N.B., Documents, instruction – safety/work, Objectives and outcomes of experiments and respective labs, Lab utilization Timetable (TT) and essential displays in Labs etc.	TT and other documents as mentioned and essential.
		10/12/2018	HOD & Faculty Presentation – **Civil Dept** &Lab Visit	Last semester academic Review- Reading MOM of ARMs conducted in previous SEM-I, Activities conducted Vs planned, best practices adopted, action taken reports, activities to achieve department Vision-Mission, achievement of department, special programs/activities/efforts taken. Review of Next SEM-II Planning- Planning for next semester, target set, result analysis of previous academic year SEM-II, action planned for critical subjects to improve results, subject load allocation, Master time table, course file preparation, and Department activity calendar. Review of faculty presentations.	PPT Soft copy, visit summary report including Suggestions by Principal, Action plan and taken report as corrective measure. Course File with essential Documents.
		11/12/2018	HOD & Faculty Presentation – **E&TC Dept** / Lab Visit		
		12/12/2018	HOD & Faculty Presentation – **Comp Dept** / Lab Visit		
		13/12/2018	HOD & Faculty Presentation – **Mech Dept** / Lab Visit		
	26/12/2018	--	HOD & Faculty Presentation – **FE Dept** & Lab Visit		
Dec – Jan	**01/01/2019**	**17/12/2018**	**Commencement of Teaching**	& HOD's address to students of SE, TE & BE about college and dept policies and motivation, Introduction to subject with COs, POs, PSOs etc by respective faculties.	Report - point discussed and shared with students
	02/01/2019	18/12/2018	First Day Non-Reporting Student List	Prepare a list with action planed by Class Teachers and submit to DAC /HOD	Action plan and taken report with duration.
	25/12/2018		**Christmas Holiday**		Holiday Circular
Jan - 2019	**11/01/2019 to 12/01/2019**		**Annual Cultural Program (Gathering)**		Circular
	16/01/2019	01/01/2019	Defaulter students List	Prepare a list of students with less attendance, (Display on N.B.), Plan corrective measures. Communicate a list to mentors Incharge and Mentors for further counseling and corrective action	Attendance review Report
	14/01/2019 to 18/01/2019	02/01/2019 to 04/01/2019	Mentor - Student Meet	Mentor Faculties meet with students (online exam)	Proctors forms, Mentor Meeting Report, Course file verification Report, E-magazine Soft copy.
			Course File Verification	Course File Verification – I by DAC & HOD	
			Monthly E-magazine By In-charge	A report of departments monthly activities conducted/planned, achievements, results, events, guest lectures, visits, workshop/seminar/conferences attended, patent/copyrights filed etc	

	21/01/2019	07/01/2019	Course File Verification Report	Course File Verification Report by DAC to HOD and AC (Scanned soft copy – signed by DAC & HOD).	Course File Verification Report. Mentor Report (to be submitted by Mentor Incharge in scanned soft copy – signed by HOD) Verification Report, Mentor Meet Summary Report
			A meeting by Dept Mentor In-charge	Mentor Faculties meet with Dept Mentor In-charge. Issue discussion, Action Plan and taken of last Meeting, Compliance & Improvement, issue closing documents and Reports Mentor Form Verification Report by Dept Mentor In-charge to HOD Mentor Meet Summary Report by Dept Mentor In-charge to HOD	
	N/A	**08/01/2019 to 11/01/2019**	**ARM**	**First Academic review meeting – Department wise.**	**Reports and PPTs as per agenda.**
	12/01/2019	12/01/2019	**Post ARM Meeting - IQAC**	Meeting with all HODs, AC and Principal to finalize action plans.	Agenda, MOM
Jan - Feb	01/02/2019	16/01/2019	Defaulter students List	Prepare a list of students with less attendance - Display on N.B., Plan corrective measures. Communicate a list to mentors Incharge and Mentors for further counseling and corrective action	Attendance review Report
	25/01/2019 to 01/02/2019	21/01/2019 to 25/01/2019	**Unit Test - I SE Students (All Branches)**	**Unit Test-I For SE Students** First Two Units – Theory/MCQ's Exam of 30 Marks *(Question Papers must as per SPPU requirements and Question to be mapped with COs)*	Notice, Circulars, Que Papers, Attd., Assessment and Result Analysis Reports, Slow & Advanced Learners List & Action plans for each
	26/01/2019		**Republic Day (Non- Teaching Day)**		Circular
	04/02/2019 to 09/02/2019	28/01/2019 to 31/01/2019	**Remedial Activities/Corrective actions & Re-Test – I for SE Students**		Attd., Assessment and Result Analysis Reports
Feb - 2019	18/02/2019	01/02/2019	Defaulter students List	Prepare a list of students with less attendance - Display on N.B., Plan corrective measures. Communicate a list to mentors Incharge and Mentors for further counseling and corrective action	Attendance review Report
	04/02/2019 to 06/02/2019	04/02/2019 to 06/02/2019	Monthly E-magazine By In-charge	A report of departments monthly activities conducted/planned, achievements, results, events, guest lectures, visits, workshop/seminar/conferences attended, patent/copyrights filed etc	Course file verification Report, E-magazine Soft copy.
			Course File Verification	Course File Verification by DAC & HOD	
	04/02/2019 to 09/02/2019	04/02/2019 to 09/02/2019	**SPPU Online Phase – I (First Year and Second Year students) (UNIT-1 & 2 MCQs)** **Tentative Schedule (Don't conduct /organize any other Events During Exam)*		Notice, Circulars from SPPU, Result Analysis
			FEEDBACK - I	Take feedback/suggestions of students for appreciation of faculties teaching learning and other parameters in Feedback –I	Analysis Reports, Action plans

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			MID Term Assessment	(INDEX -I Closed) Two Index should be prepared. *Sign 1st Index for MID Term Index Closing*	MID TERM Submission Status Report
	11/02/2019 to 14/02/2019	11/02/2019 to 14/02/2019	Mentor - Student Meet	Mentor Faculties meet with students	Proctors forms, Mentor Meeting Report,
	07/02/2019 to 08/02/2019	07/02/2019 to 08/02/2019	Course File Verification Report	Course File Verification Report by DAC to HOD and AC (Scanned soft copy – signed by DAC & HOD).	Course File Verification Report. Mentor Report (to be submitted by Mentor Incharge in scanned soft copy – signed by HOD) Verification Report, Mentor Meet Summary Report Letters with proper address and records
	11/02/2019 to 14/02/2019		**Letters to the Parent – I**	Letters to parents – Student's academic performance/ areas to be improved, Schedule of Parents-teachers meet.	
	15/02/2019	15/02/2019	A meeting by Dept Mentor In-charge	Mentor Faculties meet with Dept Mentor In-charge. Issue discussion, Action Plan and taken of last Meeting, Compliance & Improvement, issue closing documents and Reports Mentor Form Verification Report by Dept Mentor In-charge to HOD Mentor Meet Summary Report by Dept Mentor In-charge to HOD	
	08/02/2019	**11/02/2019 to 14/02/2019**	**ARM**	Academic review meeting – Department wise.	Reports and PPTs as per agenda.
	15/02/2019		**Post ARM Meeting –IQAC**	Meeting with all HODs, AC and Principal to Review ARM-1 corrective measure/action taken and finalize action plans.	Agenda, MOM
Feb-Mar	25/02/2019 to 01/03/2019	11/02/2019 to 14/02/2019	**MID Term Work Marks Submission**	MID TERM WORK Marks calculation and Submission to department for approval and Display on N.B. For students	TW Marks calculation Sheet
	19/02/2019		**Chhatrapati Shivaji Maharaj Jayanti Holiday**		Circular
	11/03/2019 to 15/03/2019	18/02/2019 to 23/02/2019	**Unit Test - II SE**	**Unit Test For FE, SE Students** on **UNIT NO – 3 and 4**	Notice, Circulars, Que Papers, Attd., Assessment and Analysis Reports, Slow, Fast Learners List & Action plans for each
			Unit Test - TE & BE Students **(All Branches)**	**Unit Test For TE & BE Students** First three Units - Theory Exam of 30 Marks *(Question Papers must as per SPPU requirements and Question to be mapped with COs)*	
	18/03/2019 to 22/03/2019	25/02/2019 to 01/03/2019	**Remedial Activities/Corrective Action & Re-Test for Students (All Branches)**		Attd., Assessment and Result Analysis Reports
Mar - 2019	01/03/2019	01/03/2019	Defaulter students List –4	Prepare a list of students with less attendance - Display on N.B., Plan corrective measures. Communicate a list to mentors Incharge and Mentors for further counseling and corrective action	Attendance review Report
	04/03/2019		**Mahashivratri Holiday**		Circular
	N/A	05/03/2019 to 09/03/2019	**SPPU In-SEM Theory Exam (TE & BE students)** **Tentative Schedule (Don't conduct /organize any other Events During Exam)*		Notice, Circulars from SPPU, Result Analysis

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	05/03/2019 to 11/03/2019		**SPPU Online Phase – II (First Year and Second Year students) (UNIT-3 & 4 MCQs)** **Tentative Schedule (Don't conduct /organize any other Events During Exam)*		
	05/03/2019 to 07/03/2019	05/03/2019 to 07/03/2019	Course File Verification	Course File Verification by DAC & HOD	Course file verification Report, E-magazine Soft copy.
			Monthly E-magazine By In-charge	A report of departments monthly activities conducted/planned, achievements, results, events, guest lectures, visits, workshop/seminar/conferences attended, patent/copyrights filed etc	
	07/03/2019 to 08/03/2019	08/03/2019 to 09/03/2019	Course File Verification Report	Course File Verification Report by DAC to HOD and AC (Scanned soft copy – signed by DAC & HOD). Syllabus completion Review and plan for extra sessions if needed	Course File Verification Report.
	12/03/2019 to 15/03/2019	12/03/2019 to 15/03/2019	Mentor - Student Meet	Mentor Faculties meet with students	Proctors forms, Mentor Meeting Report,
	14/03/2019 to 15/03/2019	14/03/2019 to 15/03/2019	**Letters to the Parent**	Letters to parents – Student's academic performance/ areas to be improved, SPPU Results (for FC+FCWD) – congratulation.	Letters with proper address and records
	08/03/2019	**04/03/2019 to 07/03/2019**	**ARM**	**Academic review meeting – Department wise.**	**Reports and PPTs as per agenda.**
	11/03/2019	**11/03/2019**	**Post ARM Meeting - IQAC**	Meeting with all HODs, AC and Principal to finalize action plans/corrective actions.	Agenda, MOM
	18/03/2019	18/03/2018	A meeting by Dept Mentor In-charge	Mentor Faculties meet with Dept Mentor In-charge. Issue discussion, Action Plan and taken of last Meeting, Compliance & Improvement, issue closing documents and Reports Mentor Form Verification Report by Dept Mentor In-charge to HOD Mentor Meet Summary Report by Dept Mentor In-charge to HOD	Mentor Report (to be submitted by Mentor Incharge in scanned soft copy – signed by HOD) Verification Report, Mentor Meet Summary Report
	21/03/2019		**Holi (2nd day) Holiday**		Circular
	March End		**Sports**	Sport activities for students	Circular
Mar - Apr	01/04/2019 to 05/04/2019	22/03/2019 to 28/03/2019	**END Term Assessment**	(INDEX -II Closed) Two Index should be prepared. *Sign 2nd Index for END Term Index Closing*	END TERM Submission Status Report
	5/04/2019	**28/03/2019**	**Conclusion of Teaching**		
	08/04/2019 to 22/04/2019	29/03/2019 to 13/04/2019	**Crash Course**	Conduction of crash courses by subject faculties.	Notice, Circulars, Que Papers, Attd., Assessment and Analysis Reports, Action plans, Mock Exam Report, Submission Report, Clearance Form Sign Report
			Prelim Exam	Prelim examination as per SPPU End SEM exam pattern.	
			Feedback-II	Take feedback/suggestions of students for appreciation of faculties teaching learning and other parameters in Feedback –II	
			Mock Oral / Pract Exam	Conduct Mock Oral Practical As per SPPU pattern. TW Certificate Sign.	
Apr - 2019	8/04/2019	03/04/2019	Provisional Detention List	Prepare a Provisional detention list of students and submit to higher authorities	Provisional detention list
	22/04/2019	08/04/2019	Compliance Sheet issue	Issue Compliance Sheet to students	Compliance Sheet duly signed.

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	23/04/2019 to 26/04/2019	03/04/2019 to 10/04/2019	Final Course File Verification Report	Course File Verification Report by DAC to HOD and AC (Scanned soft copy – signed by DAC & HOD). Mentor Faculties meet with Dept Mentor In-charge.	Course File Verification Report, Mentor Report (to be submitted by Mentor Incharge in scanned soft copy – signed by HOD) Verification Report, Mentor Meet Summary Report
			Final meeting by Dept Mentor In-charge	Issue discussion, Action Plan and taken of last Meeting, Compliance & Improvement, issue closing documents and Reports Mentor Form Verification Report by Dept Mentor In-charge to HOD Mentor Meet Summary Report by Dept Mentor In-charge to HOD	
	23/04/2019	13/04/2019	**Final Detention List**		Final Detention Report
	23/04/2019 to 25/04/2019	15/04/2019 to 25/04/2019	**SPPU Practical /Oral / Project Examinations (SE,TE & BE)** *Tentative Schedule*		SPPU Examination circulars
			E-magazine of Semester By In-charge	A report of departments monthly activities conducted/planned, achievements, results, events, guest lectures, visits, workshop/seminar/conferences attended, patent/copyrights filed etc	E-magazine Soft copy.
			Term Work Marks Submission	Subject wise Term Work calculations with reference to Term Work formula.	Subject wise TW Marks calculation Sheet
	26/04/2019	26/04/2019	**Final Term Work Marks**	Prepare and Approve Summarized Term Work Sheet for all Subject from higher authorities	Summarized Term Work Sheet (All subject)
Apr - May	N/A	22/04/2019 to 26/05/2019	**ARM**	**Academic review meeting – Department wise.**	**Reports and PPTs as per agenda.**
	29/04/2019	N/A	**ARM**	**Academic review meeting – FE Department.**	**Reports and PPTs as per agenda.**
May -2019	06/05/2019 to 09/05/2019	06/05/2019 To 09/05/2019	**Semester End Review Meeting**	Department Semester end review, planning Vs execution, best practices, activities, achievements etc, (HOD Presentations), Corrective actions/action plan.	Agenda, MOM
		02/05/2019 to 27/05/2019	**SPPU Theory Examinations April/May 2018-19** *Tentative Schedule*		SPPU Examination circulars

Working days$ AY-2018-19 SEM-2:

Month	Dec-18			Jan -19			Feb -19			Mar-19			Apr-19			Total working Days		
Class	FE	SE	TE & BE	FE	SE	TE & BE	FE	SE	TE & BE	FE	SE	TE & BE	FE	SE	TE & BE	FE	SE	TE, BE
Working Days	00	09	10	23	19	23	14	14	19	14	13	13	09	00	00	60	55	65
Commencement teaching: -		SE, TE & BE 17/12/2018		FE 01/01/2019	Conclusion of teaching: -						SE, TE & BE 28/03/2019		FE 10/04/2019			15 weeks	15 weeks	15 weeks

$No working Saturdays were considered.

N/A – Not Applicable

****Tentative Schedule may change as per SPPU exam Schedule.***

Note: 1) Any changes in Academic and activity Calendar shall be informed separately
2) ***Principal Meet (ARM) will be Conducted once in a Month***
3) HODs meet with dept Faculties at-least twice in Month and as per required.
4) Holiday on 1st and 3rd Saturday of every month.
5) Aptitude Course in Unit Test Time Table as additional subject.

Academic Co-Ordinator
Sanjay M. Narayankar

P.C.C. COLLEGE OF ENGINEERING & RESEARCH RAVET PUNE-412 101

Principal
Prof. (Dr.) Harish U Tiwari

Principal
Pimpri-Chinchwad College of Engineering & Research
Laxminagar, Ravet, Pune - 412 101

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Figure B.2.2.1c:Institute Academic CalendarCAYm1 (2018-19) Sem-II

PIMPRI CHINCHWAD EDUCATION TRUST'S
Pimpri Chinchwad college of Engineering & Research Ravet, Pune

Record No.: **ACAD/R/03-A**

Academic Year: 2018-19 | **Department Activity Calendar** | **Semester - II**

Date: 10-12-2018

Department: Electronics & Telecommunication Engineering

Month	Date	Activities	Responsible Person (Activity Incharge)	Conducted Date
Dec - 2018	03/12/2018	Department meeting (HOD and Dept. Faculties)	HOD	03/12/2018
	04/12/2018	Meeting of Course Faculties with course Coordinators	course Coordinators	04/12/2018
	05/12/2018	Meeting of Mentor In-charge with Mentor Faculties	Mentor In-charge	05/12/2018
	08/12/2018	A review of activities conducted on 03/12/2018 (For SE-BE 17/12/2018) and conduct a Pre-presentation by (Presentation by HOD) at department for Review and Planning meeting.	HOD	19/12/2018
	03/12/2018 to 08/12/2018	Update Notice Board and Web site (communicate information to stakeholders)	Notice Board and Web site coordinator	03/12/2018 to 08/12/2018
	11/12/2018	HOD & Faculty Presentation – **E&TC Dept** / Lab Visit	HOD & Faculty	11/12/2018
	17/12/2018	**Commencement of Teaching**	All	SE,TE – 17/12/2018 BE – 24/12/2018
	18/12/2018 to 21/12/2018	• **30 Hrs. workshop for TE Students on Python & Raspberry Pi** • **Industrial Training for BE Students** First Day Non-Reporting Student List	Prof. Maithili Andhare & Class teachers	18/12/2018 to 21/12/2018
	18/12/2018 to 21/12/2018	**30 Hrs. workshop for SE Students on Python & C, C++**	Prof. Kishor Wane	18/12/2018 to 21/12/2018
	25/12/2018	**Christmas Holiday**	--	-
Jan - 2019	01/01/2019	Defaulter students List I	Class teachers	08/01/2019
	02/01/2019 to 04/01/2019	Mentor - Student Meet	All Mentors	02/01/2019 to 04/01/2019
		Course File Verification	DAC	
		Monthly E-magazine By In-charge	DAC	
	07/01/2019	Course File Verification Report	DAC	07/01/2019
		A meeting by Dept. Mentor In-charge	Prof. Maithili Andhare	
	08/01/2019 to 11/01/2019	**First Academic review meeting – Department wise.**	HOD & DAC	09/1/2019
	11/01/2019	**Project Stage II Review**	Prof. Arti Tekade	25/01/2019
	12/01/2019	Meeting with all HODs, AC and Principal to finalize action plans.	AC	12/01/2019
	16/01/2019	• Defaulter students List • **Identification of slow learners & Fast Learners.** • **Planning of activities for them**	Class Teacher & Subject Teacher	16/01/2019
	24/01/2019	**ETeSA Activity ("SCOPE of E&TC" Awareness to 11th & 12th Students)**	Prof. Triveni Dhamale	24/01/2019
	21/01/2019 to 25/01/2019	**Unit Test - I, SE Students**	Prof. Arti Tekade	21/01/2019 to 25/01/2019
	26/01/2019	**Republic Day (Non- Teaching Day)**		-
	28/01/2019 to 31/01/2019	**Remedial Activities for SE Students**	SE Teachers	Dates vary according to subjects

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Feb - 2019	01/02/2019	Defaulter students List 2	Class Teacher	07/02/2019
	04/02/2019 to 06/02/2019	Monthly E-magazine By In-charge	DAC	Done
		Course File Verification	DAC	04/02/2019
	06/02/2019	**IEEE Activity (Seminar on Comm. skill)**	Prof. V. S. Kumbhar	06/02/2019.
	06/02/2019 to 09/02/2019	**IEEE Activity (4 Day workshop on Drone Manufacturing)**	Prof. V. S. Kumbhar	06/02/2019 to 09/02/2019
	08/02/2019	**ETeSA Activity (MOC Interviews)**	Prof. Triveni Dhamale	07/02/2019 to 08/02/2019
	08/02/2019	**Alumni Interaction**	Prof. Rupali Kawade	09/02/2019 & 18/03/2019
	08/02/2019	**Industrial Visit (BE)-All India Radio , Shivajinagar**	Prof. Dipali Dhake	08/02/2019
	04/02/2019 to 09/02/2019	**SPPU Online Phase – I (First Year and Second Year students) (UNIT-1 & 2 MCQs)** **Tentative Schedule (Don't conduct /organize any other Events During Exam)*	Prof. Santosh Randive	11/03/2019 to 16/03/2019
		FEEDBACK – I- Take feedback/suggestions of students for appreciation of faculties teaching learning and other parameters in Feedback –I	Class Teachers	04/02/2019 to 09/02/2019
		MID Term Assessment- (INDEX -I Closed) Two Index should be prepared. *Sign 1st Index for MID Term Index Closing*	DAC & Subject Teachers	04/02/2019 to 09/02/2019
	11/02/2019 to 14/02/2019	Mentor - Student Meet	All Mentors	14/02/2019
	07/02/2019 to 08/02/2019	Course File Verification Report	DAC	07/02/2019 to 08/02/2019
	11/02/2019 to 14/02/2019	**Letters to the Parent – I**	Class Teachers	-
	13/02/2019	**Industrial Visit (SE)-Am Receiver Center, Hadapsar**	Prof. Dipali Dhake	Cancelled due to rescheduling of online exam. But arranged with TE to GMRT
	15/02/2019	A meeting by Dept. Mentor In-charge	Prof. Maithili Andhare	15/02/2019
	15/02/2019 to 16/02/2019	**IEEE Activity (PCB Workshop)**	Prof. V. S. Kumbhar	01/03/2019
	11/02/2019 to 14/02/2019	**ARM-II**	HOD & DAC	15/02/2019
	15/02/2019	Meeting with all HODs, AC and Principal to Review ARM-1 corrective measure/action taken and finalize action plans.	AC	**15/02/2019**
	16/02/2019	**ETeSA Activity (PCCOE&R Marathon)**	Prof. Triveni Dhamale	Next Semester
	11/02/2019 to 14/02/2019	**MID Term Work Marks Submission**	Class Teachers	11/02/2019 to 14/02/2019
	19/02/2019	**Chhatrapati Shivaji Maharaj Jayanti Holiday**		
	23/02/2019	**Project Stage II Review**	Prof. Rahul Parbat	27/02/2019
	18/02/2019 to	**Unit Test - II SE** on **UNIT NO – 3 and 4**	Prof. Arti Tekade	01/03/2019 to 08/03/2019

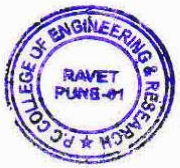
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	23/02/2019	**Unit Test - TE & BE Students**- First three Units - Theory Exam of 30 Marks *(Question Papers must as per SPPU requirements and Question to be mapped with COs)*	Prof. Arti Tekade	18/02/2019 to 23/02/2019
	22/02/2019	**ETeSA Activity (OLD Age Home /Orphanage Home Visit)**	Prof. Triveni Dhamale	30/03/2019
	28/02/2019	**BE & PBL Project Exhibition**	Prof. Arti Tekade	22/06/2019
	28/02/2019	**Industrial Visit (TE)-GMRT, Khodad**	Prof. Dipali Dhake	28/02/2019
March - 2019	01/03/2019	Defaulter students List –3	Class Teacher	07/03/2019
	01/03/2019	**Project Stage II Review**	Prof. Rahul Parbat	05/03/2019
	04/03/2019	**Mahashivratri Holiday**		
	05/03/2019 to 09/03/2019	**SPPU In-SEM Theory Exam (TE & BE students)** **Tentative Schedule (Don't conduct /organize any other Events During Exam)*	Prof. V. Kumbhar	11/03/2019 to 15/03/2019
	05/03/2019 to 11/03/2019	**SPPU Online Phase – II (First Year and Second Year students) (UNIT-3 & 4 MCQs)** **Tentative Schedule (Don't conduct /organize any other Events During Exam)*	Prof. Santosh Randive	11/03/2019 to 16/03/2019
	05/03/2019 to 07/03/2019	Course File Verification	DAC	07/03/2019
		Monthly E-magazine By In-charge	DAC	07/03/2019
	08/03/2019 to 09/03/2019	Course File Verification Report	DAC	08/03/2019 to 09/03/2019
	09/03/2019	**Parent Teacher Meeting**	Class Teachers	09/03/2019
	12/03/2019 to 15/03/2019	Mentor - Student Meet	All Mentors	12/03/2019 to 15/03/2019
	15/03/2019	**Checking performance of Slow Learners**	Subject Teachers	15/03/2019
	14/03/2019 to 15/03/2019	**Letters to the Parent**	Class Teachers	-
	04/03/2019 to 07/03/2019	**ARM-III**	HOD & DAC	15/03/2019
	11/03/2019	**Post ARM Meeting - IQAC**	HOD & DAC	-
	18/03/2019	A meeting by Dept. Mentor In-charge	Prof. Maithili Andhare	20/03/2019
	21/03/2019	**Holi (2nd day) Holiday**		
	22/03/2019 to 28/03/2019	**END Term Assessment**	Class Teachers	22/03/2019 to 28/03/2019
	28/03/2019	**Conclusion of Teaching**	All	SE – 30/03/2019 TE,BE – 28/03/2019
May - 2019	29/03/2019 to 13/04/2019	**Crash Course**	Subject Teachers	29/03/2019 to 13/04/2019
		Prelim Exam	Prof. Arti Tekade	29/03/2019 to 13/04/2019
		Feedback-II	Class Teachers	05/04/2019
	03/04/2019	Provisional Detention List	Class Teachers	03/04/2019
	08/04/2019	Compliance Sheet issue	Class Teachers	08/04/2019
	03/04/2019 to 10/04/2019	Final Course File Verification Report	DAC	03/04/2019 to 10/04/2019
		Final meeting by Dept. Mentor In-charge	Prof. Maithili Andhare	10/04/2019
	13/04/2019	**Final Detention List**	Class Teachers	01/04/2019
	14/04/2019	**CO Attainments Checking**	HOD & DAC	14/04/2019

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	15/04/2019 to 25/04/2019	**SPPU Practical /Oral / Project Examinations (SE,TE & BE)** **Tentative Schedule*		15/04/2019 to 25/04/2019
		E-magazine of Semester By In-charge		
		Term Work Marks Submission	Class Teachers	
	22/04/2019 to 26/04/2019	**ARM-IV**	Academic Coordinator	30/04/2019
	06/05/2019 To 09/05/2019	**Semester End Review Meeting**	Academic Coordinator	06/05/2019
	02/05/2019 to 27/05/2019	**SPPU Theory Examinations April/May 2018-19** **Tentative Schedule*	CEO	02/05/2019 to 27/05/2019

Working days$ AY-2018-19 SEM-II:

Month	**Dec-18**		**Jan -19**		**Feb -19**		**Mar-19**		**Apr-19**		**Total working Days**	
Class	SE	TE & BE	SE	TE & BE	SE	TE & BE	SE	TE & BE	SE	TE & BE	SE	TE, BE
Working Days	08	08	23	23	13	19	13	13	00	00	**56**	**63**
Commencement teaching: -	**17/12/2018**				**Conclusion of teaching: -**		**28/03/2019**					

$No working Saturdays were considered.

**Tentative Schedule may change as per SPPU exam Schedule.*

Note: 1) Any changes in Academic and activity Calendar shall be informed separately
2) ***Principal Meet (ARM) will be Conducted once in a Month***
3) HODs meet with dept Faculties at-least twice in Month and as per required.
4) Holiday on 1st and 3rd Saturday of every month.
5) Aptitude Course in Unit Test Time Table as additional subject.

Department Academic Co-Ordinator

COLLEGE OF ENGINEERING & RESEARCH RAVET PUNE-01

Dr. Rahul Mapari
Head of Department
Head of Department
Dept. of E&TC Engineering
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Figure B.2.2.1d: Department activity Calendar CAYm1 (2018-19) Sem-II with adherence

PIMPRI CHINCHWAD EDUCATION TRUST'S

Pimpri Chinchwad college of engineering & Research, Ravet, Pune

Adherence to Academic Calendar

Adherence to department academic calendar (CAYm1-2018-19) Semester-I

Sr. No.	Activity Planned	SPPU Dates	Department Date	Percentage of Adherence
1	Commencement of Teaching	15/06/2018	18/06/2018	100%
2	Conclusion of Teaching	17/10/2018	29/09/2019	100%
3	Practical / Oral/Project Stage- I Examination	20/10/2018 to 03/11/2018	20/10/2018 to 03/11/2018	100%
4	Theory Examination	14/11/2018 to 08/12/2018	14/11/2018 to 08/12/2018	100%

Adherence to department academic calendar (CAYm1-2018-19) Semester-II

Sr. No.	Activity Planned	SPPU Dates	Department Date	Percentage of Adherence
1	Commencement of Teaching	17/12/2018	17/12/2018	100%
2	Conclusion of Teaching	09/04/2019	30/03/2019	100%
3	Practical / Oral/Project Stage- I Examination	11/04/2019 to 25/04/2019	11/04/2019 to 25/04/2019	100%
4	Theory Examination	02/05/2019 to 27/05/2019	02/05/2019 to 27/05/2019	100%

Note: Institute Conclusion of Teaching are differ than the SPPU dates. In most of the courses SPPU assigned three lectures per week but to get more Preparation Leaves to student, we assigned four lectures per week to the courses.

COLLEGE OF ENGINEERING & RESEARCH ★ P.C. RAVET PUNE-41

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Figure B.2.2.1e: Adherence to SPPU calendar CAYm1 (2018-19)

	PIMPRI CHINCHWAD EDUCATION TRUST'S PimpriChinchwad college of engineering & Research, Ravet, Pune	Record No.:ACAD/R/09-A
Academic Year: 2019-20	Teaching Plan– Theory Sessions	Semester - II

Date:17/12/2019

Department: Electronics & Telecommunication			**Class: TE**
Subject Name:SYSTEM PROGRAMMING AND OPERATING SYSTEM			**Subject Code:304190**
Teaching Scheme:	**Lect./week:3Hrs/Week**		
Examination Scheme:	**Theory (INSEM):30**	**Theory (ENDSEM):70**	**Online:----**
Name of Faulty: KISHOR WANE			
Course Outcome:			
On successful completion of the course, students able to:			
C304190.1	Apply the knowledge of assembler and macro processor in system programming and Operating Systems (BT-3)		
C304190.2	Formulate the Problem and develop the solution for assembler and macro processor (BT-4)		
C304190.3	Compare and analyze the multi programming, multi tasking and time sharing of system programming operating system abstractions.. (BT-4)		
C304190.4	Apply the knowledge of IO management, disc scheduling and file management for case studies Android mobile, directories, System calls to handles process (Bt-3)		

Lect No.	Topics to be Covered	Content Delivery Methods (CDM)	COs Mapping to the Contents	Proposed Date	Conducted Date	Remarks / Lecture Adjustment
Unit I: Introduction to Systems Programming						
1	Introduction to Systems Programming, Components of System Software;	Black Board, PPT Presentation	C304190.1	23/12/2019	24/12/2019	KBW CIPCFS EVENT
2	Language Processing Activities, Fundamentals of Language Processing;	Black Board, PPT Presentation		24/12/2019	27/12/2019	KBW
3	Assemblers: Elements of Assembly language programming. Simple assembler scheme;	Black Board, PPT Presentation		27/12/2019	28/12/2019	KBW
4	Structure of an assembler;	Black Board, PPT		28/12/2019	30/12/2019	KBW
5	Design of single and two pass assembler;	**Flipped Lecture**		30/12/2019	31/12/2019	KBW
6	Macro Processors: Macro Definition and call;	Black Board, PPT Presentation		31/12/2019	1/1/2020	KBW
7	Macro expansion, Nested Macro Calls;	Black Board, PPT Presentation		1/1/2020	3/1/2020	KBW
8	Advanced Macro Facilities, Design of a two-pass macro-processor;	**Guest Lecture**		3/1/2020	6/1/2020	KBW
Unit II: Compiler, Loaders and Linkers						
9	Compiler, Loaders and Linkers: Basic compilers function;	Black Board, PPT Presentation	C304190.2	6/1/2020	7/1/2020	KBW
10	Phases of compilation, memory allocation;	Black Board, PPT Presentation		7/1/2020	8/1/2020	KBW
11	compilation of expression, compilation of control structures, Code of optimization;	Black Board, PPT Presentation		8/1/2020	10/1/2020	KBW
12	Loaders: Compile and go, General Loader Scheme, Absolute loaders;	**Flipped Lecture**		10/1/2020	11/1/2020	KBW

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13	subroutine linkages, relocating loaders,directlinking loaders, Design of an absolute loader;	Black Board, PPT Presentation		11/1/2020	13/1/2020	KBW
14	Linkers: Relocation and linking concepts	Black Board, PPT Presentation		13/1/2020	15/1/2020	14/1/20 lect given to Dharmale Madam KBW
15	Design of linker;	Black Board, PPT Presentation		14/1/2020	17/1/2020	KBW
16	self relocating programs, Static and dynamic linker;	Black Board, PPT Presentation		15/1/2020	20/1/2020	KBW
Unit III: Introduction to OS and Process management						
17	Unit III : Introduction to OS and Process management : Architecture, Goals & Structures of O.S	Black Board, PPT Presentation		17/1/2020	22/1/2020	21/1/20 TE RESULT Declration KBW
18	Basic functions, Interaction of O. S. & hardware architecture;	**Flipped Lecture**		20/1/2020	24/1/2020	KBW
19	System calls, Batch, multiprogramming. Multitasking, time sharing;	Black Board, PPT Presentation	**C304190.3**	21/1/2020	27/1/2020	KBW
20	parallel, distributed & real - time O.S.;	Black Board, PPT Presentation		22/1/2020	28/1/2020	KBW
21	Process Management: Process Concept, Process states, Process control;	Black Board, PPT Presentation		27/1/2020	29/1/2020	KBW
22	Scheduling: Preemptive,Non preemptive;	Black Board, PPT Presentation		28/1/2020	31/1/20	KBW
23	Scheduling algorithms: FCFS, SJF, RR;	Black Board, PPT Presentation		29/1/2020	3/2/2020	KBW
Unit IV : Concurrency control						
24	Unit IV : Concurrency control : Interprocess communication, Mutual Exclusion;	Black Board, PPT Presentation		31/1/20	4/2/2020	KBW
25	Semaphores, Classical Problems of Synchronization: Readers-Writers;	Black Board, PPT Presentation		3/2/2020	5/2/2020	KBW
26	Producer Consumer;	**Flipped Lecture**	**C304190.4**	4/2/2020	10/2/2020	KBW
27	Dining Philosopher problem;	**Flipped Lecture**		5/2/2020	11/2/2020	12 to 15 Feb GATHRING KBW
28	Deadlock: Principles of deadlock, Deadlock Prevention;	Black Board, PPT Presentation		7/2/2020	17/2/2020	KBW
29	Deadlock Avoidance;	Black Board, PPT Presentation		8/2/2020	17/2/2020	KBW
30	Deadlock Detection	Black Board, PPT Presentation		10/2/2020	18/2/2020	KBW
Unit V : Memory Management						
31	Unit V : Memory Management, Basics of memory management;	Black Board PPT Presentation		11/2/2020	28/2/2020	KBW
32	Swapping, Memory Allocation;	Black Board PPT Presentation		14/2/2020	29/2/2020	KBW
33	Paging, Segmentation ,	Black Board PPT Presentation	**C304190.5**	17/2/2020	9/3/2020	2-9 March Insem Exams KBW
34	Virtual memory;	Black Board, PPT Presentation		18/2/2020	11/3/20	KBW
35	Demand Paging, Page replacement;	Black Board, PPT Presentation		22/2/2020	13/3/20	KBW
36	Page replacement algorithms	Black Board, PPT Presentation		24/2/2020	30/3/20	KBW

37	– Optimal FIFO, LRU,	Black Board, PPT Presentation		25/2/2020	31/3/20	KBW
38	LRU approximation; Allocation of frames;	Flipped Lecture		26/2/2020	1/4/20	KBW
Unit VI: Input and Output, File System						
39	Unit VI : Input and Output, File System,I/O management Disk schedulingI/O Devices;	Black Board, PPT Presentation	C304190.6	28/2/2020	3/4/20	KBW
40	Organization of I/O functions,;	Black Board, PPT Presentation		29/2/2020	4/4/20	KBW
41	Operating System	**YouTube Lecture**		2/3/2020	6/4/20	KBW
42	Design issues, I/O Buffering, Disk Scheduling (FCFS);	**YouTube Lecture**		3/3/2020	7/4/20	KBW
43	RAID, Disk Cache. File Management: Concepts	**YouTube Lecture**		4/3/2020	8/4/20	KBW
44	File Organization	Black Board, PPT Presentation		6/3/2020	10/4/20	KBW
45	File Directories,File Sharing, Record Blocking;	**Flipped Lecture**		16/3/2020	11/4/20	KBW
46	Allocation methods, Free Space management;	Black Board, PPT Presentation		17/3/2020	13/4/20	KBW
47	Revision	Black Board, PPT Presentation		18/3/2020	14/4/20	KBW
48	Revision	Black Board		20/3/2020	15/4/20	KBW

Unit wise Plan (Summary)					
Unit No.	Name of Units/Chapters	Total No. Of Lectures	Planned Date of Completion	Actual date of Completion	Remarks (Plan Vs Actual)
01	**Introduction to Systems Programming**	08	3/1/2020	6/1/20	CIPCIS EVENT KBW
02	**Compiler, Loaders and Linkers**	08	17/1/2020	20/1/20	KBW
03	**Introduction to OS and Process management**	07	31/1/2020	3/2/20	21/1 TE RESULT Declaration KBW
04	**Concurrency control**	07	11/2/2020	18/2/20	KBW
05	**Memory Management**	08	25/2/2020	1/4/20	KBW
06	**Input and Output, File System**	11	20/3/2020	15/4/20	KBW

References:

Text Books:				
Code	**Name of Book**	**Author**	**Publication**	**Edition/Year**
T1	Systems Programming and Operating Systems	**DHAMDERE D**	**TMH Publication.**	**2nd**
T2	Operating System Concepts	Galvin P.B; Gagne G	**Wiley**	**2nd**

Reference Books:				
Code	**Name of Book**	**Author**	**Publication**	**Edition/Year**
R1	Operating Systems	Stalling William	Pearson Education	**5TH**
R2	System Programming with C	ADAM HOOVER	Pearson Education	
R3	System Software	LELAND BECK	Pearson Education	
R4	Modern Operating Systems	Andrew S. anenbaum	**PHI**	**2nd**
R5	Compilers: Principles, Techniques	A. V. Aho, R. Sethi		

KBW Subject Teacher KBW Course Coordinator DAC HOD

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Figure B.2.2.1f: Teaching plan CAY (2019-20) Sem-II

2.2.1 B. Instructional Methods and Pedagogical Initiatives:

A well-defined process for course allotment and load distribution is adopted at the department level. Course choices are taken from faculty members. Course allocation is made based on the choice or expertise of faculty members 25-30 days before the commencement of semester. Once the courses are allocated, faculty members prepare a detailed course plan, assignment questions etc. for particular course. Course materials are prepared as per the teaching plan & course outcomes. Faculty members use various pedagogical methods for effective teaching learning process. The department has taken the following pedagogical initiatives:

- **Project based learning (PBL):** It is more effective to train competent and skilled practitioners. Project based learning is an innovative practice used to implement outcome based education at PCET's PCCOE&R. PBL is considered as a separate course in the department. Students are encouraged to carry out multidisciplinary projects to apply their engineering knowledge. The PBL activity is described as below,
  1. A notice is circulated to students by the PBL coordinator to form their group (6 students in one group) and choose the guide
  2. Topic is identified by the group in discussion with guide and it is submitted to PBL coordinator
  3. PBL coordinator approves the topic
  4. Laboratory and slots are allotted in class time table
  5. At the end of 1st semester a POster presentation is conducted and at the end of year a project exhibition activity is conducted and evaluated by team of experts.

- **Think-Pair-Share-** Topics are float, students work together to solve a problem or answer a question about an assigned reading.

- **Flipped classroom-** Flipped lectures are included in teaching plan. One week before the activitystudents are informed to prepare the particular topic. On the scheduled day students explain the topic and faculty ask the questions.

- **Lab experiments beyond syllabus-** Some lab experiments beyond syllabusare allocated to students to enhance their practical knowledge.
- **Presentations-** Students are asked to deliver a presentation on given topic to improve stage courage.
- **Technical blogs-** Faculty members create the Technical blogs and share the course material on this blog with the students.
- **Video Lectures-** The faculty members are using E-sources such as NPTEL courses for effective teaching process.
- **Assignments-** Assignments are given to students based on COs which helps us to attain program outcomes.
- **ICT based Learning-**Faculties prepare and upload E-contents (presentations, animated videos, study materials, assignment etc.) on Google classrooms.
- **Moodle Based LMS-**Course materialis shared with students through Moodle. Syllabus, assignments, various types of games like snake ladder, crossword, emozi puzzles etc. are access through Moodle.
- **ERP for attendance, feedback-** ERP is used for marking the attendance and through this facility an SMS is sent to absent student parents immediately after the lecture and also feedback from students is taken through this facility.

- **Expert talks**-Talks of eminent personalities from reputed institutes and industries are arranged to bridge the curriculum gap.
- **Industrial visits**- Field visits are organized regularly to support curriculum delivery.
- **Hands on workshops-** Workshopsare organized to help the students to understand concepts beyond curriculum.



Figure B.2.2.1g: Instructional methods and Pedegogical initiatives

2.2.1. C. Methodologies to Support Weak Students and Encourage Bright Students:

Following method is adopted to classify students into two categories as Advanced Learners (Bright) and Slow Learners (Weak):

- Student classification for each course is performed considering following key points
  1. Marks obtained by student in objective type test /class test / unit test conducted for respective subject.

2. Academic performance of students in preceding university examination.
3. Subject teacher observation and feedback form previous class teacher.

- Above three parameters have been distributed in 100% as given in table B.2.2.1a :

Table B.2.2.1a: Parameter and weightage distribution for weak and fast learner identification

Sr. No.	Parameter	Weightage in Percentage
1	Marks obtained by student in objective type test /class test / unit test conducted for respective subject	50%
2	Academic performance of students in preceding university examination	25%
3	Subject teacher observation and previous class performance	25%

- The students securing marks below 40% are identified as slow learners and the students securing marks above 70% are identified as fast learners. Special activities are arranged for weak students and its impact is checked after online examination in case of SE and In-sem examination for TE and BE class.Table B.2.2.1b gives methodologies to support weak students and encourage bright students.

Table B.2.2.1b: Methodologies to support weak students and encourage bright students

Learner	Actions taken	Outcome
Weak (Slow)	1. Department arranges remedial lectures for weak students for all the courses. 2. Mentoring and counseling to weak students to overcome the fear of difficult subjects. 3. The teacher teaches as per the requirement of weak students. 4. Attempts are made by the teachers to give personal attention to these students.	1. Due to counseling many students improved their academic performance 2. Improved results and less number of failures in Subjects.

	5. Question banks and assignments are given.	
Bright (Advanced)	1. Provide seed funding for major and special projects. 2. Assigned as PBL coordinator. 3. Top three meritorious students from each class are awarded. 4. Apart from regular library facility, additional two books are provided to meritorious students 5. The department provides guidance for competitive examinations by arranging lectures for the students appearing for GATE, GRE/TOEFL etc. 6. Students are motivated to conduct workshops in other institutes to build the leadership quality. 7. Bright students help the weak students to improve their performance.	1. Improved quality results. 2. Placement in Product based companies with higher package. 3. Participation in technical competitions increased.

2.2.1. D. Quality of Classroom Teaching:

- Before commencement of the semester Head of Department distributes the courses to the faculty members as per the choices given by them. Course teachers are instructed to give their allotted course presentations to the Module Coordinator. During the course presentations suggestions regarding the Teaching plan, gap identified, content beyond syllabus and pedagogies to be used are given to the course teacher by the Module coordinator. Course teacher revises his/her course materials as per the suggestions and finalizes the course material. All course teachers are well prepared before going to the class. The content delivery methods used by the faculty are:
    - Flipped lecture
    - Video lectures
    - Some curriculum from industry person
    - Some portion through industrial visit
    - Content beyond syllabus topics are completed through workshops

- Expert lectures

- Monthly Academic Review Meetings (ARM's) are conducted for the assessment, evaluations and corrective actions on teaching learning processes.
- Module coordinators take monthly feedback of course teachers and provide inputs accordingly. All points are further discussed in Program Assessment Committee (PAC) once in a semester.
- Unit test, preliminary exams and mock orals are conducted to check the performance of students.
- Quality of teaching is checked in ISO internal and external audit using parameters like teaching quality, clarity of concept and speed of delivery, teacher encouragement for inviting questions and providing satisfactory answers, real life examples, class control and discipline, overall impact of the teacher.
- Actions are taken on teacher feedback given by students in order to maintain the quality of teaching.
- Classroom is equipped with LCD projector, Smart board, Pcconnected with LAN, good ventilation, enough fans, tube lights and benches.

2.2.1. E. Conduct of Experiments:

- Under project based learning practical kits are designed and made by the students.
- Special projects and products are displayed in respective laboratories made by the students.
- Thrust area groups of faculty members are formed. A senior faculty is assigned as mentor (module coordinator) for each group. Faculty members of each group discuss the preparation of laboratory manual, material requirements, conduction of experiments and rubrics for experiments before commencement of semester.
- As per the university guidelines, 8-12 experiments are to be conducted. Additional experiments are conducted beyond the specified list for relevant courses.

- Laboratory manual explaining the details of the experiment and designing issues are available with the course teacher.
- Laboratory manuals and rubrics of experiments are provided to the students at the starting of semester.
- Course teacher explains all the theory and experiment conduction details at the starting of each laboratory session.
- Students are divided into several groups to perform experiments. Each group contains two students.
- The students perform the experiment with observations, calculations and results.
- Course teacher regularly asses the laboratory journal of students based on predefined rubrics and conduct viva during assessment. Based on the rubrics, grades are assigned to each experiment.
- Course teacher also notes down the marks of each student in Continuous Assessment Sheet. These marks are used to evaluate University term work.
- Additional practical sessions are also conducted beyond the curriculum to improve the knowledge of the student.
- Students are also encouraged for additional utilization of laboratories.
- Mock practical exams are conducted for courses having practical examination.

2.2.1. F. Continuous Assessment in the laboratory:

- Based on three parameters shown in table B.2.2.1b and table B.2.2.1c for Hardware and Software practical, assessment is carried out.
- Internal assessment marks of SE and TE students are reflected in the final university examination.

Table B.2.2.1b: Rubrics for Laboratory Experiments Evaluation (Hardware)

Parameter for Assessment		Excellent	Good	Average	Poor
1	Design and Implementation of experiments	Design the experiments with full justification and implement it so that it works perfectly	Design the experiments with full justification and implement the same but it does not give 100% results	Design the experiments with full justification and implement the same but it does not give results	Design the experiments incorrectly and implement the same it does not give results
Marks		**4**	**3**	**1-2**	**0**
2	Observation, Reading& Data Interpretation	Well focused result & discussion; Data is completely & appropriately interpreted	Missed some important points in results & discussion; interpreted most data correctly, but some points may be over interpreted	Analyzed only basic points in results & discussion; interpreted some data correctly, but errors are still present	Entirely missed the points in experiment; little or no attempt to interpret the data
Marks		**3**	**2**	**1**	**0**
3	Organization of Report & Timely Submission	Lab report is well organized & submitted on time	Lab report is well organized & but not submitted on time	Report contains few errors &not submitted on time	Poor organization & late submission
Marks		**3**	**2**	**1**	**0**

Table B.2.2.1c: Rubrics for Laboratory Experiments Evaluation (Software)

Parameter for Assessment		Excellent	Good	Average	Poor
1	Design and Implementation of program	Design the experiments with full justification and implement it so that it works perfectly	Design the experiments with full justification and implement the same but it does not works perfectly due to 10% errors	Design the experiments with full justification and implement the same but it does not works perfectly due to 20% errors	Design the experiments incorrectly and implement the same it does not give results due to more than 30% errors
Marks		**4**	**3**	**1-2**	**0**
2	Observation, Reading& Data Interpretation	Well focused result & discussion; Data is completely &	Missed some important points in results &	Analyzed only basic points in results &	Entirely missed the points in experiment; little

		appropriately interpreted	discussion; interpreted most data correctly, but some points may be over interpreted	discussion; interpreted some data correctly, but errors are still present	or no attempt to interpret the data
Marks		**3**	**2**	**1**	**0**
3	Organization of Report &Timely Submission	Lab report is well organized &submitted on time	Lab report is well organized & but not submitted on time	Report contains few errors &not submitted on time	Poor organization & late submission
Marks		**3**	**2**	**1**	**0**

2.2.1. G. Student feedback of teaching learning process:

- To improve the teaching learning process on regular basis, student feedback for the respective course is conducted twice in a semester with various parameters as defined by the institution.
- Online feedback process is followeddefined by ISO cell. Feedbacks are taken twice in a semester.
- Appreciation letters are given to faculties in case of feedback more than target.
- In case of less feedback than defined target, the reasons and plans are asked from faculty to improve the feedback
- The improvementis checked in revised feedback and action will be taken accordingly. The flowchart of student feedback processis shown in figure B.2.2.1g.

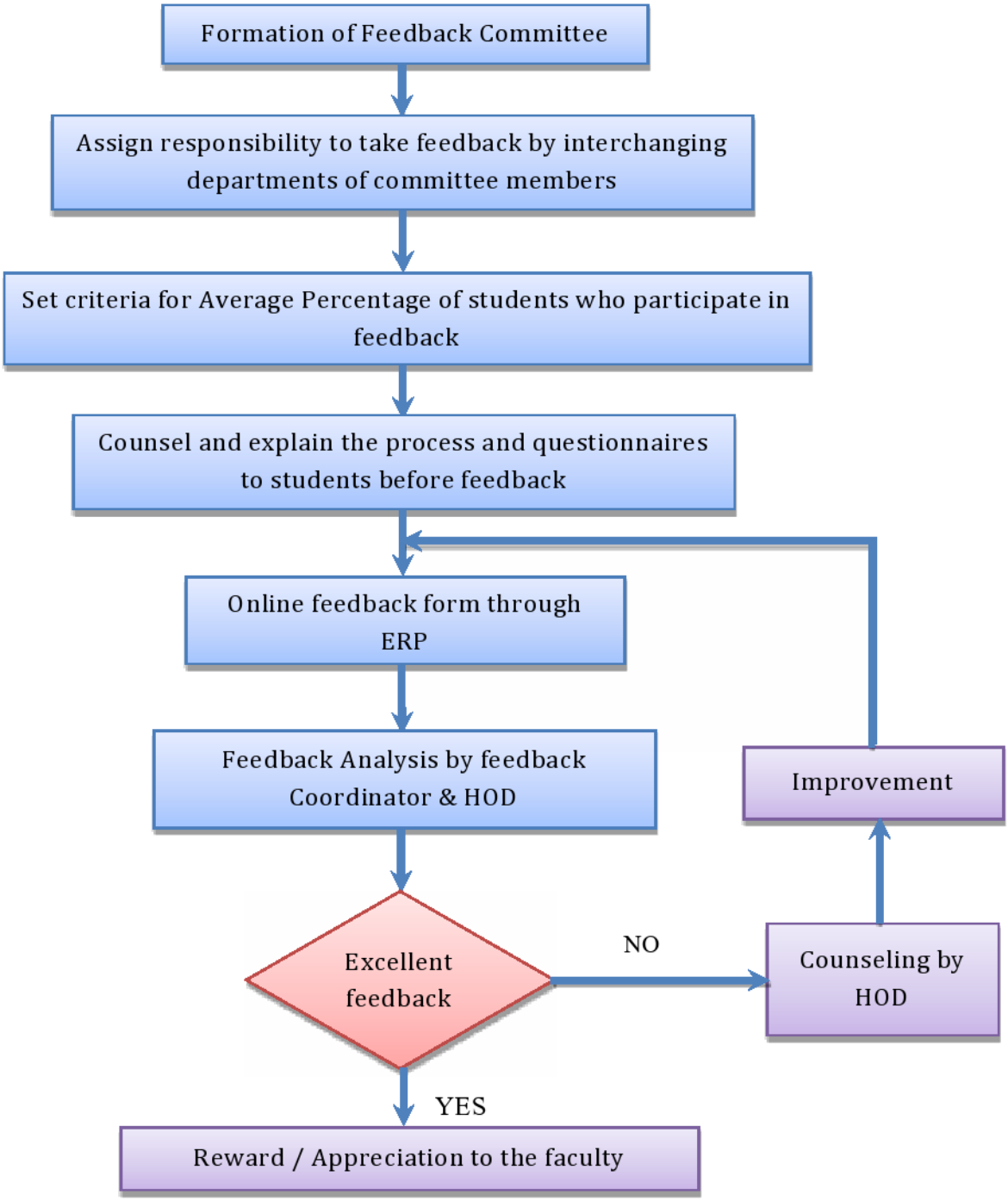


Figure B.2.2.1g: Flowchart of student feedback process

Measures taken to improve feedback/ Action taken:

- The faculty having less feedback is being counseled by HOD and departmental senior faculty members. Faculty members have been allotted college level mentor if required or if POssible.
- Faculty members are suggested to undergo NPTEL and FDP programs.
- Due to measures taken there is significant improvement in faculty members in many aspects.
- The faculty having excellent feedback is being honored with appreciation letter. As a result there was significant increment in next feedback. Also for overall growth of faculty members the feedback is also included in Self-Appraisal Form (SAF).

Above mentioned processes to improve quality of teaching learning resulted in following POsitive outcomes:

- Active participation of students in OBE (Outcome Based Education) activities
- Better bonding between students and faculty
- Appreciation from the parents
- Increased self confidence among students
- The observable impact of assisting weak students is improved results
- Development of interest in course.

Table B.2.2.1d: Student Satisfaction Index

Academic Year	2017-18	2018-19	2019-20	2020-21
Student Satisfaction Index	81.3%	83.56%	86.26%	87.09%

2.2.2 Quality of internal semester Question papers, Assignments and Evaluation (20)

Institute Marks 20

In addition to predefined online/insem and end semester examination by SPPU additional efforts in the form of Unit test, prelim and assignments are taken to ensure learning outcomes. Two internal tests are conducted, unit test 1 and preliminary examination for the attainment of learning outcomes.. Assignments are conducted beyond university curriculumto solve open-ended problems. The structure and pattern of examinations and assignment is shown in table B.2.2a.

Table B.2.2.2a: Institute and university examination and assignment structure

Sr. No.	Institute		University	
01	Unit Test 1	30 Marks	Insem Exam	30 Marks
02	Preliminary Exam	70 Marks	Endsem Exam	70 Marks
03	Assignment	Over and Above	Assignment	Beyond curriculum

2.2.2.A. Process for Internal semester question paper setting and evaluation and effective process implementation:

- The process for internal semester question paper setting and evaluation and effective process implementation is defined by our ISO cell.
- Faculty member prepare two question papers as per university examination pattern and CO mapping by considering Blooms Taxonomy level.
- Above two question papers are discussed in module coordinator meeting. Suggestions are given by module coordinator and program coordinator if required.
- After making changes according to step 2, question papers are verified and authenticated using department seal.
- Pick any one question paper for examinations and keeps remaining for retest.
- Evaluate students answer sheet within one week after examination and distribute evaluated answers sheet to students for self-analysis.

- Redress and recheck answer sheet in presence of student in case of any grievances from students in assessment of answer sheet.

2.2.2.B. Process to ensure questions from outcomes/learning levels perspective:

- The process for internal semester question paper setting and evaluation and effective process implementation is defined by our ISO cell.
- Faculty member prepare two question papers as per university examination pattern. CO'sand Blooms Taxonomy levels are considered for each question.
- Above two question papers are discussed in module coordinator meeting. Module coordinator and program coordinator if required give suggestions.
- After making changes according to step 2, question papers are verified and authenticated using department seal. Ensure question paper as per requirement. If Question papers are not as per requirements, ask concern subject faculties to resubmit as per requirements.

2.2.2.C. Evidence of COs coverage in internal exam test:

- Class tests used for internal assessment are framed as per the process explained in earlier section (2.2.2.B)
- The Course Outcomes are mapped with the questions asked in the question paper. This ensures that the student and the faculty both are oriented towards outcome based education.
- The assessment of internal exam test is carried outas per the CO coverage in the test.
- The sample copy of unit test and its mapping with CO is as shown in figure B.2.2.2a.

Pimpri Chinchwad Education Trust's

Pimpri Chinchwad College of Engineering & Research Ravet, Pune

Record No: **ACAD/R/11**

Academic Year:2019-20	**UT-1**	**Term** – II

Department: E&TC Engg **Class:** BE E&TC **Div:** -
Subject: Audio Video Engineering **Maximum Marks:** 30 **Duration:** 1Hrs.
Subject Code: 404191 **Date:** 06/02/2020

Note: *1.* ***Solve Que 1 or Que2 and Que 3*** *or* ***Que4*** *and* ***Que 5*** *or* ***Que6***
2. Give explanation or justification wherever required.

Course Outcomes:
C404191.1 Apply the knowledge of television to distinguish different video standards of analog and digital TV like NTSC, PAL, SECAM and display devices like CRT, OLED, LCD, Plasma, TFT **(Unit 1, 2) (BT-3/4)**
C404191.2 Analyze and distinguish different digital TV systems like HDTV, CCTV, CATV, 3D TV, IP TV, Mobile TV, Wi-Fi TV **(Unit 3,4) (BT-4)**

Que 1	a)	**Detect** the bandwidth for a PAL TV system	(Marks – 5) **[C404191.1], BT-4**
	b)	**Use** the color composite video signal to show the significance of pedestal height, DC level, darker and white portion.	(Marks – 5) **[C404191.1], BT-3**
		-------OR------	
Que 2	a)	**Justify** the video bandwidth in PAL-B standard is 7MHz	(Marks – 5) **[C404191.1], BT-4**
	b)	**Compare** PAL, NTSC and SECAM color TV systems.	(Marks – 5) **[C404191.1], BT-4**
Que 3	a)	**Compare** analog TV, DTV and HDTV	(Marks – 5) **[C404191.1], BT-4**
	b)	**Compare** LED, LCD and Plasma display devices.	(Marks – 5) **[C404191.1], BT-4**
		----------OR--------	
Que 4	a)	Explain the basic principle of digital video compression technique and **comments on** why MPEG 4 is more popular	(Marks – 5) **[C404191.1], BT-4**
	b)	Write your **comments**-MAC packet encoding is most suitable for satellite TV broadcasting	(Marks – 5) **[C404191.1], BT-4**
Que 5	a)	**Select and explain** the appropriate television which operates in Ku or K band and doesn't need service operator.	Marks – 5) **[C404191.2], BT-4**
	b)	**What** are the factors that have made cable TV popular, in spite of the wider TV broadcast network? **Compare** the merits of conventional TV broadcasts, CATV and DBS as utility services for the consumer.	Marks – 5) **[C404191.2], BT-2,4**
		----------OR--------	
Que 6		**Select** the suitable cameras and their placements for the Digital broadcasting of 1. Cricket match 2. Marathon	Marks – 10) **[C404191.2], BT-4**

Rev.: 00 Date: 03-12-2018

COLLEGE OF ENGINEERING & RESEARCH ★ P.C. RAVET PUNE-01

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Figure B.2.2.2a: Internal Question Paper Template

2.2.2.D. Quality of Assignment and its relevance to COs:

- At the starting of semester, course teacher prepares assignment question bank for respective course considering COs which are made according to the Bloom's Taxonomy Levels.
- While preparing the question bank, the course teacher considers various aspects of teaching learning process like formulating and analyzing the problems, use of modern tools, complex engineering problems, etc.
- Module coordinator verifies the question bank and suggests corrections if any
- The course teacher conveys the rubrics for assessment to students.
- Separate slot is reserve in time table B.for solving the assignment to reduce the over burden on students and they take actively participation in solving the assignments
- The course teacher evaluates the assignments as per Rubrics and suggests improvements to students if any
- The course teacher prepares the assignment analysis and CO attainment.
- The sample Assignment showing quality in terms of CO mapping and Blooms Taxonomy is shown in Figure B.2.2.2b.

Pimpri Chinchwad Education Trust's

Pimpri Chinchwad College of Engineering & Research, Ravet, Pune

Academic Year: 2019 - 20	ASSIGNMENT AUDIO VIDEO ENGINEERING (404191), BE E&TC	Term: II

Course Outcome:

On successful completion of the course, students able to:

C404191.1 Apply the knowledge of television to distinguish different video standards of analog and digital TV like NTSC, PAL, SECAM and display devices like CRT, OLED, LCD, Plasma, TFT **(Unit 1, 2) (BT-3)**

C404191.2 Analyse and distinguish different digital TV systems like HDTV, CCTV, CATV, 3D TV, IP TV, Mobile TV, Wi-Fi TV **(Unit 3,4) (BT-4)**

C404191.3 Apply the principle of audio and video recording through CD/DVD player, MP3 player, Blue Ray DVD player and compression techniques **(Unit 5) (BT-3)**

Unit	Questions	Mapping with CO	BT level	Submission Date
	ASSIGNMENT-1			
1, 2	1) Apply your television knowledge to find and remove the faults when your TV screen display; a. Only Horizontal line b. Only vertical line c. Only dots d. No picture only sound e. No sound only picture	C404191.1	3	20/01/2020
	2) Detect the bandwidth for a TV system having lines per frame = 725, frame frequency = 50Hz, retrace time = 12.5µsec, vertical blanking period = 12805µsec and kell factor = 0.72		3	
	3) Survey - the television manufacturing industries in world and highlight the Indian manufacturer		3	
	ASSIGNMENT-2			
3, 4	1) Discriminate Key Trends That Will Redefine the Future of Television in India and how?	C404191.2	4	10/02/2020
	2) Compare normal television (any TV) with IPTV and mobile TV also write the steps to convert normal television into IPTV and Mobile TV.		4	
	3) Select the suitable cameras and their placements for the Digital broadcasting of Cricket match, Marathon, Football match.		4	
	ASSIGNMENT-3			
5	1) Carryout your actions when the DVD disc tray does not open	C404191.3	3	02/03/2020
	2) Carryout your action when the disc is not playing or getting no disc error		3	
	3) Apply your knowledge to sort out the case when TV programmes are received picture is missing although sound is normal but on playback of DVD		3	
	4) Apply your knowledge to sort out the case when TV receiver is neither receiving broadcast nor DVD programs, although TV receiver is quite O.K. picture is missing although sound is normal but on playback of DVD		3	

Course Teacher Module Coordinator HOD

PC COLLEGE OF ENGINEERING & RESEARCH RAVET PUNE-01

Figure B.2.2.2b: sample Assignment

Impact Analysis:

- Development in self-learning ability
- Improvement in problem solving ability
- Improvement in university examination results
- Improvement in overall performance of students

2.2.3 Quality of student projects (25) **Institute Marks 22**

Initiatives taken for students project work:

Students are doing three kinds of project. The details of the same are given in following table B.2.2.3a.

Table B.2.2.3a: Details of Projects

Sr. No	Type of Project	Class	Details
1	Project Based Learning	FE, SE, TE	Beyond curriculmn
2	Mini Project	TE	In curriculmn
3	Major Project	BE	In curriculmn

Major Project is included in curriculum in VII and VIII Semester as Project Phase I and Project Phase II respectively. In order to enhance the quality of student's project, standard procedure is used for allocation of projects and guides, progress review and assessment. The list of previous year projects is provided to students which ensures no repetition of project work and also encourages students to enhance the previous works. They are encouraged to carry out in-house projects providing with all necessary software and hardware by department. The institute provides financial support to the projects. Students are motivated to participate in various project competitions/ exhibitions or to present a paper in reputed National or International Journal/ Conference. Institute level project competition – UGCON conducted for all the branches where all the students are encouraged to participate. The industry experts are called for the assessment and evaluation so that students will get valuable inputs for the future enhancement. Best three projects from each branch are awarded.

2.2.3.A. Identification of project and guide allocation process:

The detail process of distribution of final year projects is shown below

- At the end of Sixth Semester, students are informed to form the groups of maximum 4 students per group for project based on their common interest and as per the Curriculum of the university.
- Project coordinators deliver the lecture to the students about formation of group, identification of the project, guide choice and allotment, scope and importance of project in enriching the learning and skills, progress review and assessment.Also students are motivated to register IPR on project topics and give the guidelines to publish their work in reputed journals and participation in conferences.
- Many students get projects ideas through the in-plant training completed by them in previous semesters, industry visits by students and faculty, topics floated by faculty and identified through literature by students in the area of E&TC Engineering, Agriculture, environmental and social (Figure B.2.2.3a)
- Department has identified thrust areas in the field of E&TC Engineering and provide it to the students to select the project of their interest. Embedded, automation, microwave, signal and image processing are broadly classified thrust areas in Department.
- The group of students identifies the title of projects of their interest either in-house or in industry. Industry sponsored and interdisciplinary projects are also floated depending upon guide and student’s interest andindustry support.
- The project coordinator extends support in project and the guide selection process.
- The project ideas with objectives and methodologies are presented by the project group to the review committee which includes Project Coordinators and Faculty members of respective thrust areas. Based onthe inputs from the review committee the objectives are reformed with best suggested methodologies and a topic is finalized for the project.
- The scope of the project is defined after discussing with guide and progress review committee.
- As per the requirement the financial support is provided from the institute.

- Planning, scheduling and execution of all the activities related to the project work are monitored by project coordinator.

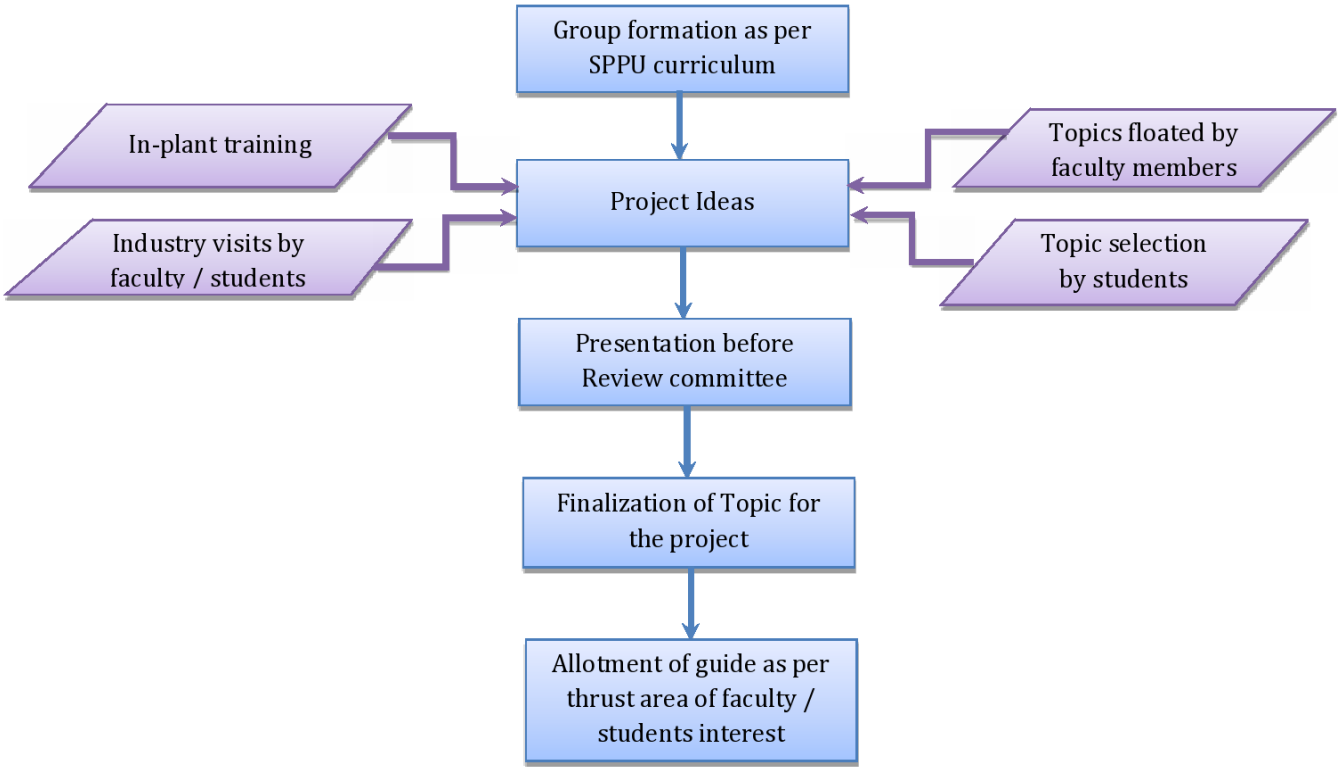


Figure B.2.2.3a: Project distribution and guide allocation process

2.2.3.B. Types and relevance of the projects and their contribution towards attainments of POs and PSOs:

- Projects done by final year students are classified into application (for societal, educational, interdisciplinary), product and research type.
- The students use modern tools and technology for implementation of their projects.
- Each project is evaluated according to rubrics designed.
- Each project topic has contribution towards attainment of most of the POs and PSOs.
- The lists of the projects carried out by students with relevance and guide are shown in the table B.2.2.3b, B.2.2.3c and B.2.2.3d and the projects with social relevance are shown in

table B.2.2.3e,B.2.2.3f and B.2.2.3g for CAY (201-20), CAYm1 (2018-19) and CAYm2 (2017-18) respectively.

Note: Mapping to PO1, PO2, PO3, PO4, PSO1 and PSO 2 is common to all projects.

Table B.2.2.3b: List of Projects for CAY (2020-21)

Group No.	Name of the Students	Name of Project	Industry/ Inhouse	Guide Name	PO mapping
1	Divyashree Desale Rajani Kanse Piyush Ingle	Robust Multi-view multi-POse face recognition using Deep Learning for Security Applications	Megavesre Tech. Pvt. Ltd, Pune	Prof. Kishor B. Bhangale	PO5,PO6, PO8, PO9,PO10
2	Radha vijay Dadge Priyanka Bajirao Katre Sayali Babasaheb Pawar	Heart attack detection by heart beat sensing	Inhouse	Prof. R. R. Kawade	PO6, PO8, PO9,PO10, PO11,PO12
3	Nikita Shirole Shreya Sakpal Vaishnavi Valanju	Design and Simulation of Microstrip Patch Antenna for 5G application	RF Lab Solutions Pune	Prof. T. D. Dhamale	PO5, PO6, PO8, PO9,PO10, PO12
4	Aishwarya Awsarkar Agalya Gowander Akash Ubale Rushikesh Suryawanshi	Smart Mirror using Rasberry Pi	Inhouse	Prof. K. B. Wane	PO6, PO8, PO9,PO10, PO11,PO12
5	Gunjan Sali Vidya sutar Shivani walunj	LoRaWAN Based Smart Farming Modular IOT Architecture	Inhouse	Prof. M. S. Andhare	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
6	Dnyaneshwari jagtap Mansi Kulkarni Salim lakde	Innovative Auto Robo Servant For Floor Cleaning With Android App	Inhouse	Prof. V. S. Kumbhar	PO5,PO6, PO7, PO8, PO9,PO10, PO11
7	Ajinkya Gaikwad	Automatic security based ration	Megavesre	Prof. K. B. Wane	PO6, PO8, PO9,PO10,

	Simran Khushalani Sonam Sachdev	distribution system	Tech. Pvt. Ltd, Pune		PO11,PO12
8	P.Mogana Priya Labhesh Lalka Sumedh Patil	Camera Based Driver Drowsiness Detector	Inhouse	Prof. K. M. Napte	PO5,PO6, PO8, PO9,PO10, PO11,PO12
9	Vrushali Shete Shruti Shinde Rushikesh Waghmare	Autonomous Drone Mission Planner	Inhouse	Prof. D. N. Dhake	PO8, PO9,PO10, PO11,PO12
10	Aishwarya Pradhan Yash Talele Mansi Shikhare	Brain Computer Interface	Inhouse	Prof. D. N. Dhake	PO5,PO6, PO8, PO9,PO10, PO11,PO12
11	Shubham Patil Pranita More Rameshwar Waykule	Covid 19 patient care robot	Argute Technologies Pvt.Ltd. Pune	Prof. T. D. D. Dhamale	PO6, PO8, PO9,PO10, PO11
12	Laukik Deshmukh Prashant Gode Ankit Gaikwad	Agriculture Crop Protection from Animals using Smart Scarecrow	Megavesre Tech. Pvt. Ltd, Pune	Dr. R. G. Mapari	PO6, PO7, PO8, PO9,PO10, PO11,PO12
13	Suhit Metkar Sahana Kulkarni Abhijith Panikar	Humonoid Robot – Lower Arm –Upper ARM	Inhouse	Prof. S. N. Randive	PO5,PO6, PO8, PO9,PO10, PO11,PO12
14	Kunal Gawhale Arti Bole Rujul Zalte Aditya Chandanwar	Humonoid Robot – Lower Arm	Inhouse	Prof. S. N. Randive	PO5,PO6, PO8, PO9,PO10, PO11,PO12
15	Janhavi Nemade Saurabh Patil Prerana Singh	Portable air conditioner System	Inhouse	Prof. A. A. Tekade	PO6, PO8, PO9,PO10, PO11
16	Sangeeta Mahapatra Neha Chugwani Pooja Chauthmal	Object Detection System for Visually Impaired	Inhouse	Prof. A. A. Tekade	PO5,PO6, PO8, PO9,PO10, PO11,PO12
17	Annamaraju Jayasree	Design of PIFA	RF Lab	Prof. Kishor	PO5,PO6, PO8,

	Sakshi Kulkarni Gayatri Bokey	antenna for 4G application	Solutions Pune	B. Bhangale	PO9,PO10
18	Nitin Pandita Yash Nagpure Labesh Lalka	Mask Detection using Drone	Inhouse	Prof. K. M. Napte	PO5,PO6, PO8, PO9,PO10, PO11
19	Amar Tamboli Abhishek Dole	Design of Hi-Fi communication system	Inhouse	Prof. V. S. Kumbhar	PO5, PO6, PO8, PO9,PO10, PO11
20	Shivraj Hujare Ashish Hadule Nimesh Dhumal	Detection and Monitoring of Unauthorized Vehicles in BRT systems	Megavesre Tech. Pvt. Ltd, Pune	Prof. R. R. Kawade	PO5,PO6, PO8, PO9, PO10, PO11
21	Tejas Bhokare Gaurav Chavan Yogesh Hiwale	Deep learning based plant leaf disease detection	Inhouse	Prof. Kishor B. Bhangale	PO5, PO6, PO7, PO8, PO9,PO10, PO11,PO12
22	Dharmesh Chaudhari Sakshi Mukkirwar Neha Dodake	EMR Analysis to Prevent Diseases	Inhouse	Prof. M. S. Andhare	PO6, PO7, PO8, PO9,PO10, PO11,PO12
23	Saurabh Shikhare Shravani Balki Dhananjay More	Fire Extinguisher Robot using IoT	Megavesre Tech. Pvt. Ltd, Pune	Prof. Kishor Wane	PO5,PO6, PO8, PO9, PO10, PO11
24	Hrushikesh Sawale Aishwarya Zope Yash Adhao	Grass Cutting Robot using ARM	Argute Technologies Pvt.Ltd. Pune	Prof. D. N. Dhake	PO6, PO7, PO8, PO9,PO10, PO11,PO12
25	Shivani Patil Kunal Bramhane Rahul Sonkamble	Path hole detection shoe	Inhouse	Dr. R. G. Mapari	PO5,PO6, PO8, PO9, PO10, PO11

Table B.2.2.3b: List of Projects for CAY (2019-20)

Group No.	Name of the Students	Name of Project	Industry/ Inhouse	Guide Name	PO mapping
1	Rade Mohit Prafulla Pareek Ashmit Kailash Patil Hrishikesh Hemant	Automatic Detection Of Diabetic Retinopathy using Deep Learning	Inhouse	Prof. Maithili Andhare	PO5,PO6, PO8, PO9,PO10, PO11
2	Mayuri Warade Aishwarya Zodge Sojwal Patil	Smart Classroom with Automatic Attendance System	Megavesre Tech. Pvt. Ltd, Pune	Prof. Kiran Napte	PO5, PO8, PO9,PO10, PO11,PO12
3	Jiyot Babrah Shweta Narkhade Anagha Navale	Waste Segregator	Inhouse	Dr. Rahul Mapari	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
4	Keta Patel Shubhangi Sambare Patil Gaurav	Smart Traffic Control Using DIP	Megavesre Tech. Pvt. Ltd, Pune	Prof. Kiran Napte	PO5,PO6, PO8, PO9,PO10, PO11,PO12
5	Sajit Chaus Onkar Gore Shivam Tekode	Smart lift system for large scale business organizations	Inhouse	Prof. Rahul Parbat	PO6, PO8, PO9,PO10, PO11,PO12
6	Akil Adhav Rushikesh Gadhave	Design of Multiband antenna for wireless application	RF Lab Solutions Pune	Prof. Triveni Dhamale	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12

	Shweta Kakade				
7	Neha Chavan Chinmayee Chitis Sanket Darur	Underwater Siganl Processing and DAS using MW	RF Lab Solutions Pune	Prof. Rupali Kawade	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
8	Roshan Bhoge Rahul Budhe Abhijeet Shelke	IOT based Water Distribution and Management system for Coorporation	Argute Technologies Pvt.Ltd. Pune	Prof. Rahul Parbat	PO6, PO8, PO9,PO10, PO11,PO12
9	Ajin Abraham Shweta Jagtap Siddhi Sawant	Library Atomization using Computer Vision	Inhouse	Prof. Kishor Wane	PO5,PO6, PO8, PO9,PO10, PO11,PO12
10	Mansi Dusane Nikhil Mahajan Swaraj Samare	Road Quality Assessment	Inhouse	Prof. Santosh Randive	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
11	Meryl Mascarenhas Mrunal Deshmukh Pratiksha Shetiya	E-Documentation using QR code and Key Logging System	Inhouse	Prof. Dipali Dhake	PO5, PO7, PO8, PO9,PO10, PO11,PO12
12	Prajakta Patil Swamini Lohkare	ATM Survilence using Image Processing	MITU Skillologies, Pune.	Prof. Arti Tekade	PO5,PO6, PO8, PO9,PO10, PO11,PO12

	Rupali Patil				
13	Onkar Phule Sanket Shetgaonkar Bhawarlal Parmar	2D LASER Engraver	Inhouse	Prof. Kishor Wane	PO6, PO8, PO9,PO10, PO11,PO12
14	Advait Karandikar Bhushan Shingate Vinay Kadam	CAR Automization	Inhouse	Prof. Santosh Randive	,PO6, PO8, PO9,PO10, PO11,PO12
15	Rohini Bali Manasi Zope Rutuja Sonawane	Paperless India using cloud for Documentation	Inhouse	Prof. V. S. Kumbhar	PO6, PO7, PO8, PO9,PO10, PO11,PO12
16	Dhanashree Divekar Samruddhi Jangam Kajal Mahajan	Soil Analyzing Tool	Inhouse	Prof. V. S. Kumbhar	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
17	Manisha Kambale Shrusti Kumbhar Sana Patil	Sign Language Communication	Inhouse	Prof. Dipali Dhake	PO5,PO6, PO8, PO9,PO10, PO11,PO12
18	Hande Rushabh Jadhav Omkar	Onion Storage Atomization with rotten onion detection and	Inhouse	Prof. Triveni Dhamale	PO6, PO7, PO8, PO9,PO10, PO11,PO12

	Jadhav Pratap	retrieval system			
19	Gaurav Pagare Shubham Roman Renuka Kharat	ATM Trassaction Using Biometric	Inhouse	Prof. Rupali Kawade	PO5,PO6, PO8, PO9,PO10, PO11,PO12
20	Shah Mausmi Shah Divyansh Kawale Khushbu	Malaria Parasite Detection Using ML	Inhouse	Prof. Santosh Randive	PO5,PO6, PO8, PO9,PO10, PO11,PO12
21	Koshti Sanket Age Kishor Patil Dhiraj	E-bike Charger with Auto battery Indicator using Electromagnetic Coils	Inhouse	Prof. Arti Tekade	PO6, PO7, PO8, PO9,PO10, PO11,PO12
22	Thigale Vaibhav Shivani Jadhav Patil Pushpa	Smart ring for Women Safety using IOT	MITU Skillologies, Pune.	Prof. Maithili Andhare	PO6, PO8, PO9,PO10, PO11,PO12
23	Itkar Dhananjay Deshmukh Kedar Bhatti Rudrapratapsingh	Animatronic RADAR with Telescope	Inhouse	Prof. Dipali Dhake	PO6, PO8, PO9,PO10, PO11,PO12
24	Thorat Pratima Pratik Chandgude	Design of UWB antenna for wireless application	RF Lab Solutions Pune	Prof. Rahul Parbat	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12

	Wagh Pranjali				
25	Kale Shweta Kingre Shivkanta Saurav Mahajan	Vedic Multiplier	Inhouse	Prof. Arti Tekade	PO5, PO8, PO9,PO10, PO11,PO12
26	Meherte Laxmi Rahul Bansode Yash Bhaarshitti	IOT based real time system for industrial safety	Argute Technologies Pvt.Ltd. Pune	Prof. Triveni Dhamale	PO6, PO7, PO8, PO9,PO10, PO11,PO12

Table B.2.2.3c: List of Projects for CAYm1 (2018-19)

Group No.	Name of the Students	Name of Project	Industry/ Inhouse	Guide Name	PO mapping
1	Salunke Abhishek Jitendra Khan Shazad Khalid Jadhav Chandrashekhar	Dibetic Retinopathy using Computer Vision	Inhouse	Prof. S N Randive	PO5,PO6, PO8, PO9,PO10, PO11,PO12
2	Jadhav Vishesh Shinde Pranjal Paratane Deepali	Advanced Bomb DisPOsable Robot	Megavesre Tech. Pvt. Ltd, Pune	Prof. K M Napte	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
3	Tiwari Rahul Anil Yadav Ruturaj Shivajirao Yadav Shubham Shashikant	Smart Attendance System	Inhouse	Prof. K B Wane	PO6, PO8, PO9,PO10, PO11,PO12
4	Limkar Pratiksha	Intelligent Layer Farming	Inhouse	Prof. T D Dhamale	PO6, PO7, PO8,

	Madurwar Rutuja Mahesh Thakre Purva Shriram				PO9,PO10, PO11,PO12
5	Badkhal Tejas Babanrao Patil Sanket Manoj Sharma Rohit Chandrabhushan Igve Sonu Jagannath	Weed killing Robot	Inhouse	Dr. R G Mapari	PO6, PO7, PO8, PO9,PO10, PO11,PO12
6	Shimpi Neha Manohar Wagh Prachi Yelwande Mayuri Sanjay	Smart BRT Sentinal Using Digital Image Processing	Inhouse	Prof. A A Tekade	PO5,PO6, PO8, PO9,PO10, PO11,PO12
7	Malgi Pallavi Parimal Singh Akash Kumar Shyam Singh Harvinder Inderjit	Auto dual converter for power factor improvement	Inhouse	Prof. K M Napte	PO6, PO8, PO9,PO10, PO11,PO12
8	Sinha Shreya Premendra Sonimindia Laxmi Vinod Taware Shruti Santosh	Agro Robot	Inhouse	Prof. V S Kumbhar	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
9	Shinde Prajakta Suresh Shukla Kautubhi Shrawankumar Zagade Shraddha Krishna	Smart Ration Card Systems	Megavesre Tech. Pvt. Ltd, Pune	Prof. V S Kumbhar	PO6, PO8, PO9,PO10, PO11,PO12

10	Dave Rudri Kartikey Kalbhor Vrushali Sanjay Kalbhor Yuga Dnyaneshwar	Marketing network for agricultural commodities for the benefit of producer and consumer	Inhouse	Prof. K B Wane	PO5,PO6, PO8, PO9,PO10, PO11,PO12
11	Daniel Ajit Arun Das Subhajit Ajit Sawant Snehal Subhash	Military Rover	Inhouse	Prof. S N Randive	PO5,PO6, PO8, PO9,PO10, PO11,PO12
12	Mali Ravindra Dhanraj More Narendra Dattatray Narsale Yuvraj Bapusaheb	Communication Helmet	Megavesre Tech. Pvt. Ltd, Pune	Prof. D Dhake	PO6, PO8, PO9,PO10, PO11,PO12
13	Kukkar Priyanshu Ramgopal Kumar Gaurav Rajeev Ranjan Pawar Mahesh Ananda	Smart electrical Vehicle	Royal Motors, Ravet , Pune	Prof. K M Napte	PO6, PO7, PO8, PO9,PO10, PO11,PO12
14	Patil Ashwini Vasantrao Patil Shruti Sharanbasappa Patil Rutuja Akaram	Real time identification of crops, weeds, diseases and pest damage and nutrient deficiency symptoms	Inhouse	Dr. R G Mapari	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
15	Kokane Jagruti Ashok Kundnani Kiran Gopichand Pande Rutuja Pandurang	Voice controlled word Writer For Handicapped Person	Inhouse	Prof. A A Tekade	PO5,PO6, PO8, PO9,PO10, PO11,PO12

16	Chavan Shivani Bhimrao Jadhav Sayali Sanjay Sakhare Rudrani Balkrishna	Smart Border Security Using High Speed Systems	Inhouse	Prof. R R Kawade	PO5,PO6, PO8, PO9,PO10, PO11,PO12
17	Dorwat Sumedh Dhananjay Ghule Shreyas Sanjay Shende Ashish Kiran	Smart Helmet	Inhouse	Prof. S N Randive	PO5,PO6, PO8, PO9,PO10, PO11,PO12
18	Gidveer Rushikesh Vishwanath Karande Ranjit Tanaji Lature Shubham Rajeshkar	Mechanism for Prescribing drug in hospitals and its substitute availability in the medical shop of the area or city	Esston Tech, Pvt. Ltd., Pune	Prof. R S Parbat	PO5,PO6, PO8, PO9,PO10, PO11,PO12
19	Pacharne Vaibhav Ganesh Pagar Shubham Bandu Zanzane Viraj Dnyaneshwar	Bike Automation using Voice Recognition Chip	Inhouse	Prof. D Dhake	PO5,PO6, PO8, PO9,PO10, PO11,PO12
20	Jagtap Abhishekh Sanjay Shaikh Kadir Firoj Vaishnav Mittal Ashokdas	IOT based Green House Monitoring and Controlling	Esston Tech, Pvt. Ltd., Pune	Prof. R S Parbat	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
21	Atkare Aarti Abhiman Kamble Pooja Kalu Agarwal Yash Naresh	WSN based Structural Health Monitoring	Nexcel Tech, Pvt. Ltd., Pune	Prof. M S Andhare	PO6,PO7 PO8, PO9,PO10, PO11,PO12

22	Kumbhar Yugandhara Vinayak Pooja Mane Ingle Nikesh Panjabrao	Smart Water Disribution Using IOT	Nexcel Tech, Pvt. Ltd., Pune	Prof. R R Kawade	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
23	Khedekar Shivam Chandrakant Pere Kunal Digambar Pandhre Sumit	IOT based Water Dispensery System (Water ATM)	Kalptech, Pune	Prof. T D Dhamale	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
24	Jadhav Kiran Rajendra Mankar Hrishikesh Prakash Shubham Vaidya	Multi-purPOse Drone	Nexcel Tech, Pvt. Ltd., Pune	Prof. M S Andhare	PO5,PO6, PO8, PO9,PO10, PO11,PO12

Table B.2.2.3d: List of Projects for CAYm2 (2017-18)

Group No.	Name of the students	Name of Project	Industry/ Inhouse	Guide Name	PO mapping
1	Priyanka Prakash Patil Jyoti Ramdas Mate	IOT Based smart Energy Meter	ELEXI FAB Solutions Pune	Prof. Rahul Mapari	PO5,PO6, PO8, PO9,PO10, PO11,PO12
2	Komal Chavan Sheetal Khandke	IOT Based home automation for paralysed / handicapped patient	Inhouse	Prof. C.A. Bhavsar	PO5,PO6, PO8, PO9,PO10, PO11,PO12
3	Rupesh P. Minde Jerin G.	Study of under Water Acoustic Channel	Mumlab Technologies pune	Prof. T.D. Dhamale	PO5,PO6, PO8, PO9,PO10, PO11,PO12

	Harish Kumbhar				
4	Pranali Machutre Pradnya Padwal Nausee Khan	RF Electromagnetic pulse generation & detection System	Mumlab Technologies ,Pune	Prof. T.D.Dhamale	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
5	Shruti Gujar Apurva Bagal Joshma Joseph	hand gesture based Audio Controlling using Image Processing	Inhouse	Prof. S.N.Randive	PO5, PO8, PO9,PO10, PO11,PO12
6	Khedekar Sakshi Kale Pratiksha Bagdure Deepa	IOT based Rail Track Monitoring System	LEXI FAB Solutions Pune	Prof. K.N.Napte	PO5, PO8, PO9,PO10, PO11,PO12
7	Asha Kale Jadhav Archita	Power Management in UPS SYSTEM	Inhouse	Prof. K.B.Wane	PO5,PO6, PO8, PO9,PO10, PO11,PO12
8	Rameshwar Jadhav Abhijeet Kasar Shubham Balwadkar	Intelligent mobile 3phase moter starter	kalptech Pvt Ltd	Prof. A.A. Tekade	PO5,PO6, PO8, PO9,PO10, PO11,PO12
9	Sudheer K. Pacharkar Umesh C. Lokhande Ashish Hatkar	Advance electricity generation using wind energy	Aakruti Electronics	Prof.M.S.Andhare	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
10	Omkar Devlekar	Ardiuno Based underground	kalptech Pvt Ltd	Prof. A.A.Tekad	PO5, PO8, PO9,PO10,

	Swapnil Gawas V.Sailaxmi	wirefault detection		e	PO11,PO12
11	Swati Bembde Mrunal Bhilare Mansi Dandekar	Wireless devices for automation	kalptech Pvt Ltd	Prof. R.R.Kawade	PO5, PO8, PO9,PO10, PO11,PO12
12	Rushabh Shah Sanket Gaikwad Yogesh Tavre Rushabh Shah	Spy robot	Mythos Technologies, Pune	Prof.M.S.Andhare	PO5, PO8, PO9,PO10, PO11,PO12
13	Shashikant Bhadre Kedar Dhoke Machhindra Sawale	IOT Based weather monitoring system	Inhouse	Prof. V.S.Kumbhar	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
14	Gauresh Sawant Datta Dhokne Kishor Pailwan	Muncipal Water Management System for prevention of Wastage Water supply	Aakruti Electronics	Prof. R.R.Kawade	PO5, PO7, PO8, PO9,PO10, PO11,PO12
15	Shekhar kokre Rushikesh Chaudhari Shivaji Doke	Smart Mobile Charging System	Mythos Technologies, Pune	Prof. K.B.Wane	PO5, PO8, PO9,PO10, PO11,PO12
16	Ashwini Auti	IOT based	Inhouse	Prof.	PO5, PO8,

	Sayali Yamgar	Communication System for Ship		K.N.Napte	PO9,PO10, PO11,PO12

Table B..2.2.3e: List of Project with Social Relevance for CAY (2020-21)

Group No.	Name of the Students	Name of Project	Industry/ Inhouse	Guide Name	PO mapping
1	Radha vijay Dadge Priyanka Bajirao Katre Sayali Babasaheb Pawar	Heart attack detection by heart beat sensing	Inhouse	Prof. R. R. Kawade	PO6, PO8, PO9,PO10, PO11,PO12
2	Gunjan Sali Vidya sutar Shivani walunj	LoRaWAN Based Smart Farming Modular IOT Architecture	Inhouse	Prof. M. S. Andhare	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
3	Dnyaneshwari jagtap Mansi Kulkarni Salim lakde	Innovative Auto Robo Servant For Floor Cleaning With Android App	Inhouse	Prof. V. S. Kumbhar	PO5,PO6, PO7, PO8, PO9,PO10, PO11
4	Ajinkya Gaikwad Simran Khushalani Sonam Sachdev	Automatic security based ration distribution system	Inhouse	Prof. K. B. Wane	PO6, PO8, PO9,PO10, PO11,PO12
5	Shubham Patil Pranita More Rameshwar Waykule	Covid 19 patient care robot	Argute Technologies Pvt.Ltd. Pune	Prof. T. D. D. Dhamale	PO6, PO8, PO9,PO10, PO11
6	Laukik Deshmukh Prashant Gode Ankit Gaikwad	Agriculture Crop Protection from Animals using Smart Scarecrow	Megavesre Tech. Pvt. Ltd, Pune	Dr. R. G. Mapari	PO6, PO7, PO8, PO9,PO10, PO11,PO12
7	Sangeeta Mahapatra Neha Chugwani Pooja Chauthmal	Object Detection System for Visually Impaired	Inhouse	Prof. A. A. Tekade	PO5,PO6, PO8, PO9,PO10, PO11,PO12
8	Dharmesh Chaudhari Sakshi Mukkirwar	EMR Analysis to Prevent Diseases	Inhouse	Prof. M. S. Andhare	PO6, PO7, PO8, PO9,PO10,

	Neha Dodake				PO11,PO12
9	Saurabh Shikhare Shravani Balki Dhananjay More	Fire Extinguisher Robot using IoT	Megavesre Tech. Pvt. Ltd, Pune	Prof. Kishor Wane	PO5,PO6, PO8, PO9, PO10, PO11
10	Shivani Patil Kunal Bramhane Rahul Sonkamble	IoT based smart agriculture crop prediction	Inhouse	Dr. R. G. Mapari	PO5,PO6, PO8, PO9, PO10, PO11
11	Tejas Bhokare Gaurav Chavan Abhishek Dole Yogesh Hiwale	Deep learning based plant leaf disease detection	Inhouse	Prof. Kishor B. Bhangale	PO5, PO6, PO7, PO8, PO9,PO10, PO11,PO12

Table B..2.2.3 e: List of Project with Social Relevance for CAY (2019-20)

Sr. No.	Name of the Students	Name of Project	Industry/ Inhouse	Guide Name	PO mapping
1	Jiyot Babrah Shweta Narkhade Anagha Navale	Waste Segregator	Inhouse	Dr. Rahul Mapari	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
2	Sajit Chaus Onkar Gore Shivam Tekode	Smart lift system for large scale business organizations	Inhouse	Prof. Rahul Parbat	PO6, PO8, PO9,PO10, PO11,PO12
3	Neha Chavan Chinmayee Chitis Sanket Darur	Underwater Siganl Processing and DAS using MW	RF Lab Solutions Pune	Prof. Rupali Kawade	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
4	Ajin Abraham Shweta Jagtap Siddhi Sawant	Library Atomization using Computer Vision	Inhouse	Prof. Kishor Wane	PO5,PO6, PO8, PO9,PO10, PO11,PO12
5	Mansi Dusane Nikhil Mahajan Swaraj Samare	Road Quality Assessment	Inhouse	Prof. Santosh Randive	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12

6	Advait Karandikar Bhushan Shingate Vinay Kadam	CAR Automization	Inhouse	Prof. Santosh Randive	PO6, PO8, PO9,PO10, PO11,PO12
7	Dhanashree Divekar Samruddhi Jangam Kajal Mahajan	Soil Analyzing Tool	Inhouse	Prof. V. S. Kumbhar	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12 PSO1
8	Shah Mausmi Shah Divyansh Kawale Khushbu	Malaria Parasite Detection Using ML	Inhouse	Prof. Santosh Randive	PO5,PO6, PO8, PO9,PO10, PO11,PO12
9	Thigale Vaibhav Shivani Jadhav Patil Pushpa	Smart ring for Women Safety using IOT	MITU Skillologies, Pune.	Prof. Maithili Andhare	PO6, PO8, PO9,PO10, PO11,PO12

Table B.2.2.3f: List of Project with Social Relevance for CAYm1 (2018-19)

Sr. No.	Name of the Students	Name of Project	Industry/ Inhouse	Guide Name	PO mapping
1	Badkhal Tejas Patil Sanket Manoj Sharma Rohit Igve Sonu	Weed killing Robot	Inhouse	Dr. R G Mapari	PO6, PO7, PO8, PO9,PO10, PO11,PO12
2	Shinde Prajakta Suresh Shukla Kautubhi Shrawankumar Zagade Shraddha Krishna	Smart Ration Card Systems	Megavesre Tech. Pvt. Ltd, Pune	Prof. V S Kumbhar	PO6, PO8, PO9,PO10, PO11,PO12
3	Dave Rudri Kartikey	Marketing network for agricultural	Inhouse	Prof. K B Wane	PO5,PO6, PO8,

	Kalbhor Vrushali Sanjay Kalbhor Yuga Dnyaneshwar	commodities for the benefit of producer and consumer			PO9,PO10, PO11,PO12
4	Kukkar Priyanshu Ramgopal Kumar Gaurav Rajeev Ranjan Pawar Mahesh Ananda	Smart electrical Vechicle	Royal Motors, Ravet , Pune	Prof. K M Napte	PO6, PO7, PO8, PO9,PO10, PO11,PO12
5	Patil Ashwini Vasantrao Patil Shruti Sharanbasappa Patil Rutuja Akaram	Real time identification of crops, weeds, diseases and pest damage and nutrient deficiency symptoms	Inhouse	Dr. R G Mapari	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12
6	Dorwat Sumedh Dhananjay Ghule Shreyas Sanjay Shende Ashish Kiran	Smart Helmet	Inhouse	Prof. S N Randive	PO5,PO6, PO8, PO9,PO10, PO11,PO12
7	Jagtap Abhishekh Sanjay Shaikh Kadir Firoj Vaishnav Mittal Ashokdas	IOT based Green House Monitoring and Controlling	Esston Tech, Pvt. Ltd., Pune	Prof. R S Parbat	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12

Table B.2.2.3g: List of Project with Social Relevance for CAYm2 (2017-18)

Sr. No.	Name of the students	Name of Project	Industry/ Inhouse	Guide Name	PO mapping
1	Priyanka Prakash Jyoti Ramdas Mate	IOT Based smart Energy Meter	ELEXI FAB Solutions Pune	Prof. Rahul Mapari	PO5,PO6, PO8, PO9,PO10,

	Pooja Mane				PO11,PO12
2	Khedekar Sakshi Kale Pratiksha Bagdure Deepa	IOT based Rail Track Monitoring System	LEXI FAB Solutions Pune	Prof. K.N.Napte	PO5, PO8, PO9,PO10, PO11,PO12
3	Rameshwar Jadhav Abhijeet Kasar Shubham Balwadkar	Intelligent mobile 3phase moter starter	kalptech Pvt Ltd	Prof. A.A.Tekade	PO5,PO6, PO8, PO9,PO10, PO11,PO12
4	Gauresh Sawant Datta Dhokne Kishor Pailwan	Muncipal Water Management System for prevention of Wastage Water supply	Aakruti Electronics	Prof. R.R.Kawade	PO5, PO7, PO8, PO9,PO10, PO11,PO12

Relevance of the projects:

Project coordinator and module coordinators of PAC identify the broad area in which project needs to be carried out. The project coordinator identifies some areas, which is as follows:

- Technical (Inhouse/Industry)
- Agricultural
- Social
- Environmental aspects

Table B.2.2.3h shows the project completed in industry and inhouse for CAY (2019-20), CAYm1 (2018-19), CAYm2 (2017-18). Table B.2.2.3i gives the classifications of projects in the area of Application, Product, Review & Research and Agricultural /Social/ Environmental.

Table B.2.2.3h: Categories of the Projects

Nature of Project (% of total No. of Projects)		
Academic Year	**Inhouse**	**Industry Sponsored**
2020-21	70%	30.00%
2019-20	68.75%	31.25%
2018-19	41.67%	58.33%
2017-18	34.62%	65.38%

Table B.2.2.3i: Types of the Projects

Academic Year	Application Oriented	Product Oriented	Review & Research Oriented	Agricultural /Social/ Environmental
2020-21	26.92%	38.46%	34.61%	53.84%
2019-20	34.62%	34.62%	30.77%	46.15%
2018-19	41.66%	33.33%	25.00%	41.66%
2017-18	50.00%	31.25%	18.75%	31.25%

2.2.3.C. Project Monitoring and Evaluation:

A project coordinator handles planning, scheduling and execution of all the activities related to the project work. It is shown in table B.2.2.3j.Rubrics used for Project Evaluation is shown in table B.2.2.3k and B.2.2.3l.

Table B.2.2.3j: Project monitoring Process

Task	Timeline	Particulars
Call for project groups	End of VI Semester	Students are invited to form their project group and communicate the same to project coordinator. Students willing to do the sponsored projects are given the request letter from department to the industry.
Project Ideas Discussion	1st and 2nd week of Semester-VII	Each project group interacts and discusses their project idea with Head of

		Department, Academic coordinator and Project Coordinator
Synopsis	1st and 2nd week of Semester-VII	Each group to project coordinator will submit synopsis on more than one topic. Synopses are discussed among the committee of project guides and they select one project topic for each group
Guide allotment	2nd week of Semester-VII	Guide will be allotted based on domain and area of project
Introductory Seminar	3rd or 4th week of Semester-VII	Project committee members give suggestion and modification
Progress Seminar	After In-Sem examination of Semester-VII	Project committee monitors the progress of project work and gives suggestions if necessary
Report ofProject Phase-I	End of Semester-VII	Students submit the report in Latex format
Project Phase-I Examination	Before or after theory examination of Semester-VII	External oral examination of 50 Marks
Progress Seminar	2nd week of Semester-VIII	Project committee monitors the progress of project work and gives suggestions if necessary.
	After In-Sem examination of Semester-VIII	Project committee monitors and give guidelines to participate in various project competitions/ exhibitions or to present a paper in reputed National or International journal
Report ofProject	10th Week of Semester-	Students prepare the report in the given

Phase-II	VIII	Latex format. Plagiarism of the report is checked in Turnitin Plagiarism Checker.
Progress Seminar	Before end of Semester-VIII	Project committee does internal evaluation by observing presentation and project models.
Project Phase-II Examination	After theory examination of Semester-VIII	Feedback will be collected on project work examined by external examiner. External term-work evaluation of 100 marks and external practical examination of 50 marks.

Table B.2.2.3k: Rubrics for Project Phase–I (150 Marks)

Sr. No	Criteria	Excellent	Good	Average
1	Gap identified in research / existing systemz (05)	Idea is interesting/ Description of Project Problem Statement and scope is clearly stated. (5-4)	Idea is Fairly interesting / Problem Statement and scope somewhat clearlystated. (4-2)	Idea is not interesting / Problem Statement and scope unclearly stated. (2-0)
2	Literature Study (10)	Many and relevant IEEE paper refereed.Comprehensive review providing a good basis for the project.Entire Coverage with relevant and accurate support. (10-8)	Few and relevant Papers Referred but not IEEE. Systematic survey attempted but incomplete and inconsistent. Little coverage and less accurate support. (8-5)	Very few and no relevant papers referred. No evidence of research been conducted. (5-0)
3	Project Objectives and Scopes (05)	Properly stated and correct Design (10-8)	Properly stated and incorrect Design (8-5)	Not Properly stated and incorrect Design (5-0)
4	Activity Chart (05)	All Contents are covered with the given format and well organized report. (5-4)	Content are covered but the format is not proper and somewhat organized report. (4-2)	Content are not covered, format is not proper and report not organized. (2-0)
5	Presentation Skill (Delivery of Contents) (15)	Student is completely prepared and the presentation is good with all topics covered (10-8)	Student is not completely prepared and the presentation is better with some topics covered (8-5)	Student is not at all prepared and the presentation is incomplete. (5-0)
6	Problem	Student answers all questions.	Student answers some questions.	Student doesnot

	Statement (05)	(5-4)	(4-3)	answer any question. (3-0)
7	Project Diary (05)	Completes the work in given time and maintains the Log book by taking signature of guide weekly. (5-4)	Partially completes the work in given time and maintains the Log book but takes the signature of guide quarterly. (4-3)	Does not completes the work in given time and does not maintains the Logbook (3-0)
Total	**(50)**	**(50-40)**	**(40-25)**	**(25-0)**

Table B.2.2.3l: Rubrics for Project Phase–II (150 Marks)

Sr. No	Criteria	Excellent	Good	Average
1	Methodology (30)	Methods that will be used are clearly described. Process flow of designing /simulation that strengthens or contributes to result is strongly supported with suitable details. (30-15)	Methods that will be used are described. Process flow of designing/simulation is partly explained. (15-10)	Methods are not described. Process flow of designing/simulation is confused. (10-0)
2	Design elements, Synthesis, simulation and programming (30)	Designing is done correctly with proper simulation and correct programming. (30-15)	Design is somewhat correct, no simulation, programming is done partially. (15-10)	Designing is not correct and no programming is done. (10-0)
3	Result, conclusion and	Results are as per the specifications with demonstration of working model.	Results are not as per the specifications, somewhat proper with	Results are not proper without working model.

	future scope. (20)	Conclusion and future scope of the project is properly known to students. (20-15)	improper demonstration of working model.Conclusion and future scope of the project is not properly known to students. (15-10)	Conclusion and future scope of the project is not known to students. (10-0)
4	Project management (10)	Clearly states the project objective and timelines. Documented and define schedule for various deliverables (report, simulation resultetc).Highly effective use of available resources.Understands and manages cost implication of project. Superior time management skills. Effective management of workload. Maintains Project work book by taking signature of guide weekly. (10-8)	States the project objective and timeliness. Not proper documentation and schedule for various deliverables (report, simulation result etc). Less effective use of available resources. Partially understands and manages cost implication of project. Good time management skills.Less effective management of workload.Maintains Project work book by taking signature of guide quarterly. (8-5)	Does not state the project objective and timeliness. Not documentation and schedule for various deliverables (report, simulation resultetc). No use of available resources. Does not understand and manages cost implication of project No time management skills.No management of workload. Does not maintain Project work book regularly. (5-0)
5	Presentation (10)	Student has properly prepared the presentation including all necessary explanations for all topics.Student is completely prepared and gives entire presentation confidently.	Student has prepared the presentation with fewer explanations for all topics. Student is completely prepared and gives entire presentation with less confidence. (8-5)	Student has not preparedthe presentation Student is not prepared for giving presentation and has no confidence (5-0)

		(10-8)		
6	Ability to Answer (10)	Student answers all questions correctly Handles difficult questions with ease and confidence.Gives illustrative explanation. (10-8)	Student answers most questions correctly Can give explanation partially. Needs Clarificationsometimes (8-5)	Student does not answer any question correctly. Needs Clarification. (5-0)
7	Works Effectively in Teams (10)	Takes a leadership role in a group. Motivates and encourages other team members. Enthusiastic and dedicated. (10-8)	Complete most task on time. Shares information and ideas with other team member. (8-5)	Very little or no commitments. Does not meet dead lines Disrespectful towards others work and efforts. (5-0)
8	Maintains professional work ethic (10)	Highly committed to project work. Punctual with all aspects of projects.Intellectual honesty among team members. (10-8)	Equal contribution to project works well with others Shows respects for others ideas. Less enthusiastic and dedicated. (8-5)	Does not contribute towards workload.Works poorly with others.Disinterested and lack enthusiasm. (5-0)
9	Final Project Report (20)	Excellent balance of written information.Perfect grammar and proper use of technical terminology. Follows prescribed templates. All Contents are covered and well organized report. References properly included. (20-15)	Good balance of written information. Perfect grammar and proper use of technical terminology. Partially follows prescribed templates. All Contents are covered but somewhat well organized report. References not included properly (15-10)	Poor Grammar.Ignores prescribed templates. Missing required information.No references included. (10-0)
Total	**150**	**(150-100)**	**(100-65)**	**(65-0)**

2.2.3.D. Process to assess individual and team performance:

The external examiner from the academia and industry evaluates individual and team performance. Based on the work completed rating is given to the students and team by external examiner as shown in figure B.2.2.3b and B.2.2.3c.

Pimpri Chinchwad education Trust's
Pimpri Chinchwad College of Engineering & Research
Ravet, Pune
Record No: ACAD/R/14-B
Academic Year: 2018-19
Project Evaluation Sheet-Project Phase-II
Term –II

Department: E&TC Engineering
Date: 04/06/2019

Group No.	Exam Seat No	Methodology (30)	Clear Understanding of: Design elements, Synthesis, simulation and programming (30)	Result, conclusion and future scope. (20)	Project management (10)	Presentation and communication skill (10)	Ability to Answer (10)	Works Effectively in Teams (10)	Maintains professional work ethic (10)	Final Project Report (20)	Total Mark (150)
Project Title: Weed killing Robot											
05	B151223053	30	30	18	10	10	9	9	10	20	146
	B151223035	30	30	18	7	7	7	8	6	20	135
	B151223062	30	30	18	9	10	8	9	10	20	144
	B151223008	30	30	18	7	6	7	8	6	20	134

RSP
Mr. Rahul Parbat
Name & Sign of Examiner:
Internal

Rahul Sidkhedkar.
Name & Sign of Examiner:
Extrenal

Figure B.2.2.3c: Individual and Team performance Evaluation Sheet-Phase-II

2.2.3.E. Quality of Completed Projects/Working Prototypes

After evaluation of the project work, the feedback about the contribution of individual student on various parameters is taken from an external examiner as shown in figure B. 2.2.3.c.

Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering & Research Ravet, Pune
Department Of Electronics & Telecommunication

Project Examiner Feedback Form

Objectives:

1. To understand and improve quality of project
2. To understand student involvement and learning
3. To understand extent to which project development stages followed by students
4. To understand methodology/ process and industry gaps
5. To understand involvement of students at individual and team level
6. To understand skills and abilities acquired by students related to project work
7. To obtain inputs for refining/ defining project related work

Academic Year: 2018-19 **Examination:** Project Part I / Project Part II
Name of Internal project guide: Prof. S. N. Randive
Title of project: Dibetic Retinopathy using Computer Vision
Name of External examiner: Mahesh Aher
Qualification: M.E. E&TC **Designation:** Technical Head
Industry/organization: Argute Technologies Pvt. Ltd. Pune
Experience: 7.6 years
Please indicate your rating using a scale of 0 (low) through 3 (high).

Sr. No.	Feedback Parameters	PO Mapped	Your Rating			
1.	Depth of understanding	PO1	0	1	2	3
2.	Analysis, design, synthesis and evaluation of selected problem	PO2, PO3, PO4	0	1	2	3
3.	Efficient use of modern techniques and tools	PO5	0	1	2	3
4.	Effectiveness of proposed solution (having Impact in a global, economic, environment and social context)	PO6, PO7	0	1	2	3
5.	Follows the norms of engineering practices	PO8	0	1	2	3
6.	Team work	PO9	0	1	2	3
7.	Presentation	PO10	0	1	2	3
8.	Quality of project report	PO11	0	1	2	3
9.	Overall impact of the project	PO12	0	1	2	3
10.	Modelling, prototyping and product development	PSO1, PSO2	0	1	2	3
	Total to be done by internal project guide		27/30			

Additional comments/suggestions
Student should more focus on fundamentals of hardware. Good work and study. Suggest to improve efficiency.

Name of External Examiner
Mahesh Aher

Signature of External Examiner

Figure B.2.2.3c: Project quality Evaluation Sheet by External Examiner

Best project evaluation scheme:

Process carried out for identification of best projects is done based on marks mentioned in table. 2.2.3m.The project score more than 40 marks is considered as best projects and remaining as average projects.

Table B.2.2.3m:Criteria for selection of the best Projects

Sr. NO.	Criteria	Marks
1	Innovative ideas and Research	10
2	IPR filling / Paper publications /participation incompetitions and conferences	20
3	Assessment by external examiner	10
4	Product development for societal need	10
Total Marks		50

The best projects done by students are listed in table B.2.2.3n, 2.2.3o and 2.2.3p for CAY (2019-20), CAYm1 (2018-19) and CAYm2 (2017-18).

Table B.2.2.3: List of Best Projects (2020-21)

Sr. No.	Name of the Students	Project Title	Industry Sponsored / Inhouse	Guide Name	PO mapping
1	Divyashree Desale Rajani Kanse Piyush Ingle	Robust Multi-view multi-POse face recognition using Deep Learning for Security Applications	Megavesre Tech. Pvt. Ltd, Pune	Prof. Kishor B. Bhangale	PO5,PO6, PO8, PO9,PO10
2	Dnyaneshwari jagtap Mansi Kulkarni Salim lakde	Innovative Auto Robo Servant For Floor Cleaning With Android App	Inhouse	Prof. V. S. Kumbhar	PO5,PO6, PO7, PO8, PO9,PO10, PO11

3	Ajinkya Gaikwad Simran Khushalani Sonam Sachdev	Automatic security based ration distribution system	Megavesre Tech. Pvt. Ltd, Pune	Prof. K. B. Wane	PO6, PO8, PO9,PO10, PO11,PO12
4	Vrushali Shete Shruti Shinde Rushikesh Waghmare	Autonomous Drone Mission Planner	Inhouse	Prof. D. N. Dhake	PO8, PO9,PO10, PO11,PO12
5	Laukik Deshmukh Prashant Gode Ankit Gaikwad	Agriculture Crop Protection from Animals using Smart Scarecrow	Megavesre Tech. Pvt. Ltd, Pune	Dr. R. G. Mapari	PO6, PO7, PO8, PO9,PO10, PO11,PO12
6	Suhit Metkar Sahana Kulkarni Abhijith Panikar	Humonoid Robot - Lower Arm - Upper ARM	Inhouse	Prof. S. N. Randive	PO5,PO6, PO8, PO9,PO10, PO11,PO12
7	Kunal Gawhale Arti Bole Rujul Zalte Aditya Chandanwar	Humonoid Robot - Lower Arm	Inhouse	Prof. S. N. Randive	PO5,PO6, PO8, PO9,PO10, PO11,PO12
8	Annamaraju Jayasree Sakshi Kulkarni Gayatri Bokey	Design of PIFA antenna for 4G application	RF Lab Solutions Pune	Prof. Kishor B. Bhangale	PO5,PO6, PO8, PO9,PO10

Table B.2.2.3n: List of Best Projects (CAY-2019-20)

Sr. No.	Name of the Students	Name of Project	Industry/ Inhouse	Guide Name	PO mapping
1	Mayuri Warade Aishwarya Zodge Sojwal Patil	Smart Classroom with Automatic Attendance System	Megavesre Tech. Pvt. Ltd, Pune	Prof. Kiran Napte	PO5, PO8, PO9,PO10, PO11,PO12, PSO1,PSO2
2	Jiyot Babrah	Waste	Inhouse	Dr. Rahul	PO5,PO6,

	Shweta Narkhade Anagha Navale	Segregator		Mapari	PO7, PO8, PO9,PO10, PO11,PO12, PSO1,PSO2
3	Keta Patel Shubhangi Sambare Patil Gaurav	Smart Traffic Control Using DIP	Megavesre Tech. Pvt. Ltd, Pune	Prof. Kiran Napte	PO5,PO6, PO8, PO9,PO10, PO11,PO12,PSO1,PSO2
4	Sajit Chaus Onkar Gore Shivam Tekode	Smart lift system for large scale business organizations	Inhouse	Prof. Rahul Parbat	PO6, PO8, PO9,PO10, PO11,PO12, PSO1,PSO2
5	Roshan Bhoge Rahul Budhe Abhijeet Shelke	IOT based Water Distribution and Management system for Coorporation	Argute Technologies Pvt.Ltd. Pune	Prof. Rahul Parbat	PO6, PO8, PO9,PO10, PO11,PO12,PSO1,PSO2
6	Ajin Abraham Shweta Jagtap Siddhi Sawant	Library Atomization using Computer Vision	Inhouse	Prof. Kishor Wane	PO5,PO6, PO8, PO9,PO10, PO11,PO12,PSO1,PSO2
7	Mansi Dusane Nikhil Mahajan Swaraj Samare	Road Quality Assessment	Inhouse	Prof. Santosh Randive	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12, PSO2
8	Dhanashree Divekar Samruddhi Jangam Kajal Mahajan	Soil Analyzing Tool	Inhouse	Prof. V. S. Kumbhar	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12 PSO1,PSO2
9	Thigale Vaibhav Shivani Jadhav Patil Pushpa	Smart ring for Women Safety using IOT	MITU Skillologies, Pune.	Prof. Maithili Andhare	PO6, PO8, PO9,PO10, PO11,PO12 PSO1,PSO2

Table B.2.2.3o: List of Best Projects (CAYm1-2018-19)

Sr. No.	Name of the Students	Name of Project	Industry/ Inhouse	Guide Name	PO mapping
1	Tiwari Rahul Anil Yadav Ruturaj Shivajirao Yadav Shubham Shashikant	Smart Attendance System	Inhouse	Prof. K B Wane	PO6, PO8, PO9,PO10, PO11,PO12
2	Dave Rudri Kartikey Kalbhor Vrushali Sanjay Kalbhor Yuga Dnyaneshwar	Marketing network for agricultural commodities for the benefit of producer and consumer	Inhouse	Prof. K B Wane	PO5,PO6, PO8, PO9,PO10, PO11,PO12, PSO2
3	Kukkar Priyanshu Ramgopal Kumar Gaurav Rajeev Ranjan Pawar Mahesh Ananda	Smart electrical Vehicle	Royal Motors, Ravet , Pune	Prof. K M Napte	PO6, PO7, PO8, PO9,PO10, PO11,PO12 PSO1,PSO2
4	Patil Ashwini Vasantrao Patil Shruti Sharanbasappa Patil Rutuja Akaram	Real time identification of crops, weeds, diseases and pest damage and nutrient deficiency symptoms	Inhouse	Dr. R G Mapari	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12, PSO2
5	Dorwat Sumedh Ghule Shreyas Shende Ashish	Smart Helmet	Inhouse	Prof. S N Randive	, PO5,PO6, PO8, PO9,PO10, PO11,PO12 PSO1,PSO2
6	Kumbhar Yugandhara	Smart Water Disribution	Nexcel Tech, Pvt. Ltd.,	Prof. R R Kawade	PO5,PO6, PO7, PO8,

	Pooja Mane Ingle Nikesh	Using IOT	Pune		PO9,PO10, PO11,PO12 PSO1,PSO2

Table B.2.2.3p: List of Best Projects (CAYm2-2017-18)

Sr. No.	Name of the students	Name of Project	Industry/ Inhouse	Guide Name	PO mapping
1	Priyanka Prakash Patil Jyoti Ramdas Mate Pooja Mane	IOT Based smart Energy Meter	ELEXI FAB Solutions Pune	Prof. Rahul Mapari	PO5,PO6, PO8, PO9,PO10, PO11,PO12 PSO1,PSO2
2	Sudheer K. Pacharkar Umesh C. Lokhande Ashish Hatkar	Advance electricity generation using wind energy	Aakruti Electronics	Prof.M.S.Andhare	PO5,PO6, PO7, PO8, PO9,PO10, PO11,PO12 PSO1,PSO2
3	Gauresh Sawant Datta Dhokne Kishor Pailwan	Muncipal Water Management System for prevention of Wastage Water supply	Aakruti Electronics	Prof. R.R.Kawade	PO5, PO7, PO8, PO9,PO10, PO11,PO12 PSO1,PSO2
4	Ashwini Auti Sayali Yamgar	IOT based Communication System for Ship	Inhouse	Prof. K.N.Napte	PO5, PO8, PO9,PO10, PO11,PO12 PSO1,PSO2

2.2.3.F. Evidences of Papers Published /Awards received by projects

Students present their project work in various exhibitions and conferences and publish papers in journals. Also student takes IPR's by filing patents and copyrights. Institute organized project exhibition to showcase final year student projects and published a proceeding with ISBN called UGCON where all papers are published.Table B.2.2.3q shows the details of the competitions in

which students have participated and Awarded,table 2.2.3r shows Students Journal Publication, tbale2.2.3s shows Students Project Patents and table 2.2.3t shows Students Project Copyright.

Table B.2.2.3q: Details of the competitions in which students have participated and awarded

CAY (2020-21)						
Sr. No	**Name of Competition**	**Organizer**	**Date**	**No. of students**	**Name of Faculty advisor**	**Remarks**
1	GMRT Virtual Science Day Exhibition held on 28th February 2021.	GMRT, Khodad, Pune	28th February 2021.	02	Prof. V. S. Kumbar	**Rank 5th,** Group-5 (BE, ME, MSC-National level project competition)
2	GMRT Virtual Science Day Exhibition held on 28th February 2021.	GMRT, Khodad, Pune	28th February 2021.	05	Prof. V. S. Kumbar	Presented project on "Hybrid electric bicycle" at National level project competition
3	2nd International Conference on Image Processing and Capsule Networks (ICIPCN2021) (May-28,29-2021)	King Mongkut University of Technology, Thonburi, Thailand	27,28 May, 2021	03	Prof. Kishor B. Bhanagle	Paper Presentation (Springer Conference)
4	International Conference on Soft Computing for Security Applications (ICSCS2021)	Dhirajlal Gandhi College of Technology, Salem,India	10-11,June2021.	03	Dr. Rahul G. Mapari	Paper Presentation (Springer Conference)
5	"3 rd International Conference on Sustainable Communication Networks and Application	Surya Engineering College. Erode, India	July 29-30, 2021	03	Prof. Kishor B. Bhanagle	Paper Presentation (Springer Conference)

	ICSCN 2021					
6	Technovation-2K21	Department of Electronics and Telecommunication of PVG COET and GKWPIM with TESA	8th April 2021.	06	Prof. Dipali Dhake	Participation (State Level Project Competition)
7	UGCON 2021 national Level Project Competition	Pimpri Chinchwad College of Engineering and Research, Ravet	07 & 08 July 2021	78	Dr. Rahul Mapari, Mr. Kishor Bhangale	Participation (national Level Project Competition)
8	UGCON 2021 national Level POster Presentation Competition	Pimpri Chinchwad College of Engineering and Research, Ravet	07 & 08 July 2021	80	Dr. Rahul Mapari, Mr. Kishor Bhangale	Participation (national Level Project Competition)

CAY (2019-20)

Sr. No.	**Name of Competition**	**Organizer**	**Date**	**No. of students**	**Name of Faculty advisor**	**Remarks**
1	'ABHIKALP 2020' Savitribai Phule Pune University, Pune	ABHIKALP 2020' Institute Research Park Foundation Cell, SPPU,Pune	13-14/03/2020	51	Prof. Rahul Parbat	02 Groups selected for Start-up
2	AgroFest Hi-Tech Farming Project Exhibition	Padmahsinh Vasantdada Patil PVIIT, Pune	29/01/2020	15	Prof. Rahul Parbat	Winner 1st Rank (01 Group)
3	SAE India Electronics forum, Electronic community Confluence (ECC)-2019	PCCOE, Pune	17/09/2019	27	Prof. Rahul Parbat	Winner 05th Rank (01 Group)
4	CIPCIS-2019	PCCOE&R, Ravet	21-22/2019	45	Dr. Rahul Mapari	Winner 3rd Rank
5	"TechnoSpark-	PCCOE&R,	29-	60	Prof. Rahul	Runner-up in

	2020 @ PCCOER"	Ravet	30/05/2020		Parbat	Paper presentation 01 Groups
CAYm1 (2018-19)						
6	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM-19	SPCOE, Otur, Pune	22-23/02/ 2019	15	Prof. Rahul Parbat	Best Paper presentation Award (01 Groups)
7	National Conference on Information, Communication and Energy Systems and Technologies – 2019	SKN COE, Pune	06/04/ 2019	03	Prof. Rahul Parbat	Participated
8	PCCOER-UGCON	PCCOE&R, Ravet	10/06/2019	73	Dr. Rahul Mapari	3 Groups winner
CAYm2 (2017-18)						
9	PCCOER-UGCON	PCCOE&R, Ravet	22/06/2018	44	Dr. Rahul Mapari	3 Groups winner
10	Project Exhibition	KK Wagh COE, Nashik	28 Jan 2018	24	Dr. Rahul Mapari	Winner 3rd Rank (01 Group)

Table B.2.2.3r: Students Journal Publication

A.Y.2020-21				
JOURNAL PUBLICATIONS				
Sr. No.	**Name of the Students**	**Paper Title**	**Journal Name**	**Volume and Issue**
1	Radha Vijay Dadge Priyanka BajiraoKatre SayaliBabasahebPawar	Wireless Weather Monitoring System Using Gsm	International Journal of Innovative Research In Technology	Issn: 2349-6002
2	Nikita Shirole Shreya Sakpal	Design And Simulation Of Single	International Research Journal Of Engineering And	E-Issn: 2395-0056, P-Issn:

	VaishnaviValanju	Band Rectangular Microstrip Patch Antenna For 5g Application	Technology (Irjet)	2395-0072
3	Aishwarya Awsarkar Agalya Gowander Akash Ubale Rushikesh Suryawanshi	Futuristic Smart Mirror Using Raspberry Pi	Journal of Huazhong University Of Science And Technology	Issn-1671-4512
4	GunjanSali VidyaSutar ShivaniWalunj	Lorawan Based Smart Farming Modular Iot Architecture	International Research Journal Of Engineering And Technology (Irjet)	E-Issn: 2395-0056, P-Issn: 2395-0072
5	Dnyaneshwari Jagtap Mansi Kulkarni Salim Lakde	Autonomous Floor Cleaning Robot	International Research Journal Of Engineering And Technology (Irjet)	E-Issn: 2395-0056, P-Issn: 2395-0072
6	Ajinkya Gaikwad SimranKhushalani SonamSachdev	Secure Contactless Automatic Ration Distribution System Using Internet Of Things	Journal of Huazhong University Of Science And Technology	Issn-1671-4512
7	P.MoganaPriya LabheshLalka SumedhPatil	Camera-Based Driver Drowsiness Detector	International Research Journal of Engineering And Technology (Irjet)	E-Issn: 2395-0056, P-Issn: 2395-0072
8	VrushaliShete ShrutiShinde RushikeshWaghmare	Teleoperated Animatronics Robot	Journal of Huazhong University Of Science And Technology	Issn-1671-4512
9	Aishwarya Pradhan YashTalele Mansi Shikhare	Eye Blink Actuation Using Human Computer Interface	International Journal For Research in Applied Science & Engineering Technology (Ijraset)	Issn: 2321-9653
10	ShubhamPatil Pranita More RameshwarWaykule	Covid-19 Patient Care Robot	Journal of Huazhong University Of Science And Technology	Issn-1671-4512
11	Janhavi Nemade Saurabh Patil Prerana Singh	Portable Air Conditioner Based On Hybrid Method Of Peltier Effect Cooling And Liquid Based Cooling	International Journal For Research In Applied Science & Engineering Technology (Ijraset)	Issn: 2321-9653
12	Sangeeta Mahapatra Neha Chugwani	Real Time Object Detection Using Yolo	International Journal For Research In Applied	Issn: 2321-9653

	Pooja Chauthmal	V3 Tiny With Voice Feedback For Visually Impaired	Science & Engineering Technology (Ijraset)	
13	Nitin Pandita YashNagpure Akash Navale	Quadcopter For E&Tc Department	Journal of Huazhong University Of Science And Technology	Issn-1671-4512
14	TejasBhokare Gaurav Chavan Yogesh Hiwale Abhishek Dole	Plant Disease Detection Using Deep Learning Framework	Journal of Huazhong University Of Science And Technology	Issn-1671-4512
15	Dharmesh Chaudhari Sakshi Mukkirwar Neha Dodake	EMR Analysis To Predict Various Disease	Journal of Huazhong University of Science And Technology	Issn-1671-4512
16	Saurabh Shikhare Shravani Balki Dhananjay More	Fire Extinguisher Robot	International Journal of Innovative Research In Technology	Issn: 2349-6002
CONFERENCE PUBLICATIONS				
1	DivyashreeDesale RajaniKanse Piyush Ingle	Multi-View Multi-POse Robust Face Recognition Based On Vggnet	2nd International Conference On Image Processing And Capsule Networks (Icipcn2021) (May-28,29-2021)	ICIPCN 2021. Lecture Notes in Networks and Systems, vol 300. Springer, Cham. https://doi.org/10.1007/978-3-030-84760-9-36
2	LaukikDeshmukh Prashant Gode Ankit Gaikwad	Agriculture Protection From Animals Using Smart Scarecrow System	International Conference on soft computing for security applications (Icscs2021)	Springer Scopus Indexed Conference
3	Annamaraju Jayasree Sakshi Kulkarni GayatriBokey	Design And Simulation Of Uwb Antenna For 4g Applications	3rd International Conference On Sustainable Communication Networks And Application Icscn 2021, (Springer - Lecture Notes On Data Engineering And Communications Technologies)	Springer Scopus Indexed Conference
A.Y. 2019-20				
JOURNAL PUBLICATIONS				
Sr.	**Name of the Students**	**Paper Title**	**Journal Name**	**Volume and**

No.				Issue
1	Ajin Abraham Kishor Wane Rahul Mapari	Pandemic Security System for Police using Neural Networks	Mukt Shabd Journal	Volume IX, Issue VI, JUNE/2020, ISSN NO: 2347-3150
2	Ajin Abraham Shweta Jagtap Siddhi Sawant	Library Automation Using Neural Network And IoT	Industrial Engineering Journal	ISSN:2581-4915
3	Roshan Bhoge Rahul Budhe Abhijeet Shelke Rahul Parbat	Smart Water Meter and Distribution System based on IoT	Industrial Engineering Journal	ISSN:2581-4915
4	Divyansh Shah, Khushbu Kawale, Masumi Shah, Santosh Randive, Rahul Mapari	Malaria Parasite Detection Using Deep Learning, Beneficial to humankind	Proceedings of the International Conference on Intelligent Computing and Control Systems (ICICCS 2020)	IEEE Xplore Part Number:CFP20K74-ART; ISBN: 978-1-7281-4876-2
5	Akhil Adhave, Rushikesh Gadhave, Shweta Kakade, Triveni Dhamale	Design and Simulation of Microstrip Multiband Antenna for Wireless Applications	Journal of Science & Technology (JST)	Volume 5, Issue 4, July-August 2020, ISSN : 2456 – 5660
6	Jiyot Babrah Shweta Narkhade Anagha Navale Rahul Mapari	Automatic Waste Sagrigator and Monitoring System	International Journal of Advanced Computer Research (IJACR)	Volume-10 Issue-49 July-2020 ISSN (Print):2249-7277 ISSN (Online):2277-7970
7	Prajakta S. Patil, Swamini A. Lohkare, Rupali S. Patil, Prof. Arti A. Tekade	ATM Surveillance & Security Using Image Processing	International Research Journal of Modernization in Engineering Technology and Science	Volume:02/Issue: 07e-ISSN: 2582-5208
8	Pratima Thorat , Pranjali wagh, Pratik Chandgude , Prof. Rahul Prabat	Design of Micro strip UWB Antenna for Wireless Application	International Journal of Engineering Research & Technology	Volume 9, Issue 7ISSN Online: 2278-0181
9	Ashmit Pareekh Hrishikesh Patil Mohit Rade Prof M. Andhare	Diabetic Retinopathy Detection Using Deep Learning	Mukt Shabd Journal	Volume IX, Issue VII, JULY/2020,ISSN NO : 2347-3150
10	Pratiksha Shetiya Meryl Mascarenhas	ATM Security System using Iris Recognition	International Journal of Engineering Research &	Vol. 9 Issue 07, July-2020 ISSN:

	Mrunal Deshmukh,Prof.Dipali Dhake	by Image Processing	Technology (IJERT)	2278-0181
11	Chinmayee Chitnis,Neha Chavhan,Sanket Darur	Underwater signal and image Processing	International Journal of Engineering Research & Technology (IJERT)	Vol 9 issue 7, July 2020 ISSN:2278-0181
12	Rutuja Sonawane,Rohini bali,Mansi Zope,Prof.V.S.Kumbhar	Making India Paperless using cloud for documentation	Mukt Shabd Journal	Volume IX, Issue VII, JULY/2020,ISSN NO : 2347-3150
CONFERENCE PUBLICATIONS				
1	Ajin Abraham Kishor Wane Rahul Mapari	Pandemic Security System for Police using Neural Networks	International Conlerence on Future Intelligence in Science & Technology.Mukt Shabd Journal	Volume IX, Issue VI, JUNE/2020, ISSN NO: 2347-3150
2	Divyansh Shah, Khushbu Kawale, Masumi Shah, Santosh Randive, Rahul Mapari	Malaria Parasite Detection Using Deep Learning, Beneficial to humankind	Proceedings of the International Conference on Intelligent Computing and Control Systems (ICICCS 2020)	IEEE Xplore Part Number:CFP20K74-ART; ISBN: 978-1-7281-4876-2
A.Y. 2018-19				
JOURNAL PUBLICATIONS				
Sr. No.	**Name of the Students**	**Paper Title**	**Journal Name**	**Volume and Issue**
1.	Jadhav Vishesh Shinde Pranjal Sanjay Paratane Deepali Rajendra	Advanced Military Spying And Bomb DisPOsable Robot	Research Review International Journals of Multidisciplinary	Vol – 04, I-02 Feb-2019 PP 726-729
2.	Limkar Pratiksha Madurwar Rutuja Mahesh Thakre Purva Shriram	Intelligent Layer Farming	Research Review International Journals of Multidisciplinary	Vol – 03, I-05 May 2018 PP 1-3
3.	Badkhal Tejas Babanrao Patil Sanket Manoj Sharma Rohit Chandrabhushan Igve Sonu Jagannath	Automatic Weed killing Robot for Agriculture PurPOse and Insect Killing	International Journal of Research in Advent Technology	Vol – 5, No.1, Jan 2019 PP 1-5
4.	Shimpi Neha Manohar Wagh Prachi	Smart BRT Sentinal Using Digital Image	International Journal of Research in Advent	Vol – 5, No.1, Jan 2017

	Yelwande Mayuri Sanjay	Processing	Technology	PP 1-6
5.	Malgi Pallavi Parimal Singh Akash Kumar Shyam Bihari Singh Harvinder Inderjit	Auto dual converter With power factor improvement	International Journal of Scientific Research in Science, Engineering and Technology (IJSRSET)	Print ISSN : 2395-1990 Vol – 1, I-6 PP
6.	Shinde Prajakta Suresh Shukla Kautubhi Shrawankumar Zagade Shraddha Krishna	E-Rationing Management System	International Journal of Research in Advent Technology	Vol – 7, No.1, Jan 2019 PP 361-363
7.	Dave Rudri Kartikey Kalbhor Vrushali Sanjay Kalbhor Yuga Dnyaneshwar	Agricultural Commodities Marketing Network	Research Review International Journals of Multidisciplinary	Vol – 04, I-02 Feb 2019 PP 368-371
8.	Mali Ravindra Dhanraj More Narendra Dattatray Narsale Yuvraj Bapusaheb	Communication Through Helmet	Journal of Emerging Technologies and Innovative Research (JETIR)	Vol 4, I-6 PP 1-3
9.	Patil Ashwini Vasantrao Patil Shruti Sharanbasappa Patil Rutuja Akaram	Real time identification of crop Diseases, Pest Damage and Nutrient Deficiency System	International Journal of Research in Advent Technology	Vol – 05, No.1 Jan 2017 PP 1-4
10.	Kokane Jagruti Ashok Kundnani Kiran Gopichand Pande Rutuja Pandurang	Voice controlled Digit Writer For Handicapped People	International Journal of Research in Advent Technology	Vol – 05, No.1 Jan 2017 PP 1-3
11.	Chavan Shivani Bhimrao Jadhav Sayali Sanjay Sakhare Rudrani Balkrishna	Smart Border Security System Using High Speed Vision Technology	International Journal of Research in Electronics and computer Engineering	Vol – 7, I-1 Jan-March 2019 PP 1593-1595
12.	Dorwat Sumedh Ghule Shreyas Sanjay Shende Ashish Kiran	Smart Helmet	Journal of Emerging Technologies and Innovative Research (JETIR)	Vol 4, I-6 PP 1-4
13.	Gidveer Rushikesh Vishwanath Karande Ranjit Tanaji	Automatic Medicine Dispensary System Using Aerial Vehicle	Journal of Emerging Technologies and Innovative Research	Vol – 6, I-3 March 2019 PP 398-403

	Lature Shubham Rajeshkar		(JETIR)	
14.	Atkare Aarti Abhiman Kamble Pooja Kalu Agarwal Yash Naresh	Building Health Monitoring System	International Journal for Science and Advance Research In Technology (IJSART)	Volume : 5, Issue : 4, april 2019 PP 180-182
15.	Kumbhar Yugandhara Pooja Mane Ingle Nikesh Panjabrao	IOT Based Smart Water Disribution and Leakage Detection System Using WSN	Research Review International Journals of Multidisciplinary	Vol – 03, I-05 May 2018 PP 1-4
16.	Khedekar Shivam Pere Kunal Digambar Pandhre Sumit	Water Dispenser System (Water ATM)	Journal of Emerging Technologies and Innovative Research (JETIR)	Vol – 4, I-6 PP 1-4
17.	Jadhav Kiran Rajendra Mankar Hrishikesh Shubham Vaidya	Cattel Farming Drone	Research Review International Journals of Multidisciplinary	Vol – 03, I-05 MAY 2018 PP 1-3
CONFERENCE PUBLICATIONS				
18.	Tiwari Rahul Anil Yadav Ruturaj Shivajirao Yadav Shubham Shashikant	All PurPOse Biometric Punch In System	International Journal of Scientific Reseach in Science, Engineering and Technology, Volume 5 | Issue 7 | Print ISSN : 2395-1990	National Conference on Information, Communication and Energy Systems and Technologies – 2019
19.	Salunke Abhishek Khan Shazad Khalid Jadhav Chandrashekhar Shyam	Detection of Dibetic Retinopathy	IOSR Journal of Engineering (IOSR JEN) www.iosrjen.org ISSN (e): 2250-3021 PP 65-67	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM-19
20.	Pacharne Vaibhav Pagar Shubham Bandu Zanzane Viraj	Overview Of Bike Automation using Voice Recognition Chip	IOSR Journal of Engineering (IOSR JEN) www.iosrjen.org ISSN (e): 2250-3021 PP 29-31	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM-19
21.	Kukkar Priyanshu	Smart Electrical	IOSR Journal of	National

	Ramgopal Kumar Gaurav Rajeev Ranjan Pawar Mahesh Ananda	Vehicle	Engineering (IOSR JEN) www.iosrjen.org ISSN (e): 2250-3021, ISSN (p): 2278-8719 PP 07-09	Conference on "Recent Innovations in Engineering and Technology" MOMENTUM-19
22.	Daniel Ajit Arun Das Subhajit Ajit Sawant Snehal Subhash	Wall Climbing Rover Using Propellers	IOSR Journal of Engineering (IOSR JEN) www.iosrjen.org ISSN (e): 2250-3021 PP 27-30	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM-19
23.	Sinha Shreya Premendra Sonimindia Laxmi Vinod Taware Shruti Santosh	Agrobot	IOSR Journal of Engineering (IOSR JEN) www.iosrjen.org ISSN (e): 2250-3021 PP 66-68	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM-19

Table B.2.2.3s: Students Project Patents

Sr. No	Name of the Student	Name of Patent	Acknowledgement Number
1.	Shivani Jadhav Patil Pushpa	A Raspberry Pi Based Smart Gadget for Women Safety using IOT	201921052296
2.	Prajakta Patil Swamini Lohkare Rupali Patil	Secured ATM System	201921052301
3.	Mayuri Warade Aishwarya Zodge Sojwal Patil	Smart Classroom With Automatic Attendence System	201921052277
4.	Manisha Kambale Shrusti Kumbhar Sana Patil	Sign Language communincation with dumb deaf people	201921052215
5.	Shah Mausmi Kawale Khushbu	Detection of malaria parasites using deep learning	201921052330
6.	Shweta Jagtap	Library Automation using	201921052293

	Siddhi Sawant	Computer Vision	
7.	Meryl Mascarenhas Mrunal Deshmukh Pratiksha Shetiya	ATM Security System Using Iris Recognition By Image Processing	201921052340
8.	Neha Chavan Chinmayee Chitis	Underwater image and signal processing	201921052273
9.	Jiyot Babrah Shweta Narkhade Anagha Navale	Automatic Waste Segregator and Monitoring System	201921052279
10.	Keta Patel Shubhangi Sambare	Smart Traffic Control Using DIP	201921052253
11.	Dhanashree Divekar Samruddhi Jangam Kajal Mahajan	A Smart Tool for Testing Deficient Elements in Soil	201921052371

2.2.3t: Students Project Copyright

A.Y. 2020-21			
Sr. No	**Diary No**	**Applicant Name**	**Title of Work**
1	9091/2021-CO/L	Divyashree Desale Rajani Kanse Piyush Ingle	Robust Multi-view multi-POse face recognition using Deep Learning for Security Applications
2	9504/2021-CO/L	Radhavijay Dadge Priyanka Bajirao Katre Sayali Babasaheb Pawar	Heart attack detection by heart beat sensing
3	9178/2021-CO/L	Nikita Shirole Shreya Sakpal Vaishnavi Valanju	Design and Simulation of Microstrip Patch Antenna for 5G application
4	9069/2021-CO/L	Aishwarya Awsarkar Agalya Gowander Akash Ubale Rushikesh Suryawanshi	Smart Mirror using Rasberry Pi
5	9150/2021-CO/L	Gunjan Sali Vidya Sutar Shivani Walunj	LoRaWANBased Smart Farming Modular IOT Architecture

6	9144/2021-CO/L	Dnyaneshwari Jagtap Mansi Kulkarni Salim lakde	Innovative Auto Robo Servant For Floor Cleaning With Android App
7	8912/2021-CO/L	Ajinkya Gaikwad Simran Khushalani Sonam Sachdev	Automatic security based ration distribution system
8	9191/2021-CO/L	P.Mogana Priya Labhesh Lalka Sumedh Patil	Camera Based Driver Drowsiness Detector
9	9072/2021-CO/L	Vrushali Shete Shruti Shinde RushikeshWaghmare	Autonomous Drone Mission Planner
10	9172/2021-CO/L	Aishwarya Pradhan YashTalele Mansi Shikhare	Brain Computer Interface
11	9161/2021-CO/L	ShubhamPatil Pranita More Rameshwar Waykule	Covid 19 patient care robot
12	9047/2021-CO/L	Laukik Deshmukh Prashant Gode Ankit Gaikwad	Agriculture Crop Protection from Animals using Smart Scarecrow
13	9210/2021-CO/L	Suhit Metkar Sahana Kulkarni Abhijith Panikar	Humonoid Robot - Lower Arm - Upper ARM
14	9210/2021-CO/L	Kunal Gawhale Arti Bole Rujul Zalte Aditya Chandanwar	Humonoid Robot - Lower Arm
15	9049/2021-CO/L	Janhavi Nemade Saurabh Patil Prerana Singh	Portable air conditioner System
16	9051/2021-CO/L	Sangeeta Mahapatra Neha Chugwani Pooja Chauthmal	Object Detection System for Visually Impaired
17	8887/2021-CO/L	Annamaraju Jayasree	Design of PIFA antenna for 4G

		Sakshi Kulkarni Gayatri Bokey	application
18	9082/2021-CO/L	Nitin Pandita YashNagpure Akash Navale	Mask Detection using Drone
19	9764/2021-CO/L	Shivraj Hujare Ashish Hadule Nimesh Dhumal	Detection and Monitoring of Unauthorized Vehicles in BRT systems
20	9136/2021-CO/L	Tejas Bhokare Gaurav Chavan Abhishek Dole Yogesh Hiwale	Design and implementation of Power Optimiser for Solar system
21	9092/2021-CO/L	Dharmesh Chaudhari Sakshi Mukkirwar Neha Dodake	EMR Analysis to Prevent Diseases
22	9017/2021-CO/L	Saurabh Shikhare Shravani Balki Dhananjay More	Fire Extinguisher Robot using IoT
23	9250/2021-CO/L	Hrushikesh Sawale Aishwarya Zope Yash Adhao	Grass Cutting Robot using ARM
AY 2019-20			
Sr. No	**Diary No**	**Applicant Name**	**Title of Work**
1	17533/2019-CO/L	Prof. Dipali Dhake Pratiksha Shetiya,Meryl Mascarenhas,Mrunal Deshmukh	ATM security system using iris recognition by image processing
2	17525/2019-CO/L	Triveni Dhamale, Rahul P.Bansode,Yash A.Bhairashetti, Laxmi S. Mhetre	IOT Based Real Time System for Industrial Boiler Safety
3	17599/2019-CO/L	Hande Rushabh, Tiveni Dhamale, Jadhav Omkar, Jadhav Pratap,	Onion Storage Atomization with Rotte Onion Detection and Retrieval System
4	17597/2019-CO/L	Akil Adhav, Rushikesh Gadhave,	Design of Microstrip Multiband Antenna For Wireless Applications

		Triveni Dhamale, Shweta Kakade,	
5	17460/2019-CO/L	Onkar Phule, Sanket Shetgaonkar, Bhawarlal Parmar	2-D Laser Engraver CNC Plotter
6	17442/2019-CO/L	Prof. S. N. Randive, Masumi Shah,Khushbu Kawale ,Divyansh Shah	malaria parasite detection using deep learning
7	17601/2019-CO/L	Prof. A. A. Tekade,R.S.Parbat, Kishor Age, DhirajPatil, Sanket Koshti	E-Bike Wireless Charging System
8	17605/2019-CO/L	Prof. A. A. Tekade, Sauravmahajan, shivkantakingre, Shweta kale	Design and FPGA Implementation of High Speed Vedic Multiplier
9	17449/2019-CO/L	Prof. V.S.Kumbhar, Kajal Mahajan, Samruddhi Jangam, Dhanashree Divekar	Soil Analyzing Tool
10	17444/2019-CO/L	Prof. V.S.Kumbhar, Rohini Bali, Rutuja Sonawane, Manasi Zope	Making India Paperless Using Cloud Storage for Documentation
11	17457/2019-CO/L	Prof.M.S.Andhare,Shiva ni R. Jadhav,Pushps Patil,Vaibhav Thgale	SMARISA: A Raspberry Pi based Smart Ring for Women Safety Using IoT
12	17451/2019-CO/L	Prof.M.S.Andhare,Mohit Rade,Ashmit Pareek, Hrishikesh Patil	Detection of Diabetic Retinopathy using Deep Learning
A.Y. 2018-19			
13	11057/2018-CO/L	Rahul Mapari Rohit Sharma	Automatic Weed Killing Robot
14	10960/2018-CO/L	Pratiksha Annasaheb Limkar Triveni Dhamale Rutuja Mahesh Madurwar Rahul Ganpat Mapari Purva Shrram Thakare	Intelligent Layer Farming
15	11046/2018-CO/L	Deepali Paratane Kiran Napte Pranjal Shinde	Automatic Advanced Bomb DisPOsal Robot using Flex Sensor

		Vishesh Jadhav	
A.Y. 2017-18			
16	756/2018-CO/L	Triveni Dhamale Nausee Khan Pradnya Padwal Pranali Machutre	RF Electromagnetic Pulse Generation & its Effects

Impact Analysis:

- New innovative ideas from students form the basis of some projects.
- Students are able to define, analyze and solve complex real life problems.
- Knowledge on various aspects of project management is developed.
- Confidence level of the students is boosted.
- Work in collaborative team as a member or leader.
- Implementation and deployment of the project for social benefits.
- Communicate effectively in verbal and written form.
- Opportunities to display their project work in project exhibition.

Table B.2.2.3u: Impact analysis of Project

Sr. No.	Activity	Number of students benefited
01	Product	15
02	Patent filed	11
03	Research Paper Publication	57
04	Copyrights	39
05	Lab Enriched	All

2.2.4 Initiatives related to industry interaction (15)

Institute Marks 12

2.2.4.A. Industry Supported Laboratories:

The industry-supported laboratories develops best learning process using a comprehensive understanding of industry's best practices for both students and faculties.This initiative imbibes professionalism, behavioral aspects and awareness about industry expectations. It also helps to align aspirations of the students with the needs of the industries and promotes career counseling by

organizing guidance lectures by senior corporate personnel. Industry Supported Laboratory details are given in table B.2.2.4a.

Table B.2.2.4b: Industry Supported Laboratory details

Name of Industry	Type of Industry	Type of Lab	Objectives	Utilization and effectiveness
Energy Swaraj Foundation, Room no. 25, Eastern Business District, Bhandup (West) Mumbai, Maharashtra-400078	Private	Sponsored	1. To support and conduct workshop and other activities 2. To provide consultancy for designing the appropriate solar solution so as to run the campus completely on solar energy 3. To provide guidance to create an academic course related to promotion of the concept of Energy Swaraj for the students	1. Conducted "Awareness Training Program" for SE, TE and BE students
CopperCloud IOTech Pvt Ltd. 4th floor, Plot #22, B U Bhandari Skyline, Dighi Pune-411015	Private	Sponsored	1. To support and conduct workshop and other activities in the field of IoT. 2. To provide consultancy for designing various IoT based products. 3. To provide sponsorship to final year projects.	1. Conducted 2-days hands-on workshops on Electronic Skill Development for SE students 2. Awareness session on importance of IoT field.
Ecoz Bolt-evehicle manufacturer, 04th floor, PCCOER, Laxminagar, Ravet	Private	Sponsored	3. To arrange the sessions on design and manufacturing of e-bicycle 4. .To inspire students to start their startups and become entrepreneur.	1. Conducted 02 brainstorming sessions for students. 2. Manufactured 05 e-bicycles for institute.

"Industry-Institute-Interaction" provides a platform to both students and faculty members to identify industry expectations and skill sets required. Experts from industry are involved in activities such as expert talks, workshops, and trainings. Their expertise is useful to emphasize and inculcate practical aspects among our under-graduate students to boost up their technical compatibility and build them to become employable in the industry. Table B.2.2.4a gives Faculty completed training from industry.Department arrange visits to industriesapart from curriculum. This enables students to identify their weaknesses and provides an opportunity for improvement

Table B.2.2.4a: Faculty completed training from industry

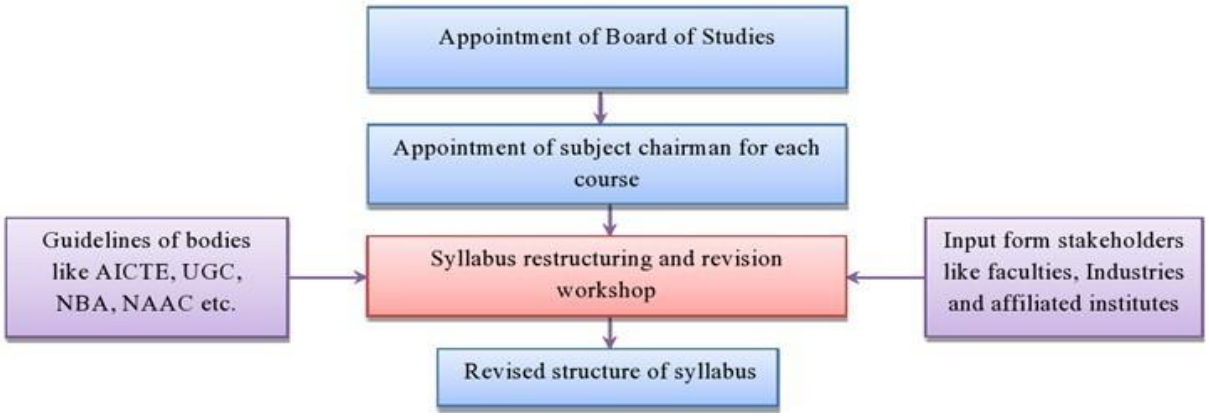
Sr. No.	Company Name	Faculty Name	Start Date	End Date
1	CopperCloud Pvt. Ltd., Dighi Pune	Prof. Maithili Andhare	28/06/2021	02/07/2021
2		Prof. Arti Tekade	28/06/2021	02/07/2021
3		Ms. Bhagyashree Gawali	28/06/2021	02/07/2021
4	Anand Techno Creation	Prof. Vijayalaxmi Kumbhar	23/03/2021	04/04/2021
5		Prof. Maithili Andhare	23/03/2021	04/04/2021
6		Prof. Arti Tekade	23/03/2021	04/04/2021
7	The Automotive Research Association of India (ARAI), Pune	Dr. Rahul Mapari	24/04/2020	29/04/2020
8		Prof. Rahul Parbat	24/04/2020	29/04/2020
9		Prof. Triveni Dhamale	24/04/2020	29/04/2020
10		Prof. Vijayalaxmi Kumbhar	24/04/2020	29/04/2020
11		Prof. Maithili Andhare	24/04/2020	29/04/2020
12		Prof. Dipali Dhake	24/04/2020	29/04/2020
13		Prof. Rupali Kawade	24/04/2020	29/04/2020
14	R.D. Electrocircuits Pvt. Ltd.	Prof. Dipali Dhake	18/05/2018	24/05/2018
15	Skada technoly Solutions Pvt. Ltd. Pune	Prof. Kiran Napte	12/12/2018	20/12/2018
16	Esston Technology Pvt. Ltd. Pune	Prof. Kiran Napte	09/05/2019	19/05/2019
17	Esston Technology Pvt. Ltd. Pune	Prof. Kishor Wane	20/05/2019	29/05/2019
18	GE Autotech Pvt. Ltd. Pune	Prof. Santosh Randive	4/12/2017	8/12/2017

19	Softcon Systems Pvt. Ltd. Pune	Prof. Maithili Andhare	5/12/2017	9/12/2017
20	Softcon Systems Pvt. Ltd. Pune	Prof. Arti Tekade	27/11/2017	29/11/2017
21	Mulika Infotech Pvt. Ltd. Pune	Prof. Kishor Wane	4/12/2017	8/12/2017
22	Softcon Systems Pvt. Ltd. Pune	Prof. Vijayalaxmi Kumbar	7/12/2017	8/12/2017
23	Dzine Arena Pvt. Ltd.	Prof. Rupali Kawade	29/11/2016	3/12/2016

2.2.4.B. Industry involvement in program design and partial delivery of course for students:

As the program is designed by Savitribai Phule Pune University (SPPU) and SPPU have industry representatives on the board, which help in designing the program suitable for industry. Institute experts take part in course design process and give suggestions while designing the program curriculum.

The technical skills of the students have enhanced with the help of Add on Courses. Savitribai Phule Pune University follows the procedure to design the curriculum of the program in below Figure B 2.2.4.a



FigureB.2.2.4.a: Process of Curriculum implication by the University

Experts from industries are regularly invited for content delivery of curriculum through expert talks, workshops, etc. These experts provide information regarding recent trends and innovations related to curriculum. Table B.2.2.4c gives the details of suchbactivities conducted for CAY (2019-20), CAYm1(2018-19) andCAYm2(2017-18).

Table B.2.2.4c: List of Industry involved activities

A.Y. 2020-21						
Sr. No.	**Gap**	**Action Taken**	**Date**	**Resource Person with designation**	**% Students**	**Relevance to PO's and PSO's**
1	High frequency circuit measurements	Industry Expert Lecture	20-10-2020	Mr. Anirudha Kulkarni, CEO, RF Labs Pvt. Ltd, Pune	80%	PO6,PO7, PO12
2	Leading technology of Artificial Intelligence in industry	Industry Expert Lecture	22/10/2020	Mr. Bhushan Garware Senior Data Scientist Persistent Systems	79%	PO5, PO6, PO12
3	Implementation of Networks Security Protocol	Industry Expert Lecture	22/10/2020	Rakhee Sonawane, Tata Communications Ltd, , Pune,	80%	PO6, PO7, PO8, PO12
4	Microelectronics: Advances & exciting career opportunities	Industry Expert Lecture	21/10/2020	Dr. B. Satynarayana	80%	PO5, PO8, PO9, PO12
5	How to read Datasheets	Industry Expert Lecture	08/10/2020	Mr. Anand S Gharpure, CEO, Sonic Multitech Pvt Ltd, Nashik	85%	PO8, PO9, PO10,PO12
6	Utilization of motors in electric vehicle	Industry Expert Lecture	11/12/2020	Mr.Omkar Harishchandra Thigale Associate Manager, Engineering Ather Energy, Bangalore	75%	PO6,PO7, PO8,PO12
7	Design of SMPS	Industry Expert Lecture	23/10/2020	Mr. S.S. Kendre, CTO, PERI Solutions,Shivane,Pune	90%	PO1,PO2, PO3, PO4, PO5, PO12, PSO1
8	Applications of Electromagnetics in the era of Telecommunication Field	Expert Lecture	28-10-2020	Dr. Ashutosh Marathe, Dean Academics, VIT Pune	90%	PO6,PO7

10	GUI Creation in MATLAB	Industry Expert Lecture	16/10/2020	R. Jishnu, Senior Engineer, Embedded Developer, Pantechsolutions, Pvt., Ltd., Chennai	70%	PO3, PO5, PO12
13	Applications of DSP in AI, Professional Ethics, Project Management and Role of Engineer to Help the Society	Industry Expert Lecture	20/10/2020	Mr. Parag Hirulkar, Data Scientist, TABSquare, Banglore	80%	PO6, PO8, PO11
14	Embedded Design & Product Development.	Industry Expert Lecture	21/10/20	Mr. Abhay Panshikar	80%	PO5, PO7, PO12, PSO1, PSO2

A.Y. 2019-20

Sr. No.	Gap	Action Taken	Date	Resource Person with designation	% Students	Relevance to PO's and PSO's
1	Antenna Design & Fabrication process	Workshop	7&8/08/2019	Mr. Anirudha Kulkarni, CEO, RF Labs Pvt. Ltd, Pune	90%	PO3,PO5,PO7 ,PO9,PO12, PSO2
2	Upcoming features in AI	Guest Lecture	09/08/2019	Dr.Dhiraj M.Dhane Associate Professor at the PVPIT,Pune	76%	PO5,PO6, PO12
4	Television Fault Finding and Troubleshooting	Workshop	31/01/2020	Mr. Sanjay Auti Proprietor, PROCOM Enterprises	85%	PO2, PO3, PO4, PO5, PO12
5	Importance of microcontroller in designing embedded application	Expert Lecture	-	by Dr. D.S.Mantri	72%	PO7, PO12, PSO1
6	Electric & Hybrid vehicle drive System	NPTEL video Lecture	18/03/2020	-	88%	PO6, PO7, PO8, PO12, PSO1

A.Y. 2018-19						
Sr. No.	**Gap**	**Action Taken**	**Date**	**Resource Person with designation**	**% Students**	**Relevance to PO's and PSO's**
1	RF Transmission of sound & vision signals	Industrial Visit to Doordarshan	9/6/2018	Mr. Walmik Gawhale (Assistant Director (Engineering) Doordarshan, Mumbai)	87%	PO5,PO12
2	Recent Trends In VLSI Design And Verification Technology Using EDA Tools Workshop	Workshop	19/09/2018 to 20/09/2018	Mr. Shrikant R. Atkarne (Application Engineer (Microwind), ni logic Pvt. Ltd. (ni2designs)	88%	PO5, PO12
3	Advanced Embedded Linux for industry use	Workshop	21/09/2018 to 22/09/2018	Mr. Mangesh Edake (Technical Engineer, Johnson Controls India Pvt. Ltd. Pune)	87%	PO5,PO12
4	Programming in Python	Workshop	18/12/2018 to 21/12/2018	Mr.Avinash Pathak (Director of I2I specialist)	84%	PO5
5	Raspberry pi with IOT	Workshop	18/12/2018 to 21/12/2018	Mr.Tushar Kate(Researcher in MITU Skillologies ,Pune)	85%	PO1,PO5,PO12,PSO1

2.2.4.B1. Industry collaborations:

Electronics and Telecommunication Engineering Department has signed MoUs with various industries to have mutual benefit. This helps students and faculty to get the industrial exPOsure through Guest Lectures, In-plant training, Industrial Visit, Sponsored Projects. Table B.2.2.4d shows the list of MoUs Signed with Industries:

Table B.2.2.4d: List of MoU's

Sr. No.	Company Name	Address	Date	Validity	Number of Students Benefited
1	RF Lab Solutions	Shrishiv, 3rd Flr, Khedekar Industrial Area, Narhe, Pune, 411041	03/06/2019	02/06/2024	53
2	Energy Swaraj Foundation	Eastern Business District, Bhandup (West) Mumbai, Maharashtra-400078	21/04/2020	20/4/2025	65
3	MEGAVERSE Technologies Private Limited, Pune	Bhosari, Pune	11/07/2018	10/07/2023	25
4	Esston Technologies Pvt. Ltd., Pune	Chaitanya Industrial Estate, Narhe, Pune	21/01/2019	20/01/2021	13
5	SKADA Technology Solution Private Limited, Pune	Pimple Gurav, Pune	23/08/2018	22/08/2020	40
6	Argute Technologies Pvt. Ltd.,	Narhe, Pune	20/06/2019	19/06/2024	80
7	Inculpt Technologies LLP,	Paud Phata, Pune	12/06/2019	11/06/2022	30
8	RPGF Foundation	Dr. A B Rioad, Worli, Mumbai	10/09/2019	09/09/2024	35
9	CopperCloud IOTech Pvt Ltd	4th floor, Plot #22, B U Bhandari Skyline, Dighi Pune-411015	01/10/2020	30/09/2025	26

2.2.4.C: Impact analysis of industry institute interaction and actions taken thereof

- Teaching Learning Process Enhancement with latest industry trends.
- Strong linkage between industry and faculties.
- Enhancement of application knowledge, identify gaps and exPOsure to latest trends.

The outcomes of industry institute interaction are summarized in Table B.2.2.4e.

Table B.2.2.4e.: Impact analysis of industry institute interaction

Sr. No.	Activity	Number of students benefited
01	Placement	07
02	Industrial Training	71
03	Sponsored Projects	36
04	Faculty Training	11

2.2.5 Initiatives related to industry internship/summer training (15)

Institute Marks 8

The students are encouraged to do training for 8-15 days before commencement of semester. Faculty helps the students by interacting with the industrial experts. Department provides the students recommendation letters and other necessary support to complete training/ internship. Industrail visits are arranged by the department to enhance the skills of students.

2.2.5.A. Industrial Visit:

Industrial training programs in the engineering industry are a mutually beneficial relationship that helps nurture student growth, enhance university-industry relationships, and challenge the faculty to include up-to-date information in the teaching curriculums learning from textbooks, lectures and other study material does not suffice for holistic learning. Practical and hands-on learning is essential for better understanding of work processes. Programme organizes the industrial visits as mentioned in the curriculum or as a part of action taken on the less attainment identified for a particular course.

Table B.2.2.5a. Industrial Visit

CAY (2019-20)				
Sr. No.	**Name of Industry Visited**	**Class**	**Date of Visit**	**No. of students**
1	All India Radio, Hadapsar	SE	05/03/2020	69
2	All India Radio, Shivajinagar	BE	26/02/2020	60
3	NRSC, ISRO	TE	24/02/2020	45
4	IIT Pawai	SE	03/01/2020	51
5	TIFR, Mumbai	BE	14/09/2019	25
CAYm1 (2018-19)				
Sr. No.	**Name of Industry Visited**	**Class**	**Date of Visit**	**No. of students**
1	All India Radio, Shivajinagar	BE	08/03/2019	51
2	GMRT, Junnar	SE, TE	28/02/2019	110
3	Science Park	SE	22/09/2018	48
4	Doordarshan	TE	06/09/2018	60
CAYm2 (2017-18)				
Sr. No.	**Name of Industry Visited**	**Class**	**Date of Visit**	**No. of students**
1	GMRT, Khodad	SE, TE	28/02/2018	92

2.2.5.B. Industrial Internship

Table B.2.2.5b shows the summary of industrial training

Table B.2.2.5b. Industry Internship Details

A.Y. 2020-21			
Sr. No.	**Name of Company**	**No. of Students**	**Duration**
1	Anand Techno-Creations, Satara (Design of Sellable Electronics Products)	43	1 Month
2	Cognifront Academy (Virtual Internship (Machine Learning) Summer 2020)	8	1 Month
3	CodeJin Software Solutions	2	1 Month
4	PARC Robotic Systems Pvt Ltd	2	1 Month

5	Advanced level telecom training centre(ALTTC) Gaziabad	1	12 Day
6	Bluencore	1	1 Month
7	Pramila Technologies	1	2 Months
8	Techpert Process Industries	1	1 Month
9	SHIPTERN	1	3-Weeks
10	Sustain and Save	1	3-Weeks
11	TechCity	1	3-Weeks
12	The Spark Foundation	1	3-Weeks
13	Antenna Design Thinking 3.0	1	3-Weeks
14	Zensar Technology	38	3-Weeks
AY 2019-20			
Sr. No.	**Name of Company**	**No. of Students**	**Duration**
1	Zensar Technologies	35	3-Weeks
2	Mumbai Metro Rail Corporation	01	3-Weeks
3	Evonix Technologies Pvt. Ltd.	02	30 Days
4	Hew Precision Works Pvt. Ltd.	06	40 Days
5	Maharashtra Metro Rail Corporation Ltd.	02	40 Days
6	Pharma Air Control Engineers	01	1-Week
7	Megaverse Technologies Pvt. Ltd.	01	6 Months
8	CodeSpeedy Technology Private Limited	01	1 Month
AY 2018-19			
Sr. No.	**Name of Company**	**No. of Students**	**Duration**
1	A. I. Analytics	02	1 week
2	Aditya Automation	02	1 week
3	AYM Syntex Ltd.	02	1 week
4	PMS Robotics Research Centre	02	1 week
5	Aakrutii Technology	02	1 week
6	BSNL, Ganganagar	01	1 week
7	Empyreal Solutions	03	1 week
8	Kalptech Solutions Pvt. Ltd.	03	1 week
9	Shubham Enterprises	02	1 week
10	ATC Technologies Inc.	07	1 week
11	Capstonetec	01	1 week
12	Zenton Technosoft Solutions	01	1 week
13	Trilocode Technologies	03	1 week
14	INTERNSHALA (Online Training)	02	1 week
15	L&T Electrical & Automation	01	1 week

16	MINDA	01	1 week
17	MIHAN India Limited	01	1 week
18	Skada Technologies	38	1 week
19	SAI-TECH Controls	01	1 week
20	Accurate automation and reconditioners	01	1 week
21	BSNL CTTC Nashik	02	1 week
22	Jaytech Electricals Pvt.Lmt.	01	1 week
23	ZUMBACH ELECTRONICS	01	1 week
AY 2017-18			
Sr. No.	**Name of Company**	**No. of Students**	**Duration**
1	SB Electricals, Nasik	02	1 week
2	BSNL,Pune	01	1 week
3	L&T , Electrical & Automation, Ahmednagar	01	1 week
4	Multiline Electronics Pvt. Ltd	01	1 week
5	V- Ramp Automation	01	1 week
6	Siemens	01	1 week
7	Rayon Illuminations	01	1 week
8	BSNL,Latur	01	1 week
9	Chasis Brakes	01	1 week
10	Kulcon automation	02	1 week
11	BSNL, Sriganganagar	01	1 week
12	BSNL ,Pune	04	1 week
13	BSNL, Agartala	01	1 week
14	Impulsetronics, Bhosari	05	1 week
15	PMS Robotics Research Centre	03	1 week
16	NPTEL	01	1 week
17	Zenton Tecnosoft Solutions	04	1 week
18	Logicon Technosolutions Pvt. Ltd.	01	1 week
19	R.D. Enterprises	01	1 week

2.2.5.C. Impact analysis of industrial training

- Students get good interdisciplinary industrial projects.
- Students get aware about industrial safety.
- Students get exPOsed to industry work culture.
- Students become industry ready after passing out.

- Better understanding of subject and application knowledge.
- Better understanding on manufacturing process and testing procedures.
- Exposure to latest development.
- PO and PSO attainments are improved

Table B.2.2.5c: Impact analysis of industry institute interaction

Sr. No.	Activity	Number of students benefited
01	Core Placement	30
02	Sponsored Projects	21
03	Special Project Developed	10
04	Enterprenuers	05

2.2.5. D. Student feedback on initiative

After the industrial visit, feedback is collected from the student. The sample copy of the feedback forms of student industrial visit and industrial training are as shown in figure B.2.2.5a and B.2.2.5brespectively.

Pimpri Chinchwad Education Trust's

Pimpri Chinchwad College of Engineering & Research
Ravet, Pune

Academic Year: 2019-20	Industrial Visit/Training Feedback	Term: II

Objectives:

- To enhance teaching learning process in engineering education.
- To have proper understanding of subject and its importance in real world.
- To provide exposure to latest trends and bridge gap between curriculum and industrial practices.
- To provide mentoring and guidance to engineering graduates to encourage and motivate in the areas of latest technology and IPR from professionals.
- To provide professional carrier guidance and counseling.
- To encourage engineering graduates to become entrepreneurs.
- To give exposure to manufacturing, specifications, testing, application, national and international standards relative to subject in engineering

Name of Industry/Organization-	Date/Period of visit-
All India Radio Station Shivajinagar Pune	26-02-2020

Please indicate your ratings using the scale 0(low) through 3(high)

Sr. No.	Feedback Parameter	PO Mapped	Your Ratings			
01	Technical expertise of faculty/ expert	PO1	0	1	2	(3)
02	Effectiveness	PO2	0	1	2	(3)
03	Enthusiasm/ awareness created	PO5	0	1	2	(3)
04	Quality and clarity of concepts	PO6	0	1	2	(3)
05	Linking with current courses under study	PO7	0	1	2	(3)
06	Response to queries	PO12	0	1	2	(3)
07	Suitability for audience	PSO1, PSO2	0	1	2	(3)
08	Exposure to industrial practices		0	1	2	(3)
09	Encouragement for research and projects		0	1	(2)	3
10	Overall impact and knowledge gained		0	1	2	(3)
	Total		29/30			

Any suggestion related to industrial visit/training to improve understanding of subject and bridge the gap between curriculum and recent trends

Name of student: Anagha Navale Signature: Anaval

Figure B.2.2.5a: Sample Student Industrial Visit Feedback Form

Pimpri Chinchwad Education Trust's

Pimpri Chinchwad College of Engineering & Research

Ravet, Pune

Academic Year: 2019-20 | **Industrial Visit/Training Feedback** | Term: II

Objectives:

- To provide exposure to state-of-the-art technologies and latest trends to bridge gap between industrial practices and curriculum
- To understand the application of engineering knowledge to solve industrial problems
- To understand the process of industry
- To experience chemistry at work
- To become aware of the role of different people in industry
- To become aware of career opportunities
- To recognize the need for health and safety in the workplace

Name of Industry/Organization-	Date/Period of visit-
Mumbai Metro Rail Corporation, Bandra, (mmrc).	9/1/2020 - 4/2/2020

Please indicate your ratings using the scale 0 (low) through 3 (high)

Sr. No.	Feedback Parameter	PO Mapped	Your Ratings			
01	Technical knowledge Acquired	PO1	0	1	2	✓3
02	Understand and analyze real life problems	PO2	0	1	✓2	3
03	Working on modern tools	PO5	0	1	✓2	3
04	Awareness about industrial standards and safety norms	PO6	0	1	2	✓3
05	Understanding of industrial process and profession ethics	PO7	0	1	2	✓3
06	lifelong learning experience	PO12	0	1	✓2	3
07	Usefulness in understanding project design, prototyping and product development	PSO1, PSO2	0	1	2	✓3
08	Usefulness in enhancing understanding of subject		0	1	✓2	3
09	Support from the department		0	1	2	✓3
10	Interaction with trainer/facilitator		0	1	2	✓3
Total			26			

Any suggestion related to industrial visit/training to improve understanding of subject and bridge the gap between curriculum and recent trends

Training is important for understanding the recent trends as well as work with such organizat" for developing skills.

Name of student: Kanase Rajani N. Signature: Rajani

Figure B.2.2.5b: Sample Student Industrial training Feedback Form

CRITERIA 03	COURSE OUTCOMES AND PROGRAM OUTCOMES	120

Total Marks 110

3.1 Establish the correlation between the Courses and the Program Outcomes (PO) and Program Specific Outcomes (PSO) (20)

Institute Marks 18

The following are the program specific outcomes:

Program Specific Outcomes (PSOs)	
PSO1	Graduate will be able to identify, design, prototype and test electronics and communication systems using software and hardware tools.
PSO2	Graduate will be able to develop and support systems based on embedded, automation, microwave, signal and image processing.

3.1.1 Course Outcomes (COs): (05)

Institute Marks 05

COs of 06 courses, one per semester are listed in the following tables.

Table 3.1.1a: C202-Electronic Devices and Circuits: Year of study 2017-18

C202.1	Students will be able to design, build and test the JFET amplifier circuits.
C202.2	Students will be able to design, build and test small signal model of FET and MOSFET
C202.3	Students will be able to design and simulate MOSFET Circuits.
C202.4	Students will be able to design amplifiers, with and without feedback, & oscillators, for given specifications.
C202.5	Students will be able to design and analyze the performance of linear and switching regulators in power supplies.

Table B.3.1.1b: C212-Object Oriented Programming: Year of study 2017-18

C212.1	Students will be able to write C++ programs using basic language concepts.
C212.2	Students will be able to apply the concepts of data encapsulation, inheritance to write programs in C++
C212.3	Students will be able to write JAVA programs using basic language concepts.
C212.4	Students will be able to apply the concepts of classes, methods and inheritance to write programs in Java
C212.5	Students will be able to implement inheritance, packages and interfaces in Java.
C212.6	Students will be able to use the concepts of Multithreading, Exception handling & Applets in Java to develop user-friendly program.

Table B.3.1.1c: C308-Electronics System Design: Year of study 2018-19

C308.1	Students will be able to apply the fundamental concepts and working principles of electronics devices to design electronics systems.
C308.2	Students will be able to select appropriate transducer and signal conditioning circuit to design prototype of Data Acquisition system.
C308.3	Students will be able to design an electronic system/sub-system and validate its performance by simulating the same using EDA tools like MATLAB, Python, Lab-View, C#, .net, etc.
C308.4	Students will be able to create, manage the database and query handling using tool SQL.

Table B.3.1.1d: C313-Advance Processors: Year of study 2018-19

C313.1	Students will be able to compare the ARM microprocessor architectures and its feature.
C313.2	Students will be able to apply the knowledge of LPC 2148 microcontroller for Interfacing the advanced peripherals.
C313.3	Students will be able to design embedded system with available resources like I2C, SPI, UART, ADC and DAC

C313.4	Students will be able to apply the concepts of DSP for signal processing applications like convolution, DFT, FFT, FIR Filter, and Audio Signal processing.

Table B.3.1.1e: C403-Radiation and Microwave Techniques: Year of study 2019-20

C403.1	Students will be able to differentiate various performance parameters such as radiation pattern, directivity, gain, efficiency, half power beam width, bandwidth, polarization of radiating elements.
C403.2	Students will be able to analyze various radiating elements such as infinitesimal dipole, small dipole, finite length dipole and half wave length dipole and arrays
C403.3	Students will be able to apply the knowledge of waveguide fundamentals in design of transmission lines.
C403.4	Students will be able to evaluate a system consisting of various passive microwave components such as E-plane, H-plane and magic tee, isolator, circulator and directional coupler.
C403.5	Students will be able to analyze tube based and solid state active devices along with their applications.
C403.6	Students will be able to select a suitable microwave systems to measure S-parameters, frequency, power, attenuation, phase shift, VSWR, impedance.

Table B.3.1.1f: C412-Audio Video Engineering: Year of study 2019-20

C412.1	Students will be able to distinguish different video standards of analog and digital TV like NTSC, PAL, SECAM and display devices like CRT, OLED, LCD, Plasma, TFT
C412.2	Students will be able to analyze and distinguish different digital TV systems like HDTV, CCTV, CATV, 3D TV, IP TV, Mobile TV, Wi-Fi TV
C412.3	Students will be able to apply the principle of audio and video recording through CD/DVD player, MP3 player, Blue Ray DVD player and compression techniques
C412.4	Students will be able to apply the principle of acoustic fundamentals and acoustic systems

3.1.2 CO-PO Matrices of Courses Selected in section 3.1.1 (05) **Institute Marks 05**

(Six matrices to be mentioned; one per semester from 3rd to 8th semester)

CO-PO Matrices of the same 6 courses listed above are given in the following tables.

Table B.3.1.2a:C202-Electronic Devices and Circuits: Year of study 2017-18

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C202.1	3	3	2	2	-	-	-	-	-	-	-	-	2	-
C202.2	3	3	2	2	2	-	-	-	-	-	-	-	2	-
C202.3	3	3	2	2	2	-	-	-	-	-	-	-	2	-
C202.4	3	3	2	-	2	-	-	-	-	-	-	-	2	-
C202.5	3	3	2	2	-	-	-	-	-	-	-	2	2	-
Average	**3.0**	**3.0**	**2.0**	**2.0**	**2.0**	**-**	**-**	**-**	**-**	**-**	**-**	**2.0**	**2.0**	**-**

Table B.3.1.2b: C212-Object Oriented Programming: Year of study 2017-18

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212.1	3	2	2	-	3	-	-	-	-	-	-	2	-	-
C212.2	3	2	2	2	3	-	-	-	-	-	-	-	-	-
C212.3	3	2	2	-	3	-	-	-	-	-	-	2	-	-
C212.4	3	2	-	-	3	-	-	-	-	-	-	-	-	-
C212.5	3	2	-	-	3	-	-	-	-	-	-	-	-	-
C212.6	3	2	2	-	3	-	-	-	-	-	-	2	-	-
Average	**3.0**	**2.0**	**2.0**	**2.0**	**3.0**	**-**	**-**	**-**	**-**	**-**	**-**	**2.0**	**-**	**-**

Table B.3.1.2c: C308-Electronics System Design: Year of study 2018-19

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C308.1	3	3	3	2	-	-	-	-		3	-	2	-	-
C308.2	3	3	3	2	-	-	-	-	3	3	-	2	-	-
C308.3	3	3	3	2	3	-	-	-	3	3	-	2	3	3
C308.4	-	-	-	-	3	-	-	-		3	-		3	
Average	**3.0**	**3.0**	**3.0**	**2.0**	**3.0**	**-**	**-**	**-**	**3.0**	**3.0**	**-**	**2.0**	**3.00**	**3.0**

Table B.3.1.2d: C313-Advance Processor: Year of study 2018-19

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C313.1	3	-	-	-	-	-	-	-	-	-	-	-	-	-
C313.2	3	3	-	-	-	-	-	-	-	-	-	-	-	-
C313.3	3	3	3	2	2	-	-	-	-	-	-	2	2	-
C313.4	3	3				-	-	-	-	-	-	-	-	-
Average	**3.0**	**3.0**	**3.00**	**2.0**	**2.0**	-	-	-	-	-	-	**2.0**	**2.0**	-

Table B.3.1.2e: C403-Radiation & Microwave Techniques: Year of study 2019-20

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C403.1	3	3	3	-	-	-	-	-	-	-	-	-	-	-
C403.2	3	3	2	-	2	-	2	-	2	-	-	2	-	2
C403.3	3	2	-	-	-	-	-	-	-	-	-	-	-	-
C403.4	3	3	-	-	-	-	-	-	-	-	-	-	-	-
C403.5	3	3	-	-	-	-	-	-	-	-	-	-	-	-
C403.6	3	2	-	-	-	-	-	-	-	-	-	-	-	-
Average	**3.00**	**2.6**	**2.50**	**-**	**2.0**	**-**	**2.0**	**-**	**2.0**	**-**	**-**	**2.0**	**-**	**2.00**

Table B.3.1.2f: C412-Audio Video Engineering: Year of study 2019-20

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C412.1	3	3	2	2	2	-	-	-	-	-	-	2	-	-
C412.2	3	3	-	-	-	-	-	-	-	-	-		-	-
C412.3	3	2	-	-	-	-	-	2	2	2	-	-	-	-
C412.4	3	-	-	-	-	2	2	-	-	-	-	-	-	-
Average	**3**	**2.66**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	-	**2**	-	-

3.1.3 Program Level Course-PO Matrix of all Courses Including First Year Courses (10)

Institute Marks 08

From the CO-PO matrix of each course, the average of POs for that course was calculated. The same procedure was adopted for all courses in Electronics and Telecommunication Engineering Program and listed in the following table.

Table B.3.1.3a: Course-PO matrix of all courses for FE (AY: 2014-15) to BE (AY: 2017-18)

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	2.67	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C102	3.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C103	3.00	2.00	2.00	-	2.00	-	-	-	-	-	-	-	-	-
C104	3.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C105	3.00	2.00	2.00	-	2.00	2.00	2.00	-	-	-	-	1.60	-	-
C106	2.33	2.00	2.00	-	-	-	-	3.00	-	1.83	-	2.00	-	-
C107	3.00	-	-	-	-	-	-	-	2.00	-	-	-	-	-
C108	2.67	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C109	2.67	2.33	-	-	-	-	-	-	-	-	-	-	-	-
C110	3.00	2.00	2.00	-	2.00	-	-	-	-	-	-	-	-	-
C111	3.00	3.00		-	2.00	-	-	-	2.00	-	-	1.00	-	-
C112	1.75	1.75	1.00	-	-	-	-	-	-	-	-	-	-	-
C113	3.00	3.00	-	-	-	-	-	-	-	-	-	-	-	-
C114	3.00	2.00	1.00	-	2.00	-	-	-	1.00	-	-	1.00	-	-
C201	3.00	2.50	-	-	1.00	-	-	-	-	-	-	2.00	-	-
C202	3.00	2.80	2.00	2.00	2.00	-	-	-	-	-	-	2.00	-	-
C203	3.00	2.50	-	-		-	-	-	-	-	-	2.00	-	-
C204	2.67	2.00	1.67	-	3.00	-	-	-	-	-	-	2.00	-	-
C205	3.00	2.67	2.25	2.00	2.00	-	-	-	-	-	-	2.00	-	-
C206	2.67	2.50	-	-	2.00	2.00	-	-	-	1.67	-	2.00	-	-
C207	3.00	2.60	-	-	-	-	-	-	-	-	-	-	-	-
C208	2.80	2.50	2.00	-	-	-	-	-	-	-	-	-	-	-
C209	2.80	2.00	-	-	-	-	-	-	-	-	-	2.00	-	-
C210	3.00	2.00	-	-	2.00	-	-	-	-	1.67	-	-	-	-
C211	2.50	2.00	-	-		-	-	-	-	-	-	-	-	-
C212	3.00	1.83	1.67	-	3.00	-	-	-	-	-	-	2.00	-	-
C213	-	-	-	-	-	-		2.50	3.00	3.00	2.00	2.00	-	-
C301	2.75	2.00	-	-	-	-	-	-	-	-	-	2.00	-	-
C302	3.00	2.50	2.50	1.50	-	-	-	-	-	-	-	-	2.00	2.50
C303	3.00	3.00	2.50	-	-	-	-	-	-	-	-	-	2.00	3.00
C304	2.83	2.00	-	-	-	-	-	-	-	-	-	-	-	-

C305	2.75	2.00	2.00	-	-	-	-	-	-	-	-	-	-	-
C306	3.00	2.75	3.00	2.00	3.00	-	-	-	-	-	-	-	2.00	2.00
C307	2.50	2.25	2.33	1.67	2.00	-	-	-	-	-	-	1.00	2.00	2.00
C308	3.00	3.00	3.00	2.00	3.00	-	-	-	2.33	3.00	-	2.00	2.00	2.33
C309	2.50	1.67	2.00	-	-	-	-	-	-	-	-	-	-	-
C310	2.50	2.50	-	-	-	2.00	2.00	-	-	-	-	-	-	-
C311	3.00	2.33	2.00	2.00	-	-	-	-	-	-	-	2.00	2.00	2.00
C312	-	-	-	-	-	3.00	2.00	2.00	3.00	2.00	2.00	2.00	-	-
C313	3.00	3.00	2.33	-	-	-	-	-	-	-	-	-	2.00	-
C314	2.80	2.25	2.25	2.00	3.00	2.00	2.00	-	-	-	-	-	-	-
C315	3.00	2.60	2.25	2.00	2.00	-	-	-	-	-	-	2.00	2.00	2.00
C316	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.33	2.50	3.00	1.50	2.00	3.00	3.00
C401	3.00	2.33	2.00	-	-	-	-	-	-	-	-	-	-	-
C402	2.83	2.00	-	-	-	-	-	1.00	-	-	-	-	-	-
C403	3.00	2.00	2.00	2.00	-	-	-	-	2.00	-	-	2.00	3.00	2.00
C404a	2.75	3.00	2.00	-	-	-	-	-	-	-	-	-	2.00	2.00
C404b	3.00	2.00	2.00	-	-	-	-	-	-	-	-	-	-	-
C405	3.00	2.00	2.00	-	-	2.00	-	-	-	-	-	-	-	-
C406	2.60	2.00	2.00	-	2.00	-	-	-	-	-	-	-	2.00	3.00
C407	3.00	2.50	2.00	1.67	2.33	-	-	-	-	-	-	2.00	3.00	3.00
C408	3.00	3.00	3.00	3.00	3.00	2.00	2.00	3.00	3.00	3.00	2.00	2.00	2.00	2.00
C409	2.75	2.00	-	-	-	-	2.00	-	-	-	-	-	-	-
C410	2.83	2.60	3.00	-	-	2.00	2.00	1.00	-	-	-	-	2.00	2.00
C411	2.00	2.00	1.50	-	-	-	-		-	-	-	-	-	-
C412	2.50	2.00	-	-	-	-	-	1.00	-	-	-	-	-	-
C413	3.00	3.00	-	-	-	-	-		-	-	-	-	2.00	2.50
C414	3.00	2.50	2.00	-	2.00	-	-	-	-	-	-	2.00	-	2.00
C415	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Average	**2.83**	**2.34**	**2.18**	**2.13**	**2.33**	**2.30**	**2.22**	**2.09**	**2.38**	**2.46**	**2.10**	**1.94**	**2.24**	**2.37**

The average program level course-PO matrix is considered as PO and PSO target while calculating PO attainment the first time. For the next batch, the PO target is set as the maximum value between PO target and PO attainment of the previous batch for respective PO and PSO

Table B.3.1.3b: Course-PO matrix of all courses for FE (AY: 2015-16) to BE (AY: 2018-19)

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	2.67	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C102	3.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C103	3.00	2.00	2.00	-	2.00	-	-	-	-	-	-	-	-	-

C104	3.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C105	3.00	2.00	2.00	-	2.00	2.00	2.00	-	-	-	-	1.60	-	-
C106	2.33	2.00	2.00	-	-	-	-	3.00	-	1.83	-	2.00	-	-
C107	3.00	-	-	-	-	-	-	-	2.00	-	-	-	-	-
C108	2.67	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C109	2.67	2.33	-	-	-	-	-	-	-	-	-	-	-	-
C110	3.00	2.00	2.00	-	2.00	-	-	-	-	-	-	-	-	-
C111	3.00	3.00	-	-	2.00	-	-	-	2.00	-	-	1.00	-	-
C112	1.75	1.75	2.00	-	-	-	-	-	-	-	-	-	-	-
C113	3.00	3.00	-	-	-	-	-	-	-	-	-	-	-	-
C114	3.00	2.00	1.00	-	2.00	-	-	-	1.00	-	-	1.00	-	-
C201	3.00	2.75	-	-	1.00	-	-	-	-	-	-	2.00	-	-
C202	3.00	3.00	2.00	2.00	2.00	-	-	-	-	-	-	-	2.00	-
C203	3.00	3.00	3.00	2.00		-	-	-	-	-	-	-	-	-
C204	3.00	2.20	2.00	2.25	3.00	-	-	-	-	-	-	2.00	-	-
C205	3.00	2.60	3.00	3.00	2.00	-	-	-	-	2.00	-	3.00	3.00	2.00
C206	3.00	3.00	3.00	3.00	2.00	2.00	-	-	-	3.00	-	3.00	3.00	3.00
C207	-	-	-	-	-	-	-	-	-	3.00	-	3.00	-	-
C208	3.00	2.40	-	-	-	-	-	-	-	-	-	2.00	-	-
C209	3.00	3.00	2.20	2.00	-	-	-	-	-	-	-	-	3.00	-
C210	3.00	2.50	-	-	-	-	-	-	-	-	-	2.00	-	-
C211	3.00	2.67	-	-	2.00	-	-	-	-	-	-	-	2.00	-
C212	3.00	2.00	2.00	2.00	3.00	-	-	-	-	-	-	2.00	-	-
C213	-	-	-	-	-	-	-	3.00	3.00	3.00	3.00	3.00	-	-
C214	-	-	-	-	-	-	-	-	-	3.00	-	3.00	-	-
C301	3.00	2.00	-	-	-	-	-	-	-	-	-	2.00	-	-
C302	3.00	3.00	3.00	1.50	-	-	-	-	-	-	-	-	2.33	2.50
C303	3.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C304	3.00	3.00	2.50	-	-	-	-	-	-	-	-	-	2.00	2.00
C305	3.00	2.75	2.00	-	-	2.00	-	-	-	-	3.00	-	3.00	3.00
C306	3.00	2.80	3.00	3.00	2.75	-	-	-	-	-	-	-	2.00	2.00
C307	3.00	3.00	3.00	2.00	2.00	2.00	-	-	-	-	-	2.00	2.00	2.00
C308	3.00	3.00	3.00	2.00	3.00	-	-		2.50	3.00	-	2.00	3.00	3.00
C309	-	-	-	-	-	-	-	-	-	3.00	-	3.00	-	-
C310	3.00	3.00	3.00	-	-	-	-	-	-	-	-	-	2.00	-
C311	3.00	2.00	2.50	-	-	-	-	-	-	-	-	2.00	-	-
C312	-	-	-	-	-	2.00	2.00	2.00	3.00	2.00	3.00	2.67	-	-
C313	3.00	3.00	3.00	2.00	-	-	-	-	-	-	-	2.00	-	-
C314	3.00	2.00	2.00	-	-	-	-	-	-	-	-	-	-	-
C315	3.00	2.60	2.00	2.00	3.00	-	-	-	-	-	-	-	2.00	2.00
C316	2.80	2.60	2.67	2.00	2.20	-	-	-	-	-	-	2.00	2.00	2.00
C317	3.00	3.00	3.00	3.00	3.00	2.00	2.00	2.00	3.00	3.00	2.00	2.00	3.00	3.00

C318	-	-	-	-	-	-	-	-	-	3.00	-	3.00	-	-
C401	3.00	2.80	3.00	-	-	-	-	-	-	-	-	-	-	-
C402	3.00	2.00	-	-	-	-	-	1.00	-	-	-	-	-	-
C403	3.00	2.67	-	-	-	-	-	-	-	-	-	-	-	-
C404a	3.00	3.00	2.33	-	-	-	-	-	-	-	-	-	-	-
C404b	3.00	3.00	3.00	3.00	-	-	-	-	-	-	-	-	-	-
C405	3.00	2.00	2.00	-	-	2.00	-	-	-	3.00	2.00	2.33	-	-
C406	3.00	2.20	2.00	2.00	2.00	-	-	-	-	-	-	2.00	2.00	2.00
C407	3.00	2.67	2.00	2.00	2.67	-	-	-	-	-	-	-	2.67	2.83
C408	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00	2.00	2.00
C409	-	-	-	-	-	3.00	3.00	-	-	-	3.00	-	-	-
C410	3.00	3.00	-	-	-	-	2.00	-	-	-	-	-	-	-
C411	3.00	2.83	2.33	-	-	-	-	-	-	-	-	2.00	-	-
C412	3.00	3.00	-	-	-	3.00	2.00	-	-	-	-	3.00	-	-
C413	2.83	2.00	2.00	-	-		2.00	1.00	-	-	-	-	-	-
C414	3.00	2.80	3.00	2.00	2.00	3.00	2.00	-	-	-	-	-	2.00	2.50
C415	3.00	2.50	2.50	2.25	2.33	-	2.00	-	-	-	-	3.00	-	-
C416	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C417	-	-	-	-	-	3.00	3.00	-	-	-	-	3.00	-	-
Average	**2.94**	**2.54**	**2.45**	**2.32**	**2.35**	**2.46**	**2.33**	**2.25**	**2.50**	**2.77**	**2.75**	**2.30**	**2.40**	**2.43**

Table B.3.1.3c: Course-PO matrix of all courses for FE (AY: 2016-17) to BE (AY: 2019-20)

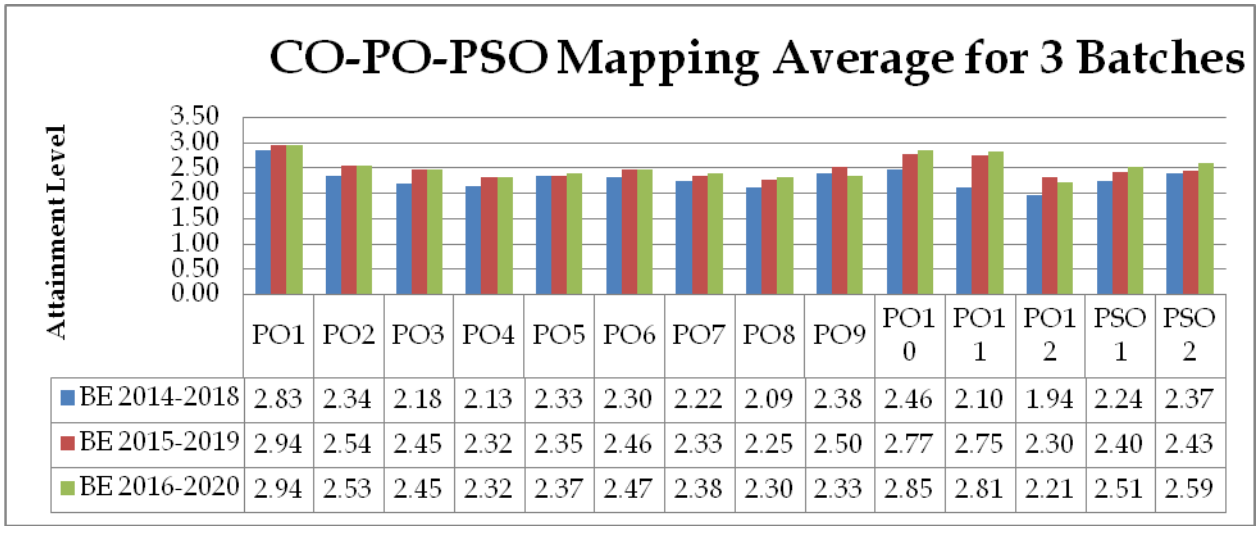
Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	2.67	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C102	3.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C103	3.00	2.00	2.00	-	2.00	-	-	-	-	-	-	-	-	-
C104	3.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C105	3.00	2.00	2.00	-	2.00	2.00	2.00	-	-	-	-	1.60	-	-
C106	2.33	2.00	2.00	-	-	-	-	3.00	-	1.83	-	2.00	-	-
C107	3.00	-	-	-	-	-	-	-	2.00	-	-	-	-	-
C108	2.67	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C109	2.67	2.33	-	-	-	-	-	-	-	-	-	-	-	-
C110	3.00	2.00	2.00	-	2.00	-	-	-	-	-	-	-	-	-
C111	3.00	2.00	-	-	2.00	-	-	-	1.00	-	-	1.00	-	-
C112	1.75	1.75	2.00	-	-	-	-	-	-	-	-	-	-	-
C113	2.67	2.33	2.00	-	-	-	2.00	-	-	-	-	1.00	-	-
C114	3.00	2.00	1.00	-	2.00	-	-	-	1.00	-	-	1.00	-	-
C201	3.00	2.75	-	-	1.00	-	-	-	-	-	-	2.00	-	-
C202	3.00	3.00	2.00	2.00	2.00	-	-	-	-	-	-	-	2.00	-
C203	3.00	3.00	3.00	2.00	-	-	-	-	-	-	-	-	-	-

C204	3.00	2.20	2.00	2.25	3.00	-	-	-	-	-	-	2.00	-	-
C205	3.00	2.60	3.00	3.00	2.00	-	-	-	-	-	-	3.00	3.00	2.00
C206	3.00	3.00	3.00	3.00	2.00	2.00	-	-	-	3.00	-	3.00	3.00	3.00
C207	-	-	-	-	-	-	-	-	-	3.00	-	3.00	-	-
C208	3.00	2.40	-	-	-	-	-	-	2.00	-	-	2.00	-	-
C209	3.00	3.00	2.20	2.00	-	-	-	-	-	-	-	-	3.00	-
C210	3.00	3.00	-	-	-	-	-	-	-	-	-	2.00	-	-
C211	3.00	2.67	-	-	3.00	-	-	-	-	-	-	-	2.00	-
C212	3.00	2.00	2.00	2.00	3.00	-	-	-	-	-	-	2.00	-	-
C213	-	-	-	-	-	-	-	3.00	3.00	3.00	3.00	3.00	-	-
C214	-	-	-	-	-	-	-	-	-	3.00	-	3.00	-	-
C301	3.00	2.00	-	-	-	-	-	-	-	-	-	2.00	-	-
C302	3.00	3.00	3.00	2.00	-	-	-	-	-	-	-	-	2.33	2.50
C303	3.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C304	3.00	3.00	3.00	-	-	-	-	-	-	-	-	-	2.00	2.00
C305	3.00	2.75	2.00	-	-	2.00	-	-	-	-	3.00	-	3.00	3.00
C306	3.00	2.80	3.00	3.00	3.00	-	-	-	-	-	-	-	2.00	2.00
C307	3.00	3.00	3.00	2.00	3.00	3.00	-	-	-	-	-	2.00	2.00	2.50
C308	3.00	3.00	3.00	2.00	3.00	-	-	-	3.00	3.00	-	2.00	3.00	3.00
C309	-	-	-	-	-	-	-	-	-	3.00	-	3.00	-	-
C310	3.00	3.00	3.00	-	-	-	-	-	-	-	-	-	2.00	-
C311	3.00	2.50	2.50	-	-	-	-	-	-	-	-	2.00	-	-
C312	-	-	-	-	-	3.00	2.00	2.00	3.00	3.00	3.00	2.67	-	-
C313	3.00	3.00	3.00	2.00	2.00	-	-	-	-	-	-	2.00	2.00	-
C314	3.00	2.25	3.00	-	-	-	-	-	-	-	-	-	-	-
C315	3.00	2.60	2.00	2.00	3.00	-	-	-	-	-	-	-	3.00	2.00
C316	2.80	2.60	2.67	2.00	2.40	-	-	-	-	-	-	2.00	2.50	2.67
C317	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.67	3.00	3.00	2.50	2.00	3.00	3.00
C318	-	-	-	-	-	-	-	-	-	3.00	-	3.00	-	-
C401	3.00	2.80	2.67	-	1.67	-	-	-	-	-	-	2.00	-	-
C402	3.00	2.00	-	-	-	1.00	1.00	1.00	-	-	-	-	2.00	-
C403	3.00	2.67	2.50	-	2.00	-	2.00	-	2.00	-	-	2.00	-	2.00
C404	3.00	3.00	3.00	3.00	-	-	-	-	-	-	-	-	-	-
C405a	3.00	2.00	2.00	-	-	3.00	-	-	-	3.00	2.00	2.33	-	-
C405b	3.00	3.00	2.00	2.00	-	1.00	1.00	-	-	-	-	2.00	-	-
C406	3.00	2.20	2.00	2.00	2.00	-	-	-	-	-	-	2.00	2.00	2.00
C407	3.00	2.50	2.00	2.00	3.00	-	-	-	-	-	-	-	3.00	3.00
C408	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00	3.00	3.00
C409	-	-	-	-	-	3.00	3.00	-	-	-	3.00	-	-	-
C410	3.00	3.00	-	-	-	-	3.00	-	-	-	-	-	-	-
C411	3.00	2.83	2.33	-	-	-	-	-	-	-	-	2.00	-	-
C412	3.00	2.67	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	-	2.00	-	-

C413a	2.83	2.00	2.00	-	-	-	2.00	1.00	-	-	-	-	-	-
C413b	3.00	3.00	-	2.00	-	-	-	-	-	-	-	-	3.00	3.00
C414	3.00	2.80	3.00	2.50	2.00	3.00	3.00	-	-	-	-	-	2.00	3.00
C415	3.00	2.50	2.50	2.25	2.33	-	3.00	-	-	-	-	3.00	-	-
C416	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C417	-	-	-	-	-	3.00	3.00	-	-	-	-	3.00	-	-
Average	**2.94**	**2.53**	**2.45**	**2.32**	**2.37**	**2.47**	**2.38**	**2.30**	**2.33**	**2.85**	**2.81**	**2.21**	**2.51**	**2.59**

Table B.3.1.3d: Course-PO matrix of all courses from FE (AY: 2014-15) to BE (AY: 2019-20)

Batch	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
BE 2014-2018	2.83	2.34	2.18	2.13	2.33	2.30	2.22	2.09	2.38	2.46	2.10	1.94	2.24	2.37
BE 2015-2019	2.94	2.54	2.45	2.32	2.35	2.46	2.33	2.25	2.50	2.77	2.75	2.30	2.40	2.43
BE 2016-2020	2.94	2.53	2.45	2.32	2.37	2.47	2.38	2.30	2.33	2.85	2.81	2.21	2.51	2.59



3.2 Attainment of Course Outcome (50) **Institute Marks 46**

3.2.1 Describe the Assessment Processes Used to Gather the Data Upon which the Evaluation of Course Outcome is Based (10) **Institute Marks 10**

Course outcomes for the entire courses are defined and they are 3 to 6 in number. The curriculum of E&TC Engineering is affiliated to Savitribai Phule Pune University (SPPU) Pune, external assessment is done as per the evaluation scheme of the university and internal assessment is done as per the policy of the program. The evaluation of course outcome is based on data gathered through internal and external assessment.

The direct method used for the evaluation of each CO consists of external assessment and internal assessment. 80% Weightage is given for external assessment and 20% weightage is given for internal assessment. The table B.3.2.1a enlists the direct assessment tools used to gather the data upon which the evaluation of Course Outcome is based. Table B.3.2.1b gives the direct assessment process.

Table B: 3.2.1.a- Direct assessment tools used to gather the data upon which the evaluation of course outcome is based

Direct Assessment Tools (80%)	
Internal Assessments (20%)	**External Assessment (SPPU Exam) (80%)**
Internal Test/Class Test	SPPU Theory examination
Assignment/Tutorials	
Comprehensive Mock Oral/Practical Exam	SPPU Practical/Oral Exam
Practical Assessments (Continuous assessment)	SPPU Term Work
Project internal review	SPPU mini/major project

Table B: 3.2.1.b- Data Collection Processes for Direct Assessment

Assessment Tool	**Process**	**Assessment Scheme**
Internal tests serve to encourage students to keep up with course content covered in class. The written examinations are conducted and their marks are considered for CO assessment. This type of performance assessment is carried out during the internal examination (Unit test and Prelim Exam). Each and every examination is focused on attaining the course outcomes.		

Internal Test/ Class Test	• The course teacher prepares Questions paper from a question bank (mapped with COs) according to Learning Levels for the respective course, considering COs to be assessed through internal examination. • While preparing the question paper, the course teacher considers various aspects of the learning abilities like Solving, analyzing the problems. • The course teacher evaluates the Answer sheets and returns them to the students for self-evaluation. Students interact with the course teacher after self-evaluation for one to one discussions. Students Submit the Answer sheet after self-evaluation and discussion. • The course teacher prepares the CO Wise (Questions are already mapped with COs) data sheet, analyze it and based on the performance of the student, the Course teacher suggests improvements to students, if any. • The course Teacher calculates the CO attainment as per criteria. After analyzing COs attainment, the course teacher prepares an Action plan for improvement	Test Conducted as Internal Examination. Question is selected as per COs that to be assessed: 1) Unit Test - I based on unit I and II (SE class) and based on unit I, II, III (TE & BE class) to assess related COs for 25 Marks(SE) and 30 Marks (TE) 2) Prelim Examinations based on unit I to VI to assess related COs for Marks 50 (SE) and 70 (TE and BE)
Assignment/ Tutorial are given regularly to assess the course outcome. Content or challenging task is given as an assignment or self-study which students either have to perform in a group or individuals or have to submit a report to the teacher. Students are also expected to interact with the teacher for assistance or guidance.		
Assignment/ Tutorials	• At the starting of the semester, the course teacher prepares assignments/tutorials according to learning levels for respective courses, considering COs to be assessed through assignments/tutorials. • While preparing the question bank, the course teacher considers various aspects of the learning levels and tools like formulating and analyzing the problems, use of modern tools, complex engineering problems, etc.	Marks are assigned as per the learning level of the task using rubrics. These marks are taken for assessment.

	• The course teacher prepares rubrics for assignments and conveys the same to students along with the Assignment. • The course teacher evaluates the assignments. Students interact with the course teacher after self-evaluation for one to one discussion and submit the assignments after self-evaluation and discussion. • The course teacher prepares the CO wise (Questions are already mapped with COs) datasheet, analyses it and based on the performance of the student, the Course teacher suggests improvements to students, if any. • The course teacher prepares the assignment analysis and CO attainment. After analyzing CO attainment, the course teacher prepares an action plan for improvement.	
The internal assessment marks for a laboratory are based on the design and implementation of experiments, observation, reading and data interpretation, organization of report and timely submission. In most laboratories, a task is assigned to a group of three to four students. Teachers provide necessary instructions, precautions and safety measures needed during experimentations. During experiments, teachers interact with group to assess the group and also provide necessary assistance if needed. These marks are also used to calculate the Term work marks of students.		
Continuous Assessment through Laboratory performance	• At the starting of the semester, while preparing the course plan for the laboratory session, all experiments mapped with respective COs by the course teacher. • The course teacher records his observation and evaluates the students based on the few criteria as per rubrics. • After conducting experiments, the course teacher again interacts with a group of students for evaluation of other criteria based on rubrics. • The course teacher prepares the CO wise data sheet, analyses it and based on the performance of the student, the course teacher suggests improvements to students, if any.	Marks are assigned as per the criterion using a rubric. These marks are taken for Term Work assessment.

	• These marks are also used to calculate the Term work marks of students. • Course Teachers calculate the CO attainment as per criterion. After analyzing CO attainment, the course teacher prepares an Action plan for improvement.	
To assess the communication of students, an internal mock oral examination based on desired COs is conducted. Questions are framed and mapped with COs which helps teachers for direct assessment of Mock Oral/Practical Examinations. Questions are framed based on the learning levels.		
Mock Oral/Practical Exam Evaluation	• At the starting of the semester, the course teacher prepares a Question bank (key point), mapping with COs for mock oral exams according to learning levels for respective courses, considering all COs. • During mock Oral examination, course teachers record the performance of students. • The course teacher prepares the CO wise (Questions are already mapped with COs) datasheet, analyzes it and based on the performance of the student, the Course teacher suggests improvements to students, if any. • The course teacher prepares the analysis of Mock Oral and CO attainment. After analyzing CO attainment, the course teacher prepares an action plan for improvement.	The mock oral examination is assessed for 10 Marks. These Marks are also considered for calculation of Term Work Marks. Direct marks are assigned as Questions are framed to check the ability to communicate the learning for the course.
The internal assessment marks in the case of seminars/projects shall be based on the evaluation as per rubrics prepared by the Examiners/Reviewers committee comprising of faculty members in the domain. Considering the requirement of Project review for stage I and II, the criterion of rubrics.		
Major Project/Seminar Evaluation	• The activity coordinator plan and conduct the internal reviews as per the schedule. • The examiner's panel along with the guide assesses students based on rubrics and criterion of assessment. • The activity coordinator compiles the assessment and calculates CO attainment.	Four internal reviews per semester for Project are conducted as per the Marks allotted based on the assessment sheet: For Project Stage – I

		review: 50 Marks Project Stage – II review : 150 Marks These Marks are considered for Project Term work Calculations.
As our institute, Pimpri Chinchwad College of Engineering & Research, Ravet, Pune (PCCOER) is affiliated with Savitribai Phule Pune University (SPPU) we follow External assessment examination conducted as per SPPU. SPPU conducts the following Examinations viz.		
SPPU Online Examinations	• Some Courses of FE and SE have online examinations that students have to attempt in 1 hrs duration. • The questions of online examination will be prepared by the chairman and paper setters appointed by SPPU. • Online examination questions are of multiple choice with each question having four options. • Evaluation of the examination is done by the software system immediately.	Online Examination: MCQ Based Phase I: 25 Marks Phase II: 25 Marks
SPPU (External) Theory examination (INSEM + ENDSEM).	• Theory examination is focused on the attainment of course outcomes through descriptive exams for the respective theory subjects. • The question paper of the end semester examination is prepared by the chairman and paper setters appointed by SPPU. • The end semester examination contains subjective questions. • Evaluation of examination is done by a panel of examiners appointed by the University.	In Sem Theory Exam: 30 Marks (TE & BE) End Sem Theory Exam: 50 Marks (SE), 70 Marks (TE & BE)
SPPU (External) Oral	• The oral examination focuses on viva-voce (Communication) for attaining their respective course outcomes.	Marks assessed by an external examiner appointed by SPPU.

examination	• Some courses are evaluated with the help of oral examination. • Oral examination questions are based on theory and practical syllabus given by SPPU. • Evaluation of the examination is based on the answers given by the students by the external examiner appointed by SPPU.	Marks: 50
SPPU (External) Practical examination	• The practical examination focuses on the conduction of experiments and viva-voce for attaining their respective course outcomes. • The practical examination is based on the assignments suggested by SPPU in the syllabus. • Evaluation of practical examination is done by the internal and external examiners appointed by the SPPU. • The evaluation is based on the performance of the student in the practical examination.	Marks assessed by an external examiner appointed by SPPU. Marks: 50
Termwork	• Some courses have external term work examination as per the SPPU curriculum. • The termwork marks are given to students by an external examiner appointed by SPPU as per the attendance, performance, journal, mock examination, etc.	For SE to TE termwork marks assessed by Course Teachers based on internal assessment. For BE final year examination, assessed by the external examiner appointed by SPPU Marks: 50 Marks
SPPU Project/ Seminar Examination	Evaluation of project and seminar examination is done by the internal and external examiners appointed by the SPPU.	Termwork for project of 150 Marks evaluated through internal reviews.

		Marks assessed by an external examiner appointed by SPPU. Marks:50

The Course End Survey is considered as an assessment tool for BE 2015-2019 Batch onwards under indirect assessment. 20% Weightage is given to course end survey and 80 % Weightage is given to direct course attainment done using above mentioned tools.

Attainment of Course Outcome:

Process of target marks setting and CO attainment is shown in figure B.3.2.1a.

Target marks are the same for internal and external assessment.

The criterion for Assessment:

Attainment Level 1:>=40 to <50% students scoring greater than or equal to target marks.

Attainment Level 2: >=50 to <60% students scoring greater than or equal to target marks.

Attainment Level 3:>= 60% students scoring greater than or equal to target marks.

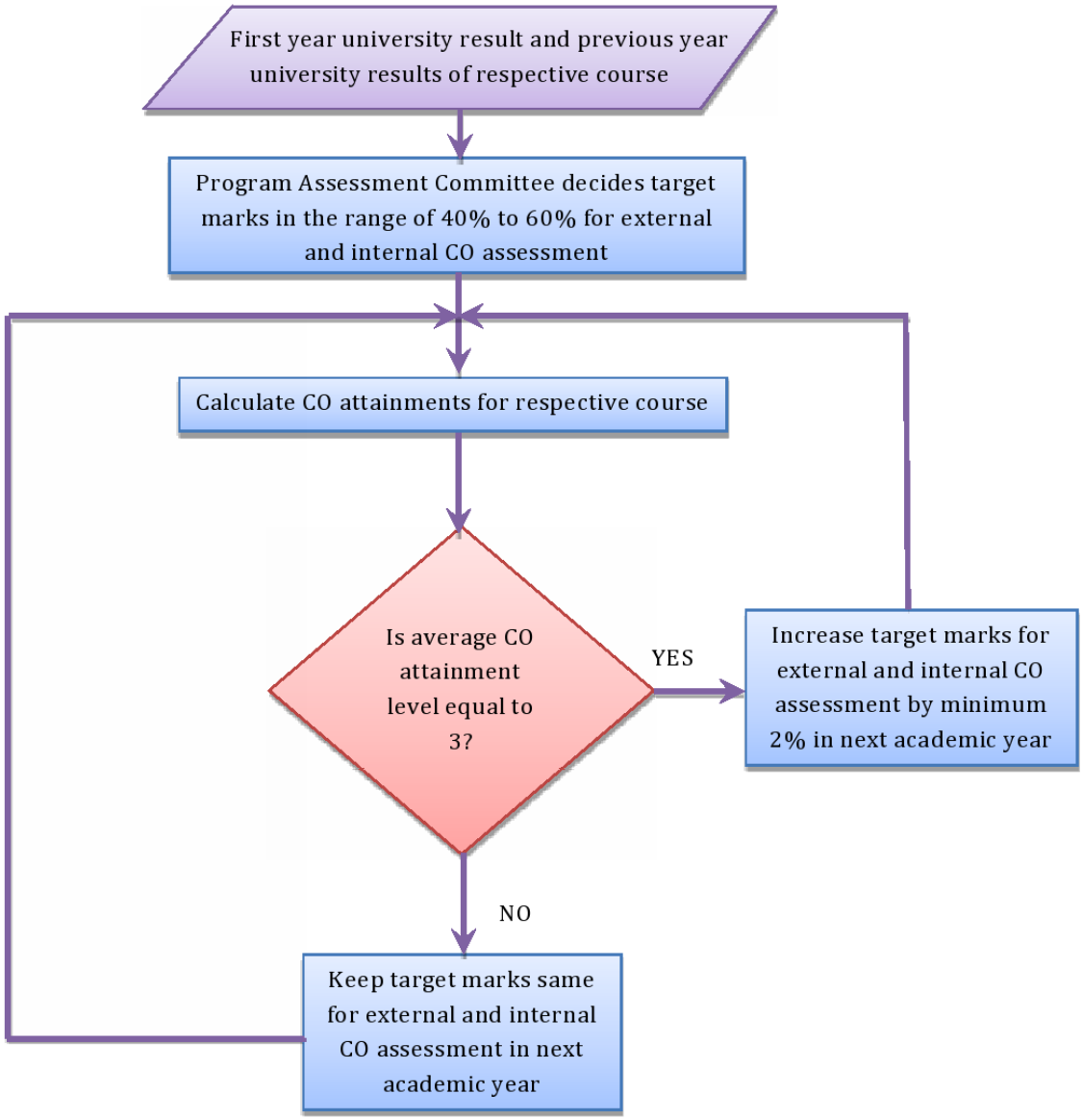


Figure B.3.2.1a: Process of target marks setting and CO attainment

3.2.2 Record the Attainment of Course Outcomes of all Courses with Respect to Set Attainment Levels (40)

Institute Marks 36

The attainment of course outcomes for each course is calculated and recorded in the course information sheet, which is prepared for each course of the program. The course information sheet includes brief information of the course, delivery methods, course outcomes, program outcomes, program specific outcomes and program educational objectives. It also includes mapping of COs with POs and PSOs. Target is set for the course and attainment of each CO is calculated based on this the average course attainment is calculated. During the calculation, 80% weightage is given to the External Assessment and 20% weightage given to the internal assessment. External assessment consists of university theory examinations, Oral examinations and practical examinations whereas Internal Assessment consists of term work, assignment and unit tests, etc. If the target of CO attainment level is not achieved for a particular course, then the respective faculty member will suggest an action plan for the next academic year to improve the course attainment. If the target of the attainment level is achieved, the target marks for the next academic year should be increased by the respective staff according to the difficulty level of the subject. The course information sheet mentions the targets set for internal assessments as well as those for external assessments and the details of calculations for the attainment of course outcomes.CO attainment target is set as level 3 for all courses.

Table B.3.2.2a: CO Attainment for 2014 to 2018 Batch

Sr. No.	Course Name	CO No.	External Assessment (80%)		Internal Assessment (20%)		CO Attainment = (0.8*A) + (0.2*B)
			Attainment in %	Attainment Level (A)	Attainment in %	Attainment Level(B)	
1	Engineering Mathematics I	C101.1	50.00	1.50	33.33	1.00	1.40
		C101.2	50.00	1.50	33.33	1.00	1.40
		C101.3	50.00	1.50	50.00	1.50	1.50
		C101.4	50.00	1.50	50.00	1.50	1.50
		C101.5	0.00	0.00	66.67	2.00	0.40
		C101.6	0.00	0.00	50.00	1.50	0.30
2	Engineering Physics	C102.1	83.33	2.50	33.33	1.00	2.20
		C102.2	83.33	2.50	50.00	1.50	2.30
		C102.3	66.67	2.00	50.00	1.50	1.90
		C102.4	66.67	2.00	50.00	1.50	1.90
3	Fundamentals	C103.1	100.00	3.00	100.00	3.00	3.00

	of Programming Language -I	C103.2	100.00	3.00	100.00	3.00	3.00
		C103.3	100.00	3.00	100.00	3.00	3.00
		C103.4	100.00	3.00	100.00	3.00	3.00
4	Basic Electrical Engineering	C104.1	83.33	2.50	33.33	1.00	2.20
		C104.2	83.33	2.50	50.00	1.50	2.30
		C104.3	66.67	2.00	50.00	1.50	1.90
		C104.4	66.67	2.00	50.00	1.50	1.90
5	Basic Civil and Environmental Engineering	C105.1	100.00	3.00	89.00	2.67	2.93
		C105.2	100.00	3.00	89.00	2.67	2.93
		C105.3	100.00	3.00	100.00	3.00	3.00
		C105.4	100.00	3.00	100.00	3.00	3.00
		C105.5	100.00	3.00	100.00	3.00	3.00
		C105.6	100.00	3.00	100.00	3.00	3.00
6	Engineering Graphics-I	C106.1	50.00	1.50	0.00	0.00	1.20
		C106.2	50.00	1.50	0.00	0.00	1.20
		C106.3	100.00	3.00	0.00	0.00	2.40
		C106.4	100.00	3.00	0.00	0.00	2.40
		C106.5	100.00	3.00	0.00	0.00	2.40
		C106.6	100.00	3.00	0.00	0.00	2.40
7	Workshop Practices	C107.1	NA	NA	100.00	3.00	3.00
		C107.2	NA	NA	100.00	3.00	3.00
		C107.3	NA	NA	100.00	3.00	3.00
8	Engineering Mathematics-II	C108.1	50.00	1.50	16.67	0.50	1.30
		C108.2	50.00	1.50	16.67	0.50	1.30
		C108.3	50.00	1.50	0.00	0.00	1.20
		C108.4	50.00	1.5	0.00	0.00	1.20
		C108.5	0.00	0.00	0.00	0.00	0.00
		C108.6	0.00	0.00	0.00	0.00	0.00
9	Engineering Chemistry	C109.1	66.67	2.00	33.33	1.00	1.80
		C109.2	66.67	2.00	33.33	1.00	1.80
		C109.3	66.67	2.00	50.00	1.50	1.90
		C109.4	66.67	2.00	50.00	1.50	1.90
		C109.5	33.33	1.00	50.00	1.50	1.10
		C109.6	33.33	1.00	50.00	1.50	1.10
10	Fundamentals of Programming Language -II	C110.1	100.00	3.00	100.00	3.00	3.00
		C110.2	100.00	3.00	100.00	3.00	3.00
		C110.3	100.00	3.00	100.00	3.00	3.00
		C110.4	100.00	3.00	100.00	3.00	3.00
11	Engineering Mechanics	C111.1	50.00	1.50	44.33	1.33	1.47
		C111.2	50.00	1.50	44.33	1.33	1.47
		C111.3	50.00	1.50	50.00	1.50	1.50
		C111.4	50.00	1.50	50.00	1.50	1.50
		C111.5	0.00	0.00	50.00	1.50	0.30
		C111.6	0.00	0.00	50.00	1.50	0.30

12	Basic Electronics Engineering	C112.1	66.67	2.00	44.33	1.33	1.87
		C112.2	83.33	2.50	50.00	1.50	2.30
		C112.3	33.33	1.00	50.00	1.50	1.10
		C112.4	33.33	1.00	50.00	1.50	1.10
13	Basic Mechanical Engineering	C113.1	83.33	2.50	33.33	1.00	2.20
		C113.2	83.33	2.50	33.33	1.00	2.20
		C113.3	83.33	2.50	50.00	1.50	2.30
		C113.4	83.33	2.50	50.00	1.50	2.30
		C113.5	66.67	2.00	50.00	1.50	1.90
		C113.6	66.67	2.00	50.00	1.50	1.90
14	Engineering Graphics-II	C114.1	NA	NA	100.00	3.00	3.00
		C114.2	NA	NA	100.00	3.00	3.00
		C114.3	NA	NA	100.00	3.00	3.00
15	Signals & Systems	C201.1	100.00	3.00	100.00	3.00	3.00
		C201.2	100.00	3.00	100.00	3.00	3.00
		C201.3	100.00	3.00	100.00	3.00	3.00
		C201.4	100.00	3.00	100.00	3.00	3.00
16	Electronic Devices & Circuits	C202.1	83.33	2.50	100.00	3.00	2.60
		C202.2	83.33	2.50	100.00	3.00	2.60
		C202.3	83.33	2.50	100.00	3.00	2.60
		C202.4	83.33	2.50	100.00	3.00	2.60
		C202.5	83.33	2.50	100.00	3.00	2.60
17	Network Theory	C203.1	100.00	3.00	100.00	3.00	3.00
		C203.2	100.00	3.00	100.00	3.00	3.00
		C203.3	100.00	3.00	100.00	3.00	3.00
		C203.4	100.00	3.00	100.00	3.00	3.00
		C203.5	100.00	3.00	100.00	3.00	3.00
		C203.6	100.00	3.00	100.00	3.00	3.00
18	Data Structures and Algorithms	C204.1	83.33	2.50	100.00	3.00	2.60
		C204.2	83.33	2.50	100.00	3.00	2.60
		C204.3	83.33	2.50	100.00	3.00	2.60
		C204.4	83.33	2.50	100.00	3.00	2.60
		C204.5	83.33	2.50	100.00	3.00	2.60
		C204.6	83.33	2.50	100.00	3.00	2.60
19	Digital Electronics	C205.1	83.33	2.50	100.00	3.00	2.60
		C205.2	83.33	2.50	100.00	3.00	2.60
		C205.3	83.33	2.50	100.00	3.00	2.60
		C205.4	83.33	2.50	100.00	3.00	2.60
		C205.5	83.33	2.50	100.00	3.00	2.60
		C205.6	83.33	2.50	100.00	3.00	2.60
20	Electronic Measuring Instruments & Tools	C206.1	NA	NA	100.00	3.00	3.00
		C206.2	NA	NA	100.00	3.00	3.00
		C206.3	NA	NA	100.00	3.00	3.00

21	Engineering Mathematics III	C207.1	33.33	1.00	66.67	2.00	1.20
		C207.2	33.33	1.00	66.67	2.00	1.20
		C207.3	33.33	1.00	66.67	2.00	1.20
		C207.4	33.33	1.00	66.67	2.00	1.20
		C207.5	33.33	1.00	66.67	2.00	1.20
22	Integrated Circuits	C208.1	83.33	2.50	100.00	3.00	2.60
		C208.2	83.33	2.50	100.00	3.00	2.60
		C208.3	83.33	2.50	100.00	3.00	2.60
		C208.4	83.33	2.50	100.00	3.00	2.60
		C208.5	83.33	2.50	100.00	3.00	2.60
23	Control Systems	C209.1	66.67	2.00	66.67	2.00	2.00
		C209.2	66.67	2.00	66.67	2.00	2.00
		C209.3	66.67	2.00	66.67	2.00	2.00
		C209.4	66.67	2.00	66.67	2.00	2.00
		C209.5	66.67	2.00	66.67	2.00	2.00
24	Analog Communication	C210.1	100.00	3.00	100.00	3.00	3.00
		C210.2	100.00	3.00	100.00	3.00	3.00
		C210.3	100.00	3.00	100.00	3.00	3.00
		C210.4	100.00	3.00	50.00	1.50	2.70
		C210.5	100.00	3.00	83.33	2.50	2.90
25	Computer Organization	C211.1	100.00	3.00	100.00	3.00	3.00
		C211.2	100.00	3.00	100.00	3.00	3.00
		C211.3	100.00	3.00	100.00	3.00	3.00
		C211.4	100.00	3.00	100.00	3.00	3.00
		C211.5	100.00	3.00	100.00	3.00	3.00
		C211.6	100.00	3.00	100.00	3.00	3.00
26	Object Oriented Programming	C212.1	100.00	3.00	100.00	3.00	3.00
		C212.2	100.00	3.00	100.00	3.00	3.00
		C212.3	100.00	3.00	100.00	3.00	3.00
		C212.4	100.00	3.00	100.00	3.00	3.00
		C212.5	100.00	3.00	100.00	3.00	3.00
		C212.6	100.00	3.00	100.00	3.00	3.00
27	Soft Skills	C213.1	NA	NA	100.00	3.00	3.00
		C213.2	NA	NA	100.00	3.00	3.00
		C213.3	NA	NA	100.00	3.00	3.00
		C213.4	NA	NA	100.00	3.00	3.00
28	Digital Communication	C301.1	66.67	2.00	100.00	3.00	2.20
		C301.2	66.67	2.00	100.00	3.00	2.20
		C301.3	66.67	2.00	50.00	1.50	1.90
		C301.4	66.67	2.00	100.00	3.00	2.20
29	Digital Signal Processing	C302.1	100.00	3.00	100.00	3.00	3.00
		C302.2	100.00	3.00	100.00	3.00	3.00
		C302.3	100.00	3.00	100.00	3.00	3.00
		C302.4	100.00	3.00	100.00	3.00	3.00

30	Micro Controller and Applications	C303.1	100.00	3.00	66.67	2.00	2.80
		C303.2	100.00	3.00	66.67	2.00	2.80
		C303.3	100.00	3.00	66.67	2.00	2.80
31	Electromagnetic and Transmission Lines	C304.1	100.00	3.00	83.33	2.50	2.90
		C304.2	100.00	3.00	50.00	1.50	2.70
		C304.3	100.00	3.00	100.00	3.00	3.00
		C304.4	100.00	3.00	50.00	1.50	2.70
		C304.5	100.00	3.00	83.33	2.50	2.90
		C304.6	100.00	3.00	50.00	1.50	2.70
32	System Programming and Operating Systems	C305.1	100.00	3.00	50.00	1.50	2.70
		C305.2	100.00	3.00	50.00	1.50	2.70
		C305.3	100.00	3.00	50.00	1.50	2.70
		C305.4	100.00	3.00	50.00	1.50	2.70
33	DC & SP Lab	C306.1	100.00	3.00	100.00	3.00	3.00
		C306.2	100.00	3.00	100.00	3.00	3.00
		C306.3	100.00	3.00	100.00	3.00	3.00
		C306.4	100.00	3.00	100.00	3.00	3.00
		C306.5	100.00	3.00	100.00	3.00	3.00
		C306.6	100.00	3.00	100.00	3.00	3.00
		C306.7	100.00	3.00	100.00	3.00	3.00
34	SP & MCA Lab	C307.1	100.00	3.00	100.00	3.00	3.00
		C307.2	100.00	3.00	100.00	3.00	3.00
		C307.3	100.00	3.00	100.00	3.00	3.00
		C307.4	100.00	3.00	100.00	3.00	3.00
35	Employability Skills in Electronics Design	C308.1	100.00	3.00	100.00	3.00	3.00
		C308.2	100.00	3.00	100.00	3.00	3.00
		C308.3	100.00	3.00	100.00	3.00	3.00
		C308.4	100.00	3.00	100.00	3.00	3.00
36	Information Theory and Coding Techniques	C309.1	100.00	3.00	100.00	3.00	3.00
		C309.2	100.00	3.00	100.00	3.00	3.00
		C309.3	100.00	3.00	100.00	3.00	3.00
		C309.4	100.00	3.00	100.00	3.00	3.00
37	Antenna and Wave Propagation	C310.1	100.00	3.00	50.00	1.50	2.70
		C310.2	100.00	3.00	50.00	1.50	2.70
		C310.3	100.00	3.00	50.00	1.50	2.70
		C310.4	100.00	3.00	50.00	1.50	2.70
38	Embedded Processors	C311.1	100.00	3.00	89.00	2.67	2.93
		C311.2	100.00	3.00	89.00	2.67	2.93
		C311.3	100.00	3.00	89.00	2.67	2.93
39	Industrial Management	C312.1	100.00	3.00	100.00	3.00	3.00
		C312.2	100.00	3.00	100.00	3.00	3.00
		C312.3	100.00	3.00	66.67	2.00	2.80
		C312.4	100.00	3.00	100.00	3.00	3.00
40	Power	C313.1	100.00	3.00	100.00	3.00	3.00

	Electronics	C313.2	100.00	3.00	66.67	2.00	2.80
		C313.3	100.00	3.00	100.00	3.00	3.00
		C313.4	100.00	3.00	83.33	2.50	2.90
41	Communicati on Lab	C314.1	100.00	3.00	100.00	3.00	3.00
		C314.2	100.00	3.00	100.00	3.00	3.00
		C314.3	100.00	3.00	100.00	3.00	3.00
		C314.4	100.00	3.00	100.00	3.00	3.00
		C314.5	100.00	3.00	100.00	3.00	3.00
42	PE & EP Lab	C315.1	66.67	2.00	100.00	3.00	2.20
		C315.2	66.67	2.00	100.00	3.00	2.20
		C315.3	66.67	2.00	100.00	3.00	2.20
		C315.4	66.67	2.00	100.00	3.00	2.20
		C315.5	66.67	2.00	100.00	3.00	2.20
43	Mini project and Seminar	C316.1	100.00	3.00	100.00	3.00	3.00
		C316.2	100.00	3.00	100.00	3.00	3.00
		C316.3	100.00	3.00	100.00	3.00	3.00
		C316.4	100.00	3.00	100.00	3.00	3.00
44	VLSI Design &Technology	C401.1	66.67	2.00	66.67	2.00	2.00
		C401.2	66.67	2.00	100.00	3.00	2.20
		C401.3	66.67	2.00	100.00	3.00	2.20
45	Computer Networks	C402.1	100.00	3.00	50.00	1.50	2.70
		C402.2	100.00	3.00	50.00	1.50	2.70
		C402.3	100.00	3.00	50.00	1.50	2.70
		C402.4	100.00	3.00	66.67	2.00	2.80
		C402.5	100.00	3.00	50.00	1.50	2.70
		C402.6	100.00	3.00	50.00	1.50	2.70
46	Microwave Engineering	C403.1	100.00	3.00	83.33	2.50	2.90
		C403.2	100.00	3.00	83.33	2.50	2.90
		C403.3	100.00	3.00	100.00	3.00	3.00
		C403.4	100.00	3.00	83.33	2.50	2.90
		C403.5	100.00	3.00	66.67	2.00	2.80
47	Elective I (ES&RTOS)	C404a.1	100.00	3.00	66.67	2.00	2.80
		C404a.2	100.00	3.00	66.67	2.00	2.80
		C404a.3	100.00	3.00	66.67	2.00	2.80
		C404a.4	100.00	3.00	66.67	2.00	2.80
48	Elective I (DIP)	C404b.1	100.00	3.00	100.00	3.00	3.00
		C404b.2	100.00	3.00	100.00	3.00	3.00
		C404b.3	100.00	3.00	100.00	3.00	3.00
		C404b.4	100.00	3.00	100.00	3.00	3.00
49	Elective II PLC & Automation	C405.1	100.00	3.00	100.00	3.00	3.00
		C405.2	100.00	3.00	100.00	3.00	3.00
		C405.3	100.00	3.00	100.00	3.00	3.00
		C405.4	100.00	3.00	83.33	2.50	2.90
50	Lab Practice I	C406.1	100.00	3.00	100.00	3.00	3.00

	(CN & MWE)	C406.2	100.00	3.00	100.00	3.00	3.00
		C406.3	100.00	3.00	100.00	3.00	3.00
		C406.4	100.00	3.00	100.00	3.00	3.00
		C406.5	100.00	3.00	100.00	3.00	3.00
51	Lab Practice II (VLSI & ELE-I)	C407.1	100.00	3.00	100.00	3.00	3.00
		C407.2	100.00	3.00	100.00	3.00	3.00
		C407.3	100.00	3.00	100.00	3.00	3.00
		C407.4	100.00	3.00	100.00	3.00	3.00
		C407.5	100.00	3.00	100.00	3.00	3.00
		C407.6	100.00	3.00	100.00	3.00	3.00
52	Project Stage I	C408.1	100.00	3.00	100.00	3.00	3.00
		C408.2	100.00	3.00	100.00	3.00	3.00
		C408.3	100.00	3.00	100.00	3.00	3.00
		C408.4	100.00	3.00	100.00	3.00	3.00
		C408.5	100.00	3.00	100.00	3.00	3.00
		C408.6	100.00	3.00	100.00	3.00	3.00
52	Mobile Communication	C409.1	100.00	3.00	66.67	2.00	2.80
		C409.2	100.00	3.00	50.00	1.50	2.70
		C409.3	100.00	3.00	50.00	1.50	2.70
		C409.4	100.00	3.00	66.67	2.00	2.80
54	Broadband Communication Systems	C410.1	100.00	3.00	66.67	2.00	2.80
		C410.2	100.00	3.00	50.00	1.50	2.70
		C410.3	100.00	3.00	50.00	1.50	2.70
		C410.4	100.00	3.00	50.00	1.50	2.70
		C410.5	100.00	3.00	66.67	2.00	2.80
		C410.6	100.00	3.00	83.33	2.50	2.90
55	Elective III Speech & Audio Signal Processing	C411.1	100.00	3.00	100.00	3.00	3.00
		C411.2	100.00	3.00	100.00	3.00	3.00
		C411.3	100.00	3.00	83.33	2.50	2.90
		C411.4	100.00	3.00	66.67	2.00	2.80
56	Elective IV Wireless Networks	C412.1	100.00	3.00	100.00	3.00	3.00
		C412.2	100.00	3.00	100.00	3.00	3.00
		C412.3	100.00	3.00	100.00	3.00	3.00
		C412.4	100.00	3.00	100.00	3.00	3.00
57	Lab Practice III (MC & BCS)	C413.1	100.00	3.00	100.00	3.00	3.00
		C413.2	100.00	3.00	100.00	3.00	3.00
		C413.3	100.00	3.00	100.00	3.00	3.00
		C413.4	100.00	3.00	100.00	3.00	3.00
58	Lab Practice IV (ELE-III)	C414.1	100.00	3.00	100.00	3.00	3.00
		C414.2	100.00	3.00	100.00	3.00	3.00
		C414.3	100.00	3.00	100.00	3.00	3.00
		C414.4	100.00	3.00	100.00	3.00	3.00
59	Project Stage II	C415.1	100.00	3.00	100.00	3.00	3.00
		C415.2	100.00	3.00	100.00	3.00	3.00

		C415.3	100.00	3.00	100.00	3.00	3.00
		C415.4	100.00	3.00	100.00	3.00	3.00
		C415.5	100.00	3.00	100.00	3.00	3.00
		C415.6	100.00	3.00	100.00	3.00	3.00

Table B.3.2.2b: CO Attainment for 2015 to 2019 Batch

Sr. No.	Course Name	NBA Course code	Direct Attainment (80%)				Indirect Attainment (20%)		CO Attainment = 0.8*((0.8*A)+(0.2*B))+0.2*C
			External Assessment (80%)		Internal Assessment (20%)		Course End Survey		
			Attainment in %	Attainment Level (A)	Attainment in %	Attainment Level (B)	Attainment in %	Attainment Level (C)	
1	M-1	C101.1	100.00	3.0	100.00	3.0	NA	NA	3.00
		C101.2	100.00	3.0	100.00	3.0	NA	NA	3.00
		C101.3	100.00	3.0	50.00	1.5	NA	NA	2.70
		C101.4	100.00	3.0	50.00	1.5	NA	NA	2.70
		C101.5	100.00	3.0	100.00	3.0	NA	NA	3.00
		C101.6	100.00	3.0	100.00	3.0	NA	NA	3.00
2	PHY	C102.1	100.00	3.0	66.67	2.0	NA	NA	2.80
		C102.2	100.00	3.0	44.33	1.3	NA	NA	2.67
		C102.3	33.33	1.0	33.33	1.0	NA	NA	1.00
		C102.4	33.33	1.0	66.67	2.0	NA	NA	1.20
3	FPL-1	C103.1	100.00	3.0	100.00	3.0	NA	NA	3.00
		C103.2	100.00	3.0	100.00	3.0	NA	NA	3.00
		C103.3	100.00	3.0	100.00	3.0	NA	NA	3.00
		C103.4	100.00	3.0	100.00	3.0	NA	NA	3.00
4	BEE	C104.1	100.00	3.0	66.67	2.0	NA	NA	2.80
		C104.2	100.00	3.0	55.67	1.7	NA	NA	2.73
		C104.3	66.67	2.0	33.33	1.0	NA	NA	1.80
		C104.4	66.67	2.0	33.33	1.0	NA	NA	1.80
5	BCEE	C105.1	100.00	3.0	100.00	3.0	NA	NA	3.00
		C105.2	100.00	3.0	100.00	3.0	NA	NA	3.00
		C105.3	100.00	3.0	83.33	2.5	NA	NA	2.60
		C105.4	100.00	3.0	83.33	2.5	NA	NA	2.60
		C105.5	100.00	3.0	100.00	3.0	NA	NA	3.00
		C105.6	100.00	3.0	100.00	3.0	NA	NA	3.00
6	EG-1	C106.1	83.33	2.5	100.00	3.0	NA	NA	2.60
		C106.2	83.33	2.5	100.00	3.0	NA	NA	2.60
		C106.3	100.00	3.0	66.67	2.0	NA	NA	2.80
		C106.4	100.00	3.0	66.67	2.0	NA	NA	2.80
		C106.5	100.00	3.0	0.00	0.0	NA	NA	2.40
		C106.6	100.00	3.0	0.00	0.0	NA	NA	2.40

7	WS	C107.1	NA	NA	100.00	3.0	NA	NA	3.00
		C107.2	NA	NA	100.00	3.0	NA	NA	3.00
		C107.3	NA	NA	100.00	3.0	NA	NA	3.00
8	M-2	C108.1	83.33	2.5	100.00	3.0	NA	NA	2.60
		C108.2	83.33	2.5	100.00	3.0	NA	NA	2.60
		C108.3	83.33	2.5	100.00	3.0	NA	NA	2.60
		C108.4	83.33	2.5	100.00	3.0	NA	NA	2.60
		C108.5	66.67	2.0	66.67	2.0	NA	NA	2.00
		C108.6	66.67	2.0	66.67	2.0	NA	NA	2.00
9	CHEM	C109.1	100.00	3	66.67	2	NA	NA	2.80
		C109.2	100.00	3	66.67	2	NA	NA	2.80
		C109.3	100.00	3	100.00	3	NA	NA	3.00
		C109.4	100.00	3	100.00	3	NA	NA	3.00
		C109.5	100.00	3	100.00	3	NA	NA	3.00
		C109.6	100.00	3	100.00	3	NA	NA	3.00
10	FPL-2	C110.1	100.00	3.0	100.00	3.0	NA	NA	3.00
		C110.2	100.00	3.0	100.00	3.0	NA	NA	3.00
		C110.3	100.00	3.0	100.00	3.0	NA	NA	3.00
		C110.4	100.00	3.0	100.00	3.0	NA	NA	3.00
11	EM	C111.1	33.33	1.0	100.00	3.0	NA	NA	1.40
		C111.2	33.33	1.0	100.00	3.0	NA	NA	1.40
		C111.3	50.00	1.5	77.67	2.3	NA	NA	1.67
		C111.4	50.00	1.5	77.67	2.3	NA	NA	1.67
		C111.5	0.00	0.0	66.67	2.0	NA	NA	0.40
		C111.6	0.00	0.0	66.67	2.0	NA	NA	0.40
12	BXE	C112.1	100.00	3.0	100.00	3.0	NA	NA	3.00
		C112.2	100.00	3.0	89.00	2.7	NA	NA	2.93
		C112.3	66.67	2.0	66.67	2.0	NA	NA	2.00
		C112.4	66.67	2.0	66.67	2.0	NA	NA	2.00
13	BME	C113.1	100.00	3.0	100.00	3.0	NA	NA	3.00
		C113.2	100.00	3.0	100.00	3.0	NA	NA	3.00
		C113.3	100.00	3.0	100.00	3.0	NA	NA	3.00
		C113.4	100.00	3.0	100.00	3.0	NA	NA	3.00
		C113.5	100.00	3.0	89.00	2.7	NA	NA	2.93
		C113.6	100.00	3.0	89.00	2.7	NA	NA	2.93
14	EG-2	C114.1	NA	NA	100.00	3.0	NA	NA	3.00
		C114.2	NA	NA	100.00	3.0	NA	NA	3.00
		C114.3	NA	NA	100.00	3.0	NA	NA	3.00
15	Signals & Systems	C201.1	100	3	100.00	3	83.67	2.51	2.90
		C201.2	100	3	100.00	3	82.00	2.46	2.89
		C201.3	100	3	100.00	3	86.67	2.6	2.92
		C201.4	100	3	100.00	3	83.33	2.5	2.90
16	Electronic	C202.1	100	3	76.67	2.3	87.67	2.63	2.81
		C202.2	100	3	50.00	1.5	87.00	2.61	2.68

	Devices & Circuits	C202.3	100	3	66.67	2	84.00	2.52	2.74
		C202.4	100	3	66.67	2	85.00	2.55	2.75
		C202.5	100	3	66.67	2	85.33	2.56	2.75
17	Electrical Circuits and	C203.1	100	3	66.67	2	86.67	2.6	2.76
		C203.2	100	3	66.67	2	86.67	2.6	2.76
		C203.3	100	3	100.00	3	90.00	2.7	2.94
18	Data Structures and Algorithms	C204.1	100	3	50.00	1.5	89.33	2.68	2.70
		C204.2	100	3	50.00	1.5	90.33	2.71	2.70
		C204.3	100	3	83.33	2.5	90.33	2.71	2.86
		C204.4	100	3	50.00	1.5	89.00	2.67	2.69
		C204.5	100	3	100.00	3	90.33	2.71	2.94
		C204.6	100	3	66.67	2	90.00	2.7	2.78
19	Digital Electronics	C205.1	100	3	50.00	1.5	71.67	2.15	2.59
		C205.2	100	3	50.00	1.5	76.00	2.28	2.62
		C205.3	100	3	50.00	1.5	73.67	2.21	2.60
		C205.4	100	3	100.00	3	71.33	2.14	2.83
		C205.5	100	3	100.00	3	96.67	2.9	2.98
20	Electronic Measuring Instruments & Tools	C206.1	NA	NA	100.00	3	100.00	3	3.00
		C206.2	NA	NA	100.00	3	100.00	3	3.00
		C206.3	NA	NA	100.00	3	100.00	3	3.00
		C206.4	NA	NA	100.00	3	100.00	3	3.00
21	Audit Course 1 Japanese Language	C207.1	NA	NA	100.00	3	100.00	3	3.00
		C207.2	NA	NA	100.00	3	100.00	3	3.00
		C207.3	NA	NA	100.00	3	100.00	3	3.00
		C207.4	NA	NA	100.00	3	100.00	3	3.00
22	Engineering Mathematics III	C208.1	100	3	58.33	1.75	86.67	2.6	2.72
		C208.2	100	3	50.00	1.5	86.67	2.6	2.68
		C208.3	100	3	75.00	2.25	86.67	2.6	2.80
		C208.4	100	3	75.00	2.25	86.67	2.6	2.80
		C208.5	100	3	66.67	2	80.00	2.4	2.72
23	Integrated Circuits	C209.1	100	3	100.00	3	81.67	2.45	2.89
		C209.2	100	3	100.00	3	81.33	2.44	2.89
		C209.3	100	3	100.00	3	80.67	2.42	2.88
		C209.4	100	3	100.00	3	81.33	2.44	2.89
		C209.5	100	3	100.00	3	81.67	2.45	2.89
		C209.6	100	3	100.00	3	82.67	2.48	2.90
24	Control Systems	C210.1	100	3	100.00	3	86.67	2.6	2.92
		C210.2	100	3	100.00	3	83.33	2.5	2.90
		C210.3	100	3	66.67	2	83.33	2.5	2.74
		C210.4	100	3	66.67	2	83.33	2.5	2.74
		C210.5	100	3	66.67	2	86.67	2.6	2.76
		C210.6	100	3	33.33	1	83.33	2.5	2.58
25	Analog	C211.1	100	3	100.00	3	96.67	2.9	2.98
		C211.2	100	3	77.67	2.33	73.67	2.21	2.73

	Communication	C211.3	100	3	100.00	3	79.33	2.38	2.88
		C211.4	100	3	100.00	3	71.67	2.15	2.83
26	Object Oriented Programming	C212.1	100	3	66.67	2	91.00	2.73	2.79
		C212.2	100	3	66.67	2	90.00	2.7	2.78
		C212.3	100	3	83.33	2.5	89.33	2.68	2.86
		C212.4	100	3	50.00	1.5	89.33	2.68	2.70
		C212.5	100	3	50.00	1.5	90.33	2.71	2.70
		C212.6	100	3	50.00	1.5	86.00	2.58	2.68
27	Employability Skill Development	C213.1	NA	NA	100.00	3	100.00	3	3.00
		C213.2	NA	NA	100.00	3	100.00	3	3.00
		C213.3	NA	NA	100.00	3	100.00	3	3.00
		C213.4	NA	NA	100.00	3	100.00	3	3.00
28	Audit Course 2 Japanese Language	C214.1	NA	NA	100.00	3	100.00	3	3.00
		C214.2	NA	NA	100.00	3	100.00	3	3.00
		C214.3	NA	NA	100.00	3	100.00	3	3.00
		C214.4	NA	NA	100.00	3	100.00	3	3.00
29	Digital Communication	C301.1	100.00	3	56.67	1.7	79.33	2.38	2.67
		C301.2	100.00	3	66.67	2	82.67	2.48	2.74
		C301.3	100.00	3	100.00	3	80.33	2.41	2.88
		C301.4	100.00	3	100.00	3	84.67	2.54	2.91
30	Digital Signal Processing	C302.1	100.00	3	83.33	2.5	71.67	2.15	2.75
		C302.2	100.00	3	100.00	3	71.33	2.14	2.83
		C302.3	100.00	3	100.00	3	69.33	2.08	2.82
		C302.4	100.00	3	100.00	3	68.33	2.05	2.81
31	Electromagnetics	C303.1	100.00	3	83.33	2.5	86.67	2.6	2.84
		C303.2	100.00	3	50.00	1.5	86.67	2.6	2.68
		C303.3	100.00	3	100.00	3	85.00	2.55	2.91
		C303.4	100.00	3	100.00	3	85.00	2.55	2.91
		C303.5	100.00	3	66.67	2	85.00	2.55	2.75
		C303.6	100.00	3	83.33	2.5	86.00	2.58	2.84
32	Micro Controllers	C304.1	66.67	2	89.00	2.67	82.67	2.48	2.20
		C304.2	66.67	2	89.00	2.67	81.67	2.45	2.20
		C304.3	66.67	2	89.00	2.67	80.67	2.42	2.19
33	Mechatronics	C305.1	100.00	3	83.33	2.5	81.67	2.45	2.81
		C305.2	100.00	3	83.33	2.5	86.00	2.58	2.84
		C305.3	100.00	3	100.00	3	77.33	2.32	2.86
		C305.4	100.00	3	83.33	2.5	79.33	2.38	2.80
34	Signal Processing & Comm Lab (DC & DSP)	C306.1	100.00	3	100.00	3	84.67	2.54	2.91
		C306.2	100.00	3	100.00	3	82.67	2.48	2.90
		C306.3	100.00	3	100.00	3	86.67	2.6	2.92
		C306.4	100.00	3	100.00	3	79.33	2.38	2.88
		C306.5	100.00	3	100.00	3	83.67	2.51	2.90
		C306.6	100.00	3	100.00	3	82.67	2.48	2.90
35	Microcontr	C307.1	100.00	3	100.00	3	86.67	2.6	2.92

	ollers & Mechatronics Lab (MC & MCT)	C307.2	100.00	3	100.00	3	83.33	2.5	2.90
		C307.3	100.00	3	100.00	3	83.33	2.5	2.90
		C307.4	100.00	3	100.00	3	83.33	2.5	2.90
		C307.5	100.00	3	100.00	3	86.67	2.6	2.92
		C307.4	100.00	3	100.00	3	83.33	2.5	2.90
36	Electronics System Design	C308.1	100.00	3	100.00	3	71.67	2.15	2.83
		C308.2	100.00	3	100.00	3	71.33	2.14	2.83
		C308.3	100.00	3	100.00	3	69.33	2.08	2.82
		C308.4	100.00	3	100.00	3	68.33	2.05	2.81
37	Audit Course 3 Japanese Language	C309.1	NA	NA	100.00	3	100.00	3	3.00
		C309.2	NA	NA	100.00	3	100.00	3	3.00
		C309.3	NA	NA	100.00	3	100.00	3	3.00
		C309.4	NA	NA	100.00	3	100.00	3	3.00
38	Power Electronics	C310.1	66.67	2	100.00	3	88.00	2.64	2.29
		C310.2	66.67	2	100.00	3	84.67	2.54	2.27
		C310.3	66.67	2	100.00	3	82.67	2.48	2.26
		C310.4	66.67	2	100.00	3	76.00	2.28	2.22
39	Information Theory, Coding & Comm	C311.1	100.00	3	50.00	1.5	90.00	2.7	2.70
		C311.2	100.00	3	50.00	1.5	90.00	2.7	2.70
		C311.3	100.00	3	66.67	2	90.00	2.7	2.78
		C311.4	100.00	3	83.33	2.5	90.00	2.7	2.86
40	Business Management	C312.1	100.00	3	90.00	2.7	89.33	2.68	2.89
		C312.2	100.00	3	89.00	2.67	88.33	2.65	2.88
		C312.3	100.00	3	100.00	3	87.67	2.63	2.93
		C312.4	100.00	3	90.00	2.7	86.67	2.6	2.87
41	Advanced Processors	C313.1	33.33	1	66.67	2	84.33	2.53	1.47
		C313.2	33.33	1	66.67	2	82.33	2.47	1.45
		C313.3	33.33	1	66.67	2	82.67	2.48	1.46
		C313.4	33.33	1	66.67	2	84.67	2.54	1.47
42	System Programming and Operating	C314.1	66.67	2	50.00	1.5	92.33	2.77	2.07
		C314.2	66.67	2	50.00	1.5	91.00	2.73	2.07
		C314.3	66.67	2	50.00	1.5	89.67	2.69	2.06
		C314.4	66.67	2	50.00	1.5	92.33	2.77	2.07
43	Power & ITCT Lab	C315.1	100.00	3	100.00	3	90.00	2.7	2.94
		C315.2	100.00	3	100.00	3	90.00	2.7	2.94
		C315.3	100.00	3	100.00	3	90.00	2.7	2.94
		C315.4	100.00	3	100.00	3	90.00	2.7	2.94
		C315.5	100.00	3	100.00	3	86.67	2.6	2.92
		C315.6	100.00	3	100.00	3	86.67	2.6	2.92
44	AP & SP Lab	C316.1	100.00	3	100.00	3	86.67	2.6	2.92
		C316.2	100.00	3	100.00	3	83.00	2.49	2.90
		C316.3	100.00	3	100.00	3	83.00	2.49	2.90
		C316.4	100.00	3	100.00	3	85.00	2.55	2.91
		C316.5	100.00	3	100.00	3	85.00	2.55	2.91

45	Employability Skills & Mini project	C317.1	100.00	3	100.00	3	83.33	2.5	2.90
		C317.2	100.00	3	100.00	3	86.67	2.6	2.92
		C317.3	100.00	3	100.00	3	85.00	2.55	2.91
		C317.4	100.00	3	100.00	3	80.00	2.4	2.88
46	Audit Course 4 Japanese Language	C318.1	NA	NA	100.00	3	100.00	3	3.00
		C318.2	NA	NA	100.00	3	100.00	3	3.00
		C318.3	NA	NA	100.00	3	100.00	3	3.00
		C318.4	NA	NA	100.00	3	100.00	3	3.00
47	VLSI Design& Technology	C401.1	100.00	3	50.00	1.5	82.67	2.48	2.66
		C401.2	100.00	3	50.00	1.5	84.67	2.54	2.67
		C401.3	100.00	3	50.00	1.5	81.00	2.43	2.65
		C401.4	100.00	3	100.00	3	86.67	2.6	2.92
		C401.5	100.00	3	100.00	3	80.33	2.41	2.88
		C401.6	100.00	3	100.00	3	81.00	2.43	2.89
48	Computer Networks & Security	C402.1	66.67	2	50.00	1.5	91.67	2.75	2.07
		C402.2	66.67	2	50.00	1.5	91.00	2.73	2.07
		C402.3	66.67	2	50.00	1.5	89.33	2.68	2.06
		C402.4	66.67	2	66.67	2	92.33	2.77	2.15
		C402.5	66.67	2	50.00	1.5	93.00	2.79	2.08
		C402.6	66.67	2	50.00	1.5	91.33	2.74	2.07
49	Radiation & Microwave Techniques	C403.1	100.00	3	50.00	1.5	86.67	2.6	2.68
		C403.2	100.00	3	66.67	2	83.33	2.5	2.74
		C403.3	100.00	3	50.00	1.5	83.33	2.5	2.66
		C403.4	100.00	3	66.67	2	83.33	2.5	2.74
		C403.5	100.00	3	66.67	2	86.67	2.6	2.76
		C403.6	100.00	3	83.33	2.5	83.33	2.5	2.82
50	Elective I (ES&RTOS)	C404a.	66.67	2	66.67	2	83.67	2.51	2.10
		C404a.	66.67	2	66.67	2	82.00	2.46	2.09
		C404a.	66.67	2	66.67	2	82.67	2.48	2.10
		C404a.	66.67	2	66.67	2	82.67	2.48	2.10
		C404a.	66.67	2	66.67	2	83.33	2.5	2.10
51	Elective I DIVP	C404b.	100.00	3	100.00	3	89.00	2.67	2.93
		C404b.	100.00	3	100.00	3	89.00	2.67	2.93
		C404b.	100.00	3	100.00	3	90.67	2.72	2.94
		C404b.	100.00	3	100.00	3	89.00	2.67	2.93
		C404b.	100.00	3	100.00	3	90.67	2.72	2.94
		C404b.	100.00	3	100.00	3	89.00	2.67	2.93
52	Elective II (Electronic Product Design)	C405.1	66.67	2	100.00	3	85.33	2.56	2.27
		C405.2	66.67	2	100.00	3	89.00	2.67	2.29
		C405.3	66.67	2	100.00	3	89.00	2.67	2.29
		C405.4	66.67	2	77.67	2.33	90.67	2.72	2.20
		C405.5	66.67	2	66.67	2	90.67	2.72	2.14
		C405.6	66.67	2	89.00	2.67	89.00	2.67	2.24
53	Lab	C406.1	100.00	3	100.00	3	84.33	2.53	2.91

	Practice I (CNS & RMT)	C406.2	100.00	3	100.00	3	84.00	2.52	2.90
		C406.3	100.00	3	100.00	3	87.67	2.63	2.93
		C406.4	100.00	3	100.00	3	85.00	2.55	2.91
		C406.5	100.00	3	100.00	3	84.00	2.52	2.90
54	Lab Practice II (VLSI & ELE-I)	C407.1	50.00	1.5	100.00	3	97.33	2.92	2.02
		C407.2	50.00	1.5	100.00	3	96.00	2.88	2.02
		C407.3	50.00	1.5	100.00	3	96.67	2.9	2.02
		C407.4	50.00	1.5	100.00	3	95.33	2.86	2.01
		C407.5	50.00	1.5	100.00	3	98.00	2.94	2.03
		C407.6	50.00	1.5	100.00	3	96.00	2.88	2.02
55	Project Stage I	C408.1	100.00	3	100.00	3	100.00	3	3.00
		C408.2	100.00	3	100.00	3	100.00	3	3.00
		C408.3	100.00	3	100.00	3	100.00	3	3.00
		C408.4	100.00	3	100.00	3	100.00	3	3.00
		C408.5	100.00	3	100.00	3	100.00	3	3.00
		C408.6	100.00	3	100.00	3	100.00	3	3.00
56	Audit Course 5 Green Energy	C409.1	NA	NA	100.00	3	100.00	3	3.00
		C409.2	NA	NA	100.00	3	100.00	3	3.00
		C409.3	NA	NA	100.00	3	100.00	3	3.00
		C409.4	NA	NA	100.00	3	100.00	3	3.00
		C409.5	NA	NA	100.00	3	100.00	3	3.00
		C409.6	NA	NA	100.00	3	100.00	3	3.00
		C409.7	NA	NA	100.00	3	100.00	3	3.00
57	Mobile Communication	C410.1	100.00	3	66.67	2	82.67	2.48	2.74
		C410.2	100.00	3	66.67	2	82.00	2.46	2.73
		C410.3	100.00	3	66.67	2	80.00	2.4	2.72
		C410.4	100.00	3	66.67	2	81.00	2.43	2.73
58	Broadband Communication Systems	C411.1	100.00	3	50.00	1.5	90.00	2.7	2.70
		C411.2	100.00	3	66.67	2	90.00	2.7	2.78
		C411.3	100.00	3	50.00	1.5	93.33	2.8	2.72
		C411.4	100.00	3	66.67	2	90.00	2.7	2.78
		C411.5	100.00	3	66.67	2	90.00	2.7	2.78
		C411.6	100.00	3	83.33	2.5	93.33	2.8	2.88
59	Elective III (Audio Video Engineerin	C412.1	100.00	3	83.33	2.5	90.67	2.72	2.86
		C412.2	100.00	3	100.00	3	90.67	2.72	2.94
		C412.3	100.00	3	66.67	2	100.00	3	2.84
		C412.4	100.00	3	83.33	2.5	89.00	2.67	2.85
60	Elective IV Wireless Sensor Networks	C413.1	100.00	3	100.00	3	95.33	2.86	2.97
		C413.2	100.00	3	83.33	2.5	97.33	2.92	2.90
		C413.3	100.00	3	83.33	2.5	96.00	2.88	2.90
		C413.4	100.00	3	83.33	2.5	96.67	2.9	2.90
		C413.5	100.00	3	100.00	3	97.00	2.91	2.98
		C413.6	100.00	3	83.33	2.5	97.33	2.92	2.90
61	Lab	C414.1	100.00	3	100.00	3	93.33	2.8	2.96

	Practice III (MC & BCS)	C414.2	100.00	3	100.00	3	93.33	2.8	2.96
		C414.3	100.00	3	100.00	3	93.33	2.8	2.96
		C414.4	100.00	3	100.00	3	93.33	2.8	2.96
		C414.5	100.00	3	100.00	3	93.33	2.8	2.96
62	Lab Practice IV (ELE-III-AVE)	C415.1	100.00	3	100.00	3	100.00	3	3.00
		C415.2	100.00	3	100.00	3	100.00	3	3.00
		C415.3	100.00	3	100.00	3	100.00	3	3.00
		C415.4	100.00	3	100.00	3	90.67	2.72	2.94
63	Project Stage II	C416.1	100.00	3	100.00	3	100.00	3	3.00
		C416.2	100.00	3	100.00	3	100.00	3	3.00
		C416.3	100.00	3	100.00	3	100.00	3	3.00
		C416.4	100.00	3	100.00	3	100.00	3	3.00
		C416.5	100.00	3	100.00	3	100.00	3	3.00
		C416.6	100.00	3	100.00	3	100.00	3	3.00
64	Audit Course 6	C417.1	NA	NA	100.00	3	100.00	3	3.00
		C417.2	NA	NA	100.00	3	100.00	3	3.00

Table B.3.2.2c: CO Attainment for 2016 to 2020 Batch

Sr. No.	Course Name	NBA Course code	Direct Attainment (80%)				Indirect Attainment (20%)		CO Attainment = 0.8*((0.8*A)+(0.2*B))+ 0.2*C
			External Assessment (80%)		Internal Assessment (20%)		Course End Survey		
			Attainment in %	Attainment Level (A)	Attainment in %	Attainment Level (B)	Attainment in %	Attainment Level (C)	
1	M-1	C101.1	66.67	2.00	100.00	3.0	NA	NA	2.20
		C101.2	66.67	2.00	100.00	3.0	NA	NA	2.20
		C101.3	66.67	2.00	77.67	2.3	NA	NA	2.07
		C101.4	66.67	2.00	100.00	3.0	NA	NA	2.20
		C101.5	33.33	1.00	100.00	3.0	NA	NA	1.40
		C101.6	33.33	1.00	100.00	3.0	NA	NA	1.40
2	PHY	C102.1	83.33	2.50	89.00	2.7	NA	NA	2.53
		C102.2	83.33	2.50	77.67	2.3	NA	NA	2.47
		C102.3	66.67	2.00	66.67	2.0	NA	NA	2.00
		C102.4	66.67	2.00	50.00	1.5	NA	NA	1.90
3	FPL-1	C103.1	100.00	3.0	100.00	3.0	NA	NA	3.00
		C103.2	100.00	3.0	100.00	3.0	NA	NA	3.00
		C103.3	100.00	3.0	100.00	3.0	NA	NA	3.00
		C103.4	100.00	3.0	100.00	3.0	NA	NA	3.00
4	BEE	C104.1	100.00	3.00	55.67	1.7	NA	NA	2.73
		C104.2	50.00	1.50	55.67	1.7	NA	NA	1.53

		C104.3	100.00	3.00	50.00	1.5	NA	NA	2.70
		C104.4	100.00	3.00	83.33	2.5	NA	NA	2.90
5	BCEE	C105.1	100.00	3.00	89.00	2.7	NA	NA	2.93
		C105.2	100.00	3.00	89.00	2.7	NA	NA	2.93
		C105.3	100.00	3.00	77.67	2.3	NA	NA	2.87
		C105.4	100.00	3.00	77.67	2.3	NA	NA	2.87
		C105.5	100.00	3.00	83.33	2.5	NA	NA	2.90
		C105.6	100.00	3.00	83.33	2.5	NA	NA	2.90
6	EG-1	C106.1	100.00	3.00	66.67	2.0	NA	NA	2.80
		C106.2	100.00	3.00	66.67	2.0	NA	NA	2.80
		C106.3	100.00	3.00	100.00	3.0	NA	NA	3.00
		C106.4	100.00	3.00	100.00	3.0	NA	NA	3.00
		C106.5	100.00	3.00	100.00	3.0	NA	NA	3.00
		C106.6	100.00	3.00	100.00	3.0	NA	NA	3.00
7	WS	C107.1	NA	NA	100.00	3.0	NA	NA	3.00
		C107.2	NA	NA	100.00	3.0	NA	NA	3.00
		C107.3	NA	NA	100.00	3.0	NA	NA	3.00
8	M-2	C108.1	83.33	2.50	66.67	2.0	NA	NA	2.40
		C108.2	83.33	2.50	83.33	2.5	NA	NA	2.50
		C108.3	83.33	2.50	50.00	1.5	NA	NA	2.30
		C108.4	83.33	2.50	100.00	3.0	NA	NA	2.60
		C108.5	66.67	2.00	33.33	1.0	NA	NA	1.80
		C108.6	66.67	2.00	0.00	0.0	NA	NA	1.60
9	CHEM	C109.1	66.67	2	76.67	2.3	NA	NA	2.06
		C109.2	66.67	2	76.67	2.3	NA	NA	2.06
		C109.3	66.67	2	90.00	2.7	NA	NA	2.14
		C109.4	66.67	2	90.00	2.7	NA	NA	2.14
		C109.5	33.33	1	83.33	2.5	NA	NA	1.30
		C109.6	33.33	1	83.33	2.5	NA	NA	1.30
10	FPL-2	C110.1	100.00	3.0	100.00	3.0	NA	NA	3.00
		C110.2	100.00	3.0	100.00	3.0	NA	NA	3.00
		C110.3	100.00	3.0	100.00	3.0	NA	NA	3.00
		C110.4	100.00	3.0	100.00	3.0	NA	NA	3.00
11	EM	C111.1	83.33	2.50	33.33	1.0	NA	NA	2.20
		C111.2	83.33	2.50	33.33	1.0	NA	NA	2.20
		C111.3	83.33	2.50	55.67	1.7	NA	NA	2.33
		C111.4	83.33	2.50	55.67	1.7	NA	NA	2.33
		C111.5	66.67	2.00	50.00	1.5	NA	NA	1.90
		C111.6	66.67	2.00	50.00	1.5	NA	NA	1.90
12	BXE	C112.1	100.00	3.00	100.00	3.0	NA	NA	3.00
		C112.2	100.00	3.00	89.00	2.7	NA	NA	2.93
		C112.3	100.00	3.00	83.33	2.5	NA	NA	2.90
		C112.4	100.00	3.00	50.00	1.5	NA	NA	2.70
13	BME	C113.1	83.33	2.50	89.00	2.7	NA	NA	2.53

		C113.2	83.33	2.50	89.00	2.7	NA	NA	2.53
		C113.3	83.33	2.50	100.00	3.0	NA	NA	2.60
		C113.4	83.33	2.50	100.00	3.0	NA	NA	2.60
		C113.5	66.67	2.00	100.00	3.0	NA	NA	2.20
		C113.6	66.67	2.00	100.00	3.0	NA	NA	2.20
14	EG-2	C114.1	NA	NA	100.00	3.0	NA	NA	3.00
		C114.2	NA	NA	100.00	3.0	NA	NA	3.00
		C114.3	NA	NA	100.00	3.0	NA	NA	3.00
15	Signals & Systems	C201.1	66.67	2	100.00	3	84.00	2.52	2.26
		C201.2	66.67	2	100.00	3	85.00	2.55	2.27
		C201.3	66.67	2	100.00	3	85.33	2.56	2.27
		C201.4	66.67	2	100.00	3	89.67	2.69	2.30
16	Electronic Devices & Circuits	C202.1	100.00	3	90.00	2.7	87.67	2.63	2.88
		C202.2	100.00	3	90.00	2.7	87.00	2.61	2.87
		C202.3	100.00	3	90.00	2.7	84.00	2.52	2.86
		C202.4	100.00	3	90.00	2.7	85.00	2.55	2.86
		C202.5	100.00	3	66.67	2	85.33	2.56	2.75
17	Electrical Circuits	C203.1	100.00	3	100.00	3	89.67	2.69	2.94
		C203.2	100.00	3	77.67	2.33	85.33	2.56	2.80
		C203.3	100.00	3	100.00	3	89.67	2.69	2.94
18	Data Structures and Algorithms	C204.1	100.00	3	76.67	2.3	90.33	2.71	2.83
		C204.2	100.00	3	66.67	2	90.33	2.71	2.78
		C204.3	100.00	3	90.00	2.7	92.33	2.77	2.91
		C204.4	100.00	3	66.67	2	90.33	2.71	2.78
		C204.5	100.00	3	100.00	3	89.33	2.68	2.94
		C204.6	100.00	3	100.00	3	89.33	2.68	2.94
19	Digital Electronics	C205.1	100.00	3	100.00	3	91.33	2.74	2.95
		C205.2	100.00	3	83.33	2.5	90.00	2.7	2.86
		C205.3	100.00	3	50.00	1.5	90.33	2.71	2.70
		C205.4	100.00	3	100.00	3	92.33	2.77	2.95
		C205.5	100.00	3	83.33	2.5	97.33	2.92	2.90
20	Electronic Measuring	C206.1	NA	NA	100.00	3	96.67	2.9	2.98
		C206.2	NA	NA	100.00	3	96.00	2.88	2.98
		C206.3	NA	NA	100.00	3	97.33	2.92	2.98
		C206.4	NA	NA	100.00	3	98.00	2.94	2.99
21	Audit Course 1 Japanese Languag	C207.1	NA	NA	100.00	3	100.00	3	3.00
		C207.2	NA	NA	100.00	3	100.00	3	3.00
		C207.3	NA	NA	100.00	3	100.00	3	3.00
		C207.4	NA	NA	100.00	3	100.00	3	3.00
22	Engineering Mathematics III	C208.1	100.00	3	83.33	2.5	87.00	2.61	2.84
		C208.2	100.00	3	66.67	2	89.33	2.68	2.78
		C208.3	100.00	3	100.00	3	87.00	2.61	2.92
		C208.4	100.00	3	100.00	3	83.33	2.5	2.90
		C208.5	100.00	3	100.00	3	85.67	2.57	2.91

23	Integrated Circuits	C209.1	100.00	3	100.00	3	89.33	2.68	2.94
		C209.2	100.00	3	100.00	3	88.33	2.65	2.93
		C209.3	100.00	3	100.00	3	87.67	2.63	2.93
		C209.4	100.00	3	100.00	3	87.33	2.62	2.92
		C209.5	100.00	3	100.00	3	90.67	2.72	2.94
24	Control Systems	C210.1	100.00	3	100.00	3	0.00		2.40
		C210.2	100.00	3	66.67	2	91.67	2.75	2.79
		C210.3	100.00	3	66.67	2	93.33	2.8	2.80
		C210.4	100.00	3	66.67	2	92.00	2.76	2.79
		C210.5	100.00	3	66.67	2	88.33	2.65	2.77
		C210.6	100.00	3	66.67	2	90.00	2.7	2.78
25	Analog Communication	C211.1	100.00	3	66.67	2	90.67	2.72	2.78
		C211.2	89.00	2.67	100.00	3	84.00	2.52	2.69
		C211.3	89.00	2.67	66.67	2	89.67	2.69	2.57
		C211.4	100.00	3	100.00	3	89.00	2.67	2.93
26	Object Oriented Programming	C212.1	100.00	3	77.67	2.33	91.00	2.73	2.84
		C212.2	100.00	3	100.00	3	90.00	2.7	2.94
		C212.3	100.00	3	100.00	3	88.33	2.65	2.93
		C212.4	100.00	3	100.00	3	89.33	2.68	2.94
		C212.5	100.00	3	100.00	3	93.00	2.79	2.96
		C212.6	100.00	3	100.00	3	89.33	2.68	2.94
27	Employability Skill Develop	C213.1	100.00	3	100.00	3	84.00	2.52	2.90
		C213.2	NA	NA	100.00	3	100.00	3	3.00
		C213.3	NA	NA	100.00	3	100.00	3	3.00
		C213.4	NA	NA	100.00	3	100.00	3	3.00
28	Audit Course 2 Japanese Languag	C214.1	NA	NA	100.00	3	100.00	3	3.00
		C214.2	NA	NA	100.00	3	100.00	3	3.00
		C214.3	NA	NA	100.00	3	100.00	3	3.00
		C214.4	NA	NA	100.00	3	100.00	3	3.00
29	Digital Communication	C301.1	NA	NA	100.00	3	100.00	3	3.00
		C301.2	100.00	3	50.00	1.5	80.33	2.41	2.64
		C301.3	100.00	3	55.67	1.67	86.67	2.6	2.71
		C301.4	100.00	3	100.00	3	82.67	2.48	2.90
30	Digital Signal Processing	C302.1	100.00	3	100.00	3	84.67	2.54	2.91
		C302.2	66.67	2	66.67	2	88.33	2.65	2.13
		C302.3	66.67	2	100.00	3	87.00	2.61	2.28
		C302.4	66.67	2	100.00	3	86.00	2.58	2.28
31	Electromagnetics	C303.1	66.67	2	100.00	3	87.33	2.62	2.28
		C303.2	100.00	3	100.00	3	88.33	2.65	2.93
		C303.3	100.00	3	100.00	3	87.00	2.61	2.92
		C303.4	100.00	3	100.00	3	86.00	2.58	2.92
		C303.5	100.00	3	100.00	3	87.33	2.62	2.92
		C303.6	100.00	3	100.00	3	84.00	2.52	2.90
32	Micro	C304.1	100.00	3	100.00	3	88.00	2.64	2.93

	Controllers	C304.2	33.33	1	100.00	3	83.67	2.51	1.62
		C304.3	33.33	1	100.00	3	82.00	2.46	1.61
33	Mechatronics	C305.1	33.33	1	100.00	3	95.00	2.85	1.69
		C305.2	66.67	2	100.00	3	86.67	2.6	2.28
		C305.3	66.67	2	100.00	3	86.00	2.58	2.28
		C305.4	100.00	3	100.00	3	78.00	2.34	2.87
34	Signal Processing & Comm Lab (DC & DSP)	C306.1	100.00	3	100.00	3	84.00	2.52	2.90
		C306.2	100.00	3	100.00	3	80.33	2.41	2.88
		C306.3	100.00	3	100.00	3	82.67	2.48	2.90
		C306.4	100.00	3	100.00	3	78.00	2.34	2.87
		C306.5	100.00	3	100.00	3	86.67	2.6	2.92
		C306.6	100.00	3	100.00	3	84.67	2.54	2.91
35	Microcontrollers & Mechatronics Lab	C307.1	100.00	3	100.00	3	81.00	2.43	2.89
		C307.2	100.00	3	100.00	3	86.67	2.6	2.92
		C307.3	100.00	3	100.00	3	83.33	2.5	2.90
		C307.4	100.00	3	100.00	3	83.33	2.5	2.90
		C307.5	100.00	3	100.00	3	83.33	2.5	2.90
		C307.4	100.00	3	100.00	3	86.67	2.6	2.92
36	Electronics System Design	C308.1	100.00	3	100.00	3	83.33	2.5	2.90
		C308.2	0.00	0	100.00	3	82.67	2.48	0.98
		C308.3	0.00	0	100.00	3	80.67	2.42	0.96
		C308.4	0.00	0	100.00	3	97.33	2.92	1.06
37	Audit Course 3 Japanese Languag	C309.1	0.00	0	100.00	3	82.00	2.46	0.97
		C309.2	NA	NA	100.00	3	100.00	3	3.00
		C309.3	NA	NA	100.00	3	100.00	3	3.00
		C309.4	NA	NA	100.00	3	100.00	3	3.00
38	Power Electronics	C310.1	NA	NA	100.00	3	100.00	3	3.00
		C310.2	66.67	2	100.00	3	96.67	2.9	2.34
		C310.3	66.67	2	100.00	3	85.33	2.56	2.27
		C310.4	66.67	2	100.00	3	96.00	2.88	2.34
39	Information Theory, Coding	C311.1	66.67	2	100.00	3	97.33	2.92	2.34
		C311.2	100.00	3	50.00	1.5	82.67	2.48	2.66
		C311.3	100.00	3	100.00	3	84.67	2.54	2.91
		C311.4	100.00	3	100.00	3	80.33	2.41	2.88
40	Business Management	C312.1	100.00	3	83.33	2.5	86.67	2.6	2.84
		C312.2	66.67	2	100.00	3	84.00	2.52	2.26
		C312.3	66.67	2	100.00	3	98.00	2.94	2.35
		C312.4	66.67	2	100.00	3	88.67	2.66	2.29
41	Advanced Processors	C313.1	66.67	2	100.00	3	98.00	2.94	2.35
		C313.2	100.00	3	89.00	2.67	88.33	2.65	2.88
		C313.3	100.00	3	55.67	1.67	89.33	2.68	2.72
		C313.4	100.00	3	66.67	2	87.00	2.61	2.76
42	System Program	C314.1	100.00	3	83.33	2.5	92.67	2.78	2.88
		C314.2	100.00	3	100.00	3	89.33	2.68	2.94

	ming and	C314.3	100.00	3	100.00	3	91.67	2.75	2.95
		C314.4	100.00	3	100.00	3	87.33	2.62	2.92
43	Power & ITCT Lab	C315.1	100.00	3	100.00	3	88.00	2.64	2.93
		C315.2	100.00	3	100.00	3	86.33	2.59	2.92
		C315.3	100.00	3	100.00	3	92.67	2.78	2.96
		C315.4	100.00	3	100.00	3	87.00	2.61	2.92
		C315.5	100.00	3	100.00	3	81.67	2.45	2.89
		C315.6	100.00	3	100.00	3	82.67	2.48	2.90
44	AP & SP Lab	C316.1	100.00	3	100.00	3	79.33	2.38	2.88
		C316.2	100.00	3	100.00	3	96.00	2.88	2.98
		C316.3	100.00	3	100.00	3	96.67	2.9	2.98
		C316.4	100.00	3	100.00	3	97.33	2.92	2.98
		C316.5	100.00	3	100.00	3	96.67	2.9	2.98
45	Employability Skills & Mini	C317.1	100.00	3	100.00	3	96.00	2.88	2.98
		C317.2	100.00	3	100.00	3	100.00	3	3.00
		C317.3	100.00	3	100.00	3	100.00	3	3.00
		C317.4	100.00	3	100.00	3	100.00	3	3.00
46	Audit Course 4 Japanese Languag	C318.1	100.00	3	100.00	3	100.00	3	3.00
		C318.2	NA	NA	100.00	3	100.00	3	3.00
		C318.3	NA	NA	100.00	3	100.00	3	3.00
		C318.4	NA	NA	100.00	3	100.00	3	3.00
47	VLSI Design & Technology	C401.1	NA	NA	100.00	3	100.00	3	3.00
		C401.2	66.67	2	83.33	2.5	95.00	2.85	2.25
		C401.3	66.67	2	75.00	2.25	94.00	2.82	2.20
		C401.4	66.67	2	83.33	2.5	93.33	2.8	2.24
		C401.5	66.67	2	77.67	2.33	94.33	2.83	2.22
		C401.6	66.67	2	91.67	2.75	92.00	2.76	2.27
48	Computer Networks & Security	C402.1	66.67	2	77.67	2.33	94.33	2.83	2.22
		C402.2	100.00	3	100.00	3	89.67	2.69	2.94
		C402.3	100.00	3	100.00	3	89.33	2.68	2.94
		C402.4	100.00	3	100.00	3	88.33	2.65	2.93
		C402.5	100.00	3	90.00	2.7	90.33	2.71	2.89
		C402.6	100.00	3	66.67	2	90.33	2.71	2.78
49	Radiation & Microwave Techniques	C403.1	100.00	3	76.67	2.3	89.33	2.68	2.82
		C403.2	100.00	3	83.33	2.5	86.67	2.6	2.84
		C403.3	100.00	3	50.00	1.5	86.67	2.6	2.68
		C403.4	100.00	3	50.00	1.5	93.33	2.8	2.72
		C403.5	100.00	3	83.33	2.5	90.00	2.7	2.86
		C403.6	100.00	3	83.33	2.5	86.67	2.6	2.84
50	Elective I DIVP	C404.1	100.00	3	66.67	2	86.67	2.6	2.76
		C404.2	100.00	3	100.00	3	100.00	3	3.00
		C404.3	100.00	3	100.00	3	100.00	3	3.00
		C404.4	100.00	3	100.00	3	76.67	2.3	2.86
		C404.5	100.00	3	100.00	3	73.33	2.2	2.84

		C404.6	100.00	3	100.00	3	73.33	2.2	2.84
51	Elective II (Electronic Product Design)	C405a.1	100.00	3	100.00	3	86.67	2.6	2.92
		C405a.2	100.00	3	100.00	3	96.67	2.9	2.98
		C405a.3	100.00	3	100.00	3	97.33	2.92	2.98
		C405a.4	100.00	3	100.00	3	98.67	2.96	2.99
		C405a.5	100.00	3	100.00	3	97.00	2.91	2.98
		C405a.6	100.00	3	100.00	3	97.33	2.92	2.98
52	Elective II (Artifici	C405b.1	100.00	3	100.00	3	96.00	2.88	2.98
		C405b.2	100.00	3	100.00	3	100.00	3	3.00
		C405b.3	100.00	3	89.00	2.67	66.67	2	2.75
53	Lab Practice I (CNS & RMT)	C406.1	100.00	3	83.33	2.5	100.00	3	2.92
		C406.2	66.67	2	100.00	3	93.33	2.8	2.32
		C406.3	66.67	2	100.00	3	93.33	2.8	2.32
		C406.4	66.67	2	100.00	3	97.33	2.92	2.34
		C406.5	66.67	2	100.00	3	100.00	3	2.36
54	Lab Practice II (VLSI & ELE-I)	C407.1	66.67	2	100.00	3	100.00	3	2.36
		C407.2	100.00	3	100.00	3	95.00	2.85	2.97
		C407.3	100.00	3	100.00	3	94.00	2.82	2.96
		C407.4	100.00	3	100.00	3	93.33	2.8	2.96
		C407.5	100.00	3	100.00	3	94.33	2.83	2.97
		C407.6	100.00	3	100.00	3	92.00	2.76	2.95
55	Project Stage I	C408.1	100.00	3	100.00	3	94.33	2.83	2.97
		C408.2	100.00	3	100.00	3	100.00	3	3.00
		C408.3	100.00	3	100.00	3	100.00	3	3.00
		C408.4	100.00	3	100.00	3	100.00	3	3.00
		C408.5	100.00	3	100.00	3	100.00	3	3.00
		C408.6	100.00	3	100.00	3	100.00	3	3.00
56	Audit Course 5 Green Energy	C409.1	100.00	3	100.00	3	100.00	3	3.00
		C409.2	NA	NA	100.00	3	100.00	3	3.00
		C409.3	NA	NA	100.00	3	100.00	3	3.00
		C409.4	NA	NA	100.00	3	100.00	3	3.00
		C409.5	NA	NA	100.00	3	100.00	3	3.00
		C409.6	NA	NA	100.00	3	100.00	3	3.00
		C409.7	NA	NA	100.00	3	100.00	3	3.00
57	Mobile Communication	C410.1	NA	NA	100.00	3	100.00	3	3.00
		C410.2	100.00	3	75.00	2.25	89.33	2.68	2.82
		C410.3	100.00	3	75.00	2.25	97.33	2.92	2.86
		C410.4	100.00	3	100.00	3	86.67	2.6	2.92
58	Broadband Communication Systems	C411.1	100.00	3	100.00	3	88.33	2.65	2.93
		C411.2	100.00	3	100.00	3	93.33	2.8	2.96
		C411.3	100.00	3	100.00	3	93.33	2.8	2.96
		C411.4	100.00	3	50.00	1.5	96.67	2.9	2.74
		C411.5	100.00	3	100.00	3	93.33	2.8	2.96
		C411.6	100.00	3	100.00	3	90.00	2.7	2.94

59	Elective III (Audio Video	C412.1	100.00	3	100.00	3	93.33	2.8	2.96
		C412.2	100.00	3	91.67	2.75	88.67	2.66	2.89
		C412.3	100.00	3	75.00	2.25	90.67	2.72	2.82
		C412.4	100.00	3	100.00	3	86.00	2.58	2.92
60	Elective IV (Wireless Sensor Networks)	C413a.1	100.00	3	100.00	3	86.67	2.6	2.92
		C413a.2	100.00	3	100.00	3	86.67	2.6	2.92
		C413a.3	100.00	3	100.00	3	97.33	2.92	2.98
		C413a.4	100.00	3	100.00	3	84.67	2.54	2.91
		C413a.5	100.00	3	100.00	3	82.67	2.48	2.90
		C413a.6	100.00	3	100.00	3	81.00	2.43	2.89
61	Elective IV (Robotics)	C413b.1	100.00	3	100.00	3	79.33	2.38	2.88
		C413b.2	100.00	3	100.00	3	89.33	2.68	2.94
		C413b.3	100.00	3	100.00	3	80.67	2.42	2.88
		C413b.4	100.00	3	100.00	3	82.67	2.48	2.90
		C413b.5	100.00	3	100.00	3	80.67	2.42	2.88
		C413b.6	100.00	3	100.00	3	88.00	2.64	2.93
62	Lab Practice III (MC & BCS)	C414.1	100.00	3	100.00	3	92.67	2.78	2.96
		C414.2	100.00	3	100.00	3	93.33	2.8	2.96
		C414.3	100.00	3	100.00	3	93.33	2.8	2.96
		C414.4	100.00	3	100.00	3	93.33	2.8	2.96
		C414.5	100.00	3	100.00	3	93.33	2.8	2.96
63	Lab Practice IV (ELE-III-AVE)	C415.1	100.00	3	100.00	3	100.00	3	3.00
		C415.2	100.00	3	100.00	3	100.00	3	3.00
		C415.3	100.00	3	100.00	3	100.00	3	3.00
		C415.4	100.00	3	100.00	3	100.00	3	3.00
		C415.5	100.00	3	100.00	3	100.00	3	3.00
		C415.6	100.00	3	100.00	3	100.00	3	3.00
64	Project Stage II	C416.1	100.00	3	100.00	3	100.00	3	3.00
		C416.2	100.00	3	100.00	3	100.00	3	3.00
		C416.3	100.00	3	100.00	3	100.00	3	3.00
		C416.4	100.00	3	100.00	3	100.00	3	3.00
		C416.5	100.00	3	100.00	3	100.00	3	3.00
		C416.6	100.00	3	100.00	3	100.00	3	3.00
65	Audit Course 6	C417.1	100.00	3	100.00	3	100.00	3	3.00
		C417.2	NA	NA	100.00	3	100.00	3	3.00

3.3 Attainment of Program Outcomes and Program Specific Outcomes (50)

Institute Marks 46

3.3.1 Describe Assessment Tools and Processes Used for Measuring the Attainment of Each of the Program Outcomes and Program Specific Outcomes (10)

Institute Marks 10

The PO and PSO assessment is done using direct and indirect methods. The assessment tools, process and frequency used for measuring the attainment of each PO and PSO is given in table B.3.3.1a and B.3.3.1b.

a. Direct Method (80% weightage)

- The assessment process is periodically documented and it demonstrates the degree to which the Programme Outcomes are attained.
- It is based on the data collected using various methods and tools such as assignments, class tests, experiments, mock oral and university exam results.
- It includes the assessment of each CO contributing to the attainment of POs and PSOs.

Table B.3.3.1a: Direct Assessment Tools

Sr. No.	Direct Assessment Tool	Process	Frequency	Weightage
External Assessment				
1	Theory Exam	1) Data gathered as described in 3.2.1 2) CO attainment as described in 3.2.2 is used 3) CO attainment contribution to PO attainment is calculated for every course	Once in Semester	80%
2	PR/OR Exam		Once in Semester	
3	Seminar/ Project Exam		Once in Semester	
Internal Assessment				
1	Unit Test	1) Data gathering as described in 3.2.1 2) CO attainment as described in 3.2.2 is used 3) CO attainment contribution to PO attainment is calculated for every course	Twice in Semester	20%
2	Preliminary Examination		Once in Semester	
3	Quizzes		Once in Semester (As per the requirement of course)	
4	PR Assessment	Student performance with rubrics for evaluation of activities are used to calculate CO attainment	Once in Semester	
5	Assignments/ Tutorials		Once in Semester (As per the requirement of course)	

6	Mock Oral		Once in Semester	
7	Seminar/ Project review		Once in Semester	

b. Indirect Method (20% weightage)

The indirect attainment level of POs and PSOs is determined based on:

- Program exit survey
- Alumni feedback
- Employer feedback
- Co-curricular and Extra-curricular activities feedback.

Table B.3.3.1b: Indirect Assessment Tools

Sr. No.	Indirect Assessment Tool	Process	Stakeholder involved	Frequency
1	Program Exit Survey	Feedback forms are customized to an average value as per the levels 1,2 and 3	BE Student	Once in Year
2	Alumni feedback		Alumni	Once in Year
3	Employer feedback		Employer	Once in Year
4	Co-curricular and Extra-curricular activities feedback		All students	As per the activities conducted.

The PO/PSO assessment and attainment process is shown in figure B.3.3.1a.

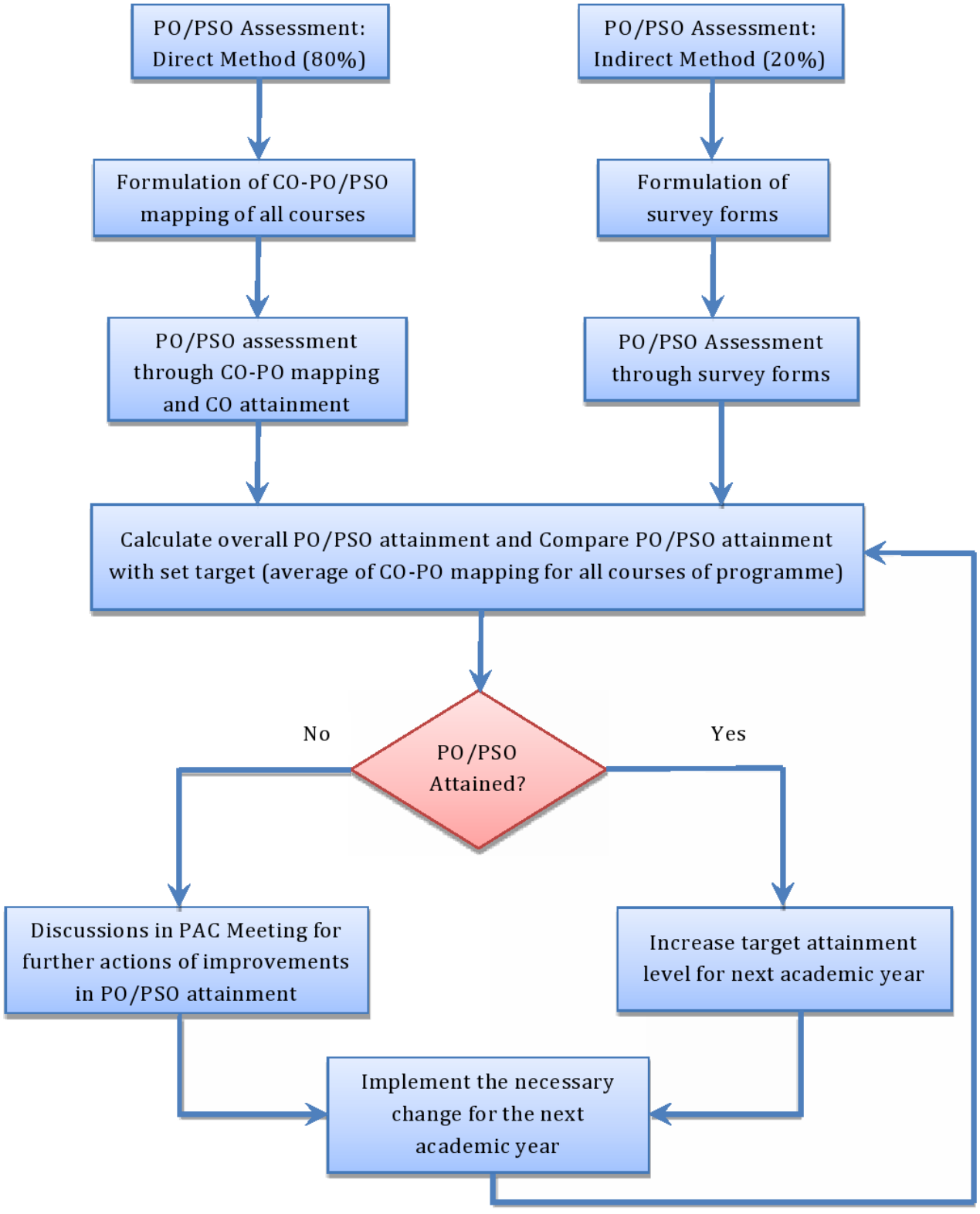


Figure B.3.3.1a: PO/PSO Assessment and Attainment Process

3.3.2 Provide Results of Evaluation of Each PO&PSO (40)

Institute Marks 36

Table B.3.3.2a: PO/PSO Attainment (BE 2014-18 Batch)

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	0.92	0.72	-	-	-	-	-	-	-	-	-	-	-	-
C102	2.08	1.38	-	-	-	-	-	-	-	-	-	-	-	-
C103	3.00	2.00	2.00	-	2.00	-	-	-	-	-	-	-	-	-
C104	2.08	1.33	-	-	-	-	-	-	-	-	-	-	-	-
C105	2.98	2.00	2.00	-	2.00	2.00	2.00	-	-	-	-	1.59	-	-
C106	1.60	1.60	1.60	-	-	-	-	2.00	-	1.33	-	1.47	-	-
C107	3.00	-	-	-	-	-	-	-	2.00	-	-	-	-	-
C108	0.77	0.56	-	-	-	-	-	-	-	-	-	-	-	-
C109	1.43	1.42	-	-	-	-	-	-	-	-	-	-	-	-
C110	3.00	2.00	2.00	-	2.00	-	-	-	-	-	-	-	-	-
C111	1.09	1.09	-	-	0.73	-	-	-	0.73	-	-	0.36	-	-
C112	0.96	0.86	0.53	-	-	-	-	-	-	-	-	-	-	-
C113	2.13	1.50	-	-	-	-	-	-	-	-	-	-	-	-
C114	3.00	2.00	1.00	-	2.00	-	-	-	1.00	-	-	1.00	-	-
C201	3.00	2.50		-	1.00	-	-	-	-	-	-	2.00	-	-
C202	2.60	2.43	1.73	1.7	1.73	-	-	-	-	-	-	1.73	-	-
C203	2.97	2.48				-	-	-	-	-	-	1.93	-	-
C204	2.31	1.73	1.44		2.60	-	-	-	-	-	-	1.73	-	-
C205	2.60	2.31	1.95	1.7	1.73	-	-	-	-	-	-	1.73	-	-
C206	2.67	2.50	-	-	2.00	2.00	-	-	-	1.67	-	2.00	-	-
C207	1.20	1.04	-	-	-	-	-	-	-	-	-	-	-	-
C208	2.43	2.17	1.73	-	-	-	-	-	-	-	-	-	-	-
C209	1.87	1.33	-	-	-	-	-	-	-	-	-	1.33	-	-
C210	2.92	1.95	-	-	2.00	-	-	-	-	1.66	-	-	-	-
C211	2.50	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C212	3.00	1.83	1.67	-	3.00	-	-	-	-	-	-	2.00	-	-
C213	-	-	-	-	-	-	-	2.50	3.00	3.00	2.0	2.00	-	-
C301	1.97	1.47	-	-	-	-	-	-	-	-	-	1.47	-	-
C302	3.00	2.50	2.50	1.5	-	-	-	-	-	-	-	-	2.0	2.5
C303	2.80	2.80	2.33	-	-	-	-	-	-	-	-	-	1.8	2.8
C304	2.66	1.84	-	-	-	-	-	-	-	-	-	-	-	-
C305	2.48	1.80	1.80	-	-	-	-	-	-	-	-	-	-	-
C306	3.00	2.43	2.50	2.0	3.00	-	-	-	-	-	-	-	2.0	2.0
C307	2.50	2.25	2.33	1.67	2.00	-	-	-	-	-	-	1.00	2.00	2.00
C308	3.00	3.00	3.00	2.0	3.00	-	-	-	2.33	3.00	-	2.00	2.0	2.3

C309	2.50	1.67	2.00	-	-	-	-	-	-	-	-	-	-	-
C310	2.25	2.25	-	-	-	1.80	1.80	-	-	-	-	-	-	-
C311	2.93	2.28	1.95	1.9	-	-	-	-	-	-	-	1.95	1.9	1.9
C312	-	-	-	-	-	2.91	1.98	1.32	1.98	1.32	1.3	1.32	-	-
C313	2.93	2.93	2.31	-	-	-	-	-	-	-	-	-	1.9	-
C314	2.80	2.25	2.25	2.0	3.00	2.00	2.00	-	-	-	-	-	-	-
C315	2.20	1.91	1.65	1.4	1.47	-	-	-	-	-	-	1.47	1.4	1.4
C316	3.00	3.00	3.00	3.0	3.00	3.00	3.00	2.33	2.50	3.00	1.5	2.00	3.0	3.0
C401	2.13	1.67	1.40	-	-	-	-	-	-	-	-	-	-	-
C402	2.57	1.80	-	-	-	-	-	0.90	-	-	-	-	-	-
C403	2.90	1.93	1.93	1.9	-	-	-	-	1.93	-	-	1.93	2.9	1.9
C404a	2.57	2.80	1.87	-	-	-	-	-		-	-	-	1.8	1.8
C404b	3.00	2.00	2.00	-	-	-	-	-		-	-	-	-	-
C405	2.98	1.98	1.97	-	-	1.93	-	-	-	-	-	-	-	-
C406	2.60	2.00	2.00	-	2.00	-	-	-	-	-	-	-	2.0	3.0
C407	3.00	2.50	2.00	1.6	2.33	-	-	-	-	-	-	2.00	3.0	3.0
C408	3.00	3.00	3.00	3.0	3.00	2.00	2.00	3.00	3.00	3.00	2.0	2.00	2.0	2.0
C409	2.52	1.80	-	-	-	-	1.80	-	-	-	-	-	-	-
C410	2.61	2.40	2.90	-	-	1.93	1.90	0.93	-	-	-	-	1.9	1.9
C411	1.95	1.95	1.47	-	-	-	-		-	-	-	-	-	-
C412	2.50	2.00	-	-	-	-	-	1.00	-	-	-	-	-	-
C413	3.00	3.00	-	-	-	-	-	-	-	-	-	-	2.0	2.5
C414	3.00	2.50	2.00	-	2.00	-	-	-	-	-	-	2.00	-	2.0
C415	3.00	3.00	3.00	3.0	3.00	3.00	3.00	3.00	3.00	3.00	3.0	3.00	3.0	3.0
Direct Attainm	2.48	2.03	2.02	2.05	2.20	2.26	2.16	1.89	2.15	2.33	1.96	1.72	2.17	2.31
80% of Direct Attainm	1.98	1.62	1.62	1.64	1.76	1.81	1.73	1.51	1.72	1.86	1.57	1.38	1.74	1.85
Indirect Attainm	2.62	2.57	2.84	2.54	2.90	2.48	2.63	2.89	2.44	2.96	2.82	2.85	2.55	2.69
20 % of Indirect Attainm	0.52	0.51	0.57	0.51	0.58	0.50	0.53	0.58	0.49	0.59	0.56	0.57	0.51	0.54
PO/PSO Attainm	2.51	2.13	2.19	2.14	2.34	2.30	2.26	2.09	2.21	2.46	2.13	1.95	2.25	2.39

Table B.3.3.2b:PO/PSO Target and PO-PSO Attainment (BE 2014-2018 Batch)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
PO/PSO Target	2.83	2.34	2.18	2.13	2.33	2.30	2.22	2.09	2.38	2.46	2.10	1.94	2.24	2.37
PO/PSO Attainment	2.51	2.13	2.19	2.14	2.34	2.30	2.26	2.09	2.21	2.46	2.13	1.95	2.25	2.39

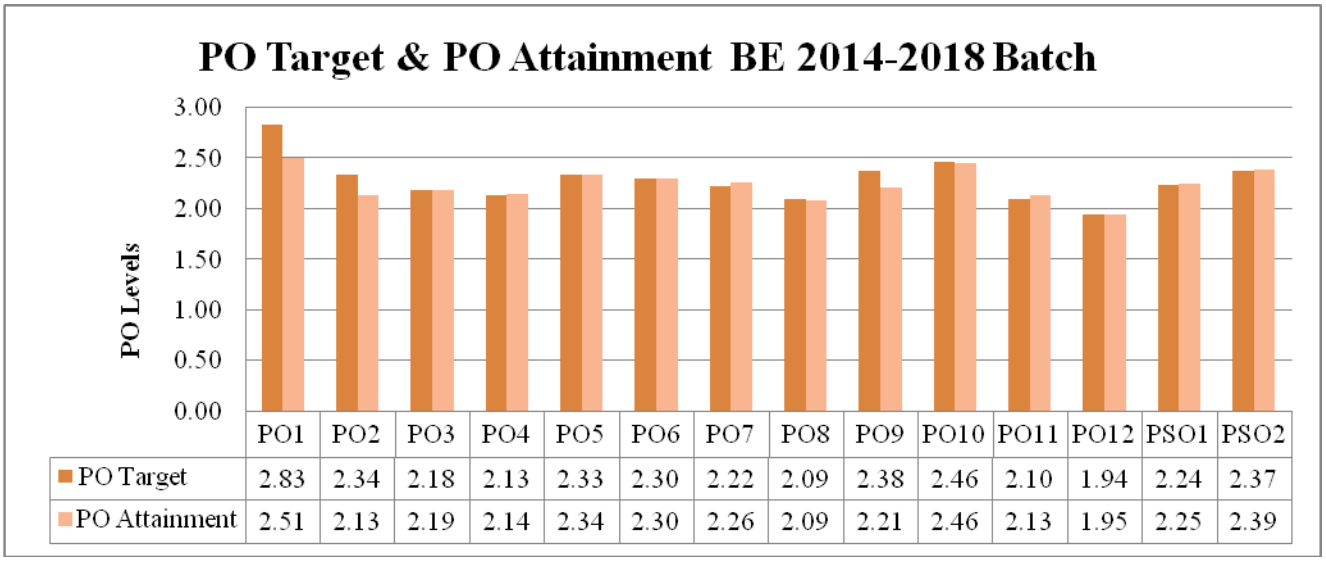


Table B.3.3.2c: PO/PSO Attainment (BE 2015-19Batch)

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	2.58	1.93	-	-	-	-	-	-	-	-	-	-	-	-
C102	2.43	1.62	-	-	-	-	-	-	-	-	-	-	-	-
C103	3.00	2.00	2.00	-	2.00	-	-	-	-	-	-	-	-	-
C104	2.28	1.42	-	-	-	-	-	-	-	-	-	-	-	-
C105	3.00	2.00	2.00	-	2.00	2.00	2.00	-	-	-	-	1.60	-	-
C106	2.12	1.80	1.80	-	-	-	-	2.73	-	1.67	-	1.83	-	-
C107	3.00	-	-	-	-	-	-	-	2.00	-	-	-	-	-
C108	2.14	1.60	-	-	-	-	-	-	-	-	-	-	-	-
C109	2.60	2.22	-	-	-	-	-	-	-	-	-	-	-	-
C110	3.00	2.00	2.00	-	2.00	-	-	-	-	-	-	-	-	-
C111	1.31	1.31	-	-	0.87	-	-	-	0.87	-	-	0.44	-	-
C112	1.49	1.41	0.98	-	-	-	-	-	-	-	-	-	-	-
C113	2.98	2.98	-	-	-	-	-	-	-	-	-	-	-	-
C114	3.00	2.00	1.00	-	2.00	-	-	-	1.00	-	-	1.00	-	-
C201	2.90	2.66	-	-	0.97	-	-	-	-	-	-	1.94	-	-
C202	2.75	2.75	1.83	1.83	1.82	-	-	-	-	-	-	-	1.83	-
C203	2.82	2.82	2.76	1.84	-	-	-	-	-	-	-	-	-	-
C204	2.78	2.05	1.83	2.05	2.78	-	-	-	-	-	-	1.80	-	-
C205	2.20	2.00	2.71	2.59	1.99	-	-	-	-	1.86	-	2.59	2.59	1.99
C206	3.00	3.00	3.00	3.00	2.00	2.00	-	-	-	3.00	-	3.00	3.00	3.00
C207	-	-	-	-	-	-	-	-	-	3.00	-	3.00	-	-
C208	2.74	2.20	-	-	-	-	-	-	-	-	-	1.83	-	-
C209	2.89	2.89	2.12	1.93	-	-	-	-	-	-	-	-	2.90	-
C210	1.86	1.19	-	-	-	-	-	-	-	-	-	1.72	-	-
C211	2.86	2.54	-	-	1.99	-	-	-	-	-	-	-	1.90	-
C212	2.75	1.83	1.85	1.85	2.75	-	-	-	-	-	-	1.85	-	-
C213	-	-	-	-	-	-	-	3.00	3.00	3.00	3.00	3.00	-	-
C214	-	-	-	-	-	-	-	-	-	3.00	-	3.00	-	-
C301	2.80	1.85	-	-	-	-	-	-	-	-	-	1.94	-	-
C302	2.80	2.80	2.81	1.41	-	-	-	-	-	-	-	-	2.18	2.34
C303	2.82	1.88	-	-	-	-	-	-	-	-	-	-	-	-
C304	2.20	2.20	1.83	-	-	-	-	-	-	-	-	-	1.46	1.46
C305	2.83	2.59	1.87	-	-	1.87	-	-	-	-	2.81	-	2.81	2.81
C306	2.90	2.71	2.91	2.91	2.66	-	-	-	-	-	-	-	1.94	1.94
C307	2.91	2.91	2.90	1.93	1.94	1.93	-	-	-	-	-	1.94	1.93	1.93
C308	2.82	2.82	2.82	1.88	2.81	-	-	-	2.35	2.82	-	1.88	2.81	2.82
C309	-	-	-	-	-	-	-	-	-	3.00	-	3.00	-	-
C310	2.26	2.26	2.25	-	-	-	-	-	-	-	-	-	1.50	-
C311	2.76	1.80	2.25	-	-	-	-	-	-	-	-	1.85	-	-

C312	-	-	-	-	-	1.93	1.92	1.93	2.90	1.93	2.90	2.57	-	-
C313	1.46	1.46	1.46	0.97	-	-	-	-	-	-	-	0.97	-	-
C314	1.45	0.97	1.91	-	-	-	-	-	-	-	-	-	-	-
C315	2.93	2.55	1.96	1.96	2.93	-	-	-	-	-	-	-	1.96	1.96
C316	2.71	2.52	2.58	1.94	2.13	-	-	-	-	-	-	1.93	1.94	1.94
C317	2.91	2.91	2.91	2.91	2.91	1.93	1.93	1.93	2.90	2.90	1.94	1.94	2.92	2.92
C318	-	-	-	-	-	-	-	-	-	2.00	-	3.00	-	-
C401	2.78	2.61	2.79	-	-	-	-	-	-	-	-	-	-	-
C402	2.08	1.38	-	-	-	-	-	0.69	-	-	-	-	-	-
C403	2.73	2.43	-	-	-	-	-	-	-	-	-	-	-	-
C404a	2.10	2.10	1.63	-	-	-	-	-	-	-	-	-	-	-
C404b	2.94	2.94	2.94	2.93	-	-	-	-	-	-	-	-	-	-
C405	2.24	1.46	1.49	-	-	1.51	-	-	-	2.24	1.50	1.74	-	-
C406	2.91	2.13	1.94	1.94	1.94	-	-	-	-	-	-	1.94	1.94	1.94
C407	2.02	1.80	1.35	1.35	1.79	-	-	-	-	-	-	-	1.79	1.91
C408	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00	2.00	2.00
C409	-	-	-	-	-	3.00	3.00	-	-	-	3.00	-	-	-
C410	2.73	2.73	-	-	-	-	1.82	-	-	-	-	-	-	-
C411	2.77	2.62	2.20	-	-	-	-	-	-	-	-	1.86	-	-
C412	2.88	2.90	-	-	-	2.85	1.90	-	-	-	-	2.85	-	-
C413	2.76	1.95	1.94	-	-	-	1.94	0.97	-	-	-	-	-	-
C414	2.96	2.76	2.96	1.97	1.97	2.96	1.97	-	-	-	-	-	1.97	2.47
C415	3.00	2.50	2.50	2.25	2.33	-	2.00	-	-	-	-	3.00	-	-
C416	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C417	-	-	-	-	-	3.00	3.00	-	-	-	-	3.00	-	-
Direct Attainment	**2.61**	**2.23**	**2.21**	**2.16**	**2.19**	**2.38**	**2.29**	**2.16**	**2.34**	**2.60**	**2.64**	**2.16**	**2.22**	**2.28**
80% of Direct Attainment	**2.08**	**1.79**	**1.77**	**1.73**	**1.75**	**1.91**	**1.83**	**1.72**	**1.87**	**2.08**	**2.11**	**1.73**	**1.78**	**1.82**
Indirect Attainment	**2.51**	**2.81**	**2.38**	**2.64**	**2.95**	**2.18**	**2.24**	**2.40**	**2.64**	**2.36**	**2.38**	**2.38**	**2.62**	**2.89**
20 % of Indirect Attainment	**0.50**	**0.56**	**0.48**	**0.53**	**0.59**	**0.44**	**0.45**	**0.48**	**0.53**	**0.47**	**0.48**	**0.48**	**0.52**	**0.58**
PO/PSO Attainment	**2.59**	**2.35**	**2.25**	**2.25**	**2.34**	**2.34**	**2.28**	**2.20**	**2.40**	**2.55**	**2.59**	**2.20**	**2.30**	**2.40**

Table B.3.3.2d:PO/PSO Target and PO-PSO Attainment (BE 2015-2019 Batch)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
PO/PSO Target	2.83	2.34	2.19	2.14	2.34	2.30	2.26	2.09	2.38	2.46	2.13	1.95	2.25	2.39
PO/PSO Attainment	2.59	2.35	2.25	2.25	2.34	2.34	2.28	2.20	2.40	2.55	2.59	2.20	2.30	2.40

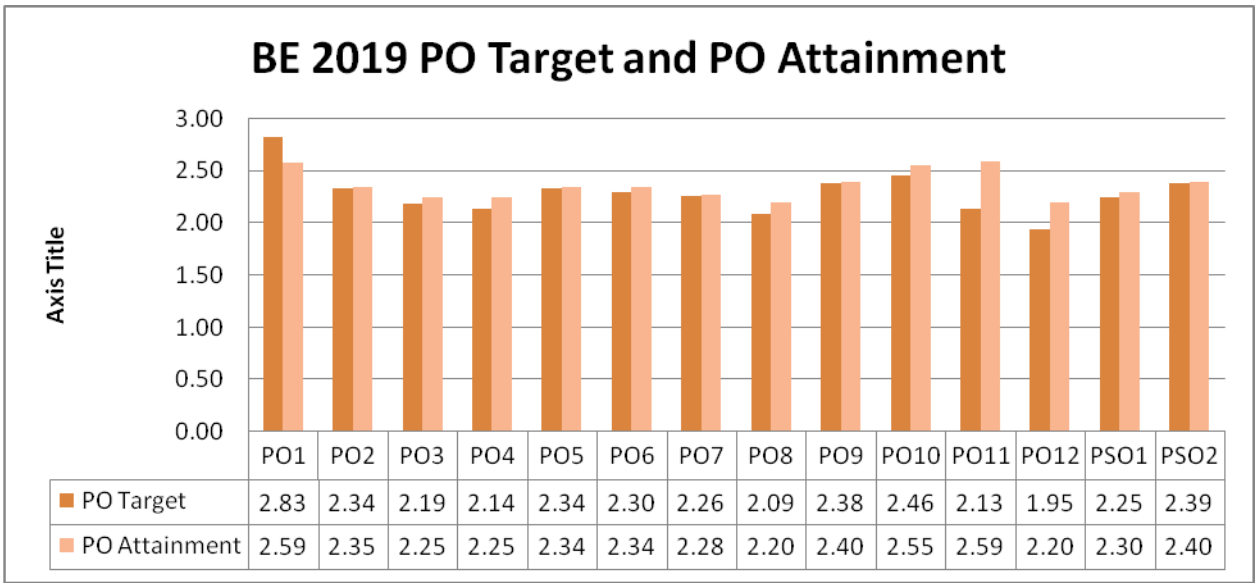


Table B.3.3.2e: PO/PSO Attainment (BE 2016-20Batch)

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	1.67	1.27	-	-	-	-	-	-	-	-	-	-	-	-
C102	2.91	1.94	-	-	-	-	-	-	-	-	-	-	-	-
C103	3.00	2.00	2.00	-	2.00	-	-	-	-	-	-	-	-	-
C104	2.47	1.85	-	-	-	-	-	-	-	-	-	-	-	-
C105	3.00	2.00	2.00	-	2.00	2.00	2.00	-	-	-	-	1.60	-	-
C106	2.29	2.00	2.00	-	-	-	-	2.93	-	1.81	-	1.98	-	-
C107	3.00	-	-	-	-	-	-	-	2.00	-	-	-	-	-
C108	1.96	1.47	-	-	-	-	-	-	-	-	-	-	-	-
C109	1.64	1.62	-	-	-	-	-	-	-	-	-	-	-	-
C110	3.00	2.00	2.00	-	2.00	-	-	-	-	-	-	-	-	-
C111	2.70	1.80	-	-	1.80	-	-	-	0.90	-	-	0.89	-	-
C112	1.68	1.68	1.97	-	-	-	-	-	-	-	-	-	-	-
C113	2.16	1.86	1.69	-	-	-	1.47	-	-	-	-	0.81	-	-
C114	3.00	2.00	1.00	-	2.00	-	-	-	1.00	-	-	1.00	-	-
C201	2.28	2.08	-	-	0.76	-	-	-	-	-	-	1.52	-	-
C202	2.84	2.84	1.90	1.89	1.91	-	-	-	-	-	-	-	1.90	-
C203	2.89	2.89	2.80	1.87	-	-	-	-	-	-	-	-	-	-
C204	2.86	2.09	1.88	2.12	2.86	-	-	-	-	-	-	1.87	-	-
C205	2.30	2.11	2.95	2.95	1.94	-	-	-	-	-	-	2.95	2.95	1.94
C206	2.98	2.99	2.99	2.99	1.99	1.99	-	-	-	2.98	-	2.98	2.99	2.99
C207	-	-	-	-	-	-	-	-	-	3.00	-	3.00	-	-
C208	2.87	2.30	-	-	-	-	-	-	1.91	-	-	1.91	-	-
C209	2.84	2.84	2.04	1.88	-	-	-	-	-	-	-	-	2.40	-
C210	2.57	2.46	-	-	-	-	-	-	-	-	-	1.85	-	-
C211	2.76	2.41	-	-	2.69	-	-	-	-	-	-	-	1.80	-
C212	2.93	1.96	1.95	1.95	2.93	-	-	-	-	-	-	1.95	-	-
C213	-	-	-	-	-	-	-	3.00	3.00	3.00	3.00	3.00	-	-
C214	-	-	-	-	-	-	-	-	-	3.00	-	3.00	-	-
C301	2.79	1.83	-	-	-	-	-	-	-	-	-	1.94	-	-
C302	2.24	2.24	2.28	1.52	-	-	-	-	-	-	-	-	1.74	1.90
C303	2.92	1.95	-	-	-	-	-	-	-	-	-	-	-	-
C304	1.64	1.64	1.65	-	-	-	-	-	-	-	-	-	1.13	1.13
C305	2.58	2.39	1.52	-	-	1.73	-	-	-	-	2.28	-	2.28	2.28
C306	2.89	2.70	2.88	2.88	2.88	-	-	-	-	-	-	-	1.93	1.93
C307	2.91	2.91	2.90	1.93	2.91	2.90	-	-	-	-	-	1.94	1.93	2.42
C308	1.00	1.00	1.00	0.67	1.02	-	-	-	1.01	0.99	-	0.67	1.02	1.06
C309	-	-	-	-	-	-	-	-	-	3.00	-	3.00	-	-
C310	2.32	2.32	2.34	-	-	-	-	-	-	-	-	-	1.56	-
C311	2.82	2.34	2.34	-	-	-	-	-	-	-	-	1.91	-	-

C312	-	-	-	-	-	2.33	1.57	1.55	2.30	2.33	2.30	2.05	-	-
C313	2.81	2.79	2.76	1.84	1.84	-	-	-	-	-	-	1.84	1.84	-
C314	2.93	2.20	2.95	-	-	-	-	-	-	-	-	-	-	-
C315	2.91	2.53	1.94	1.94	2.89	-	-	-	-	-	-	-	2.92	1.95
C316	2.78	2.58	2.65	1.99	2.38	-	-	-	-	-	-	1.99	2.48	2.65
C317	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.67	3.00	3.00	2.50	2.00	3.00	3.00
C318	-	-	-	-	-	-	-	-	-	2.00	-	3.00	-	-
C401	2.23	2.09	1.99	-	1.25	-	-	-	-	-	-	1.51	-	-
C402	2.88	1.93	-	-	-	0.94	0.94	0.94	-	-	-	-	1.88	-
C403	2.78	2.48	2.31	-	1.79	-	1.79	-	1.79	-	-	1.79	-	1.79
C404a	2.91	2.91	2.93	3.00	-	-	-	-	-	-	-	-	-	-
C404b	2.98	1.99	1.98	-	-	2.98	-	-	-	2.98	1.99	2.32	-	-
C405	2.89	2.89	1.93	2.00	-	0.96	0.96	-	-	-	-	1.93	-	-
C406	2.34	1.72	1.56	1.57	1.56	-	-	-	-	-	-	1.57	1.55	1.57
C407	2.97	2.47	1.98	1.98	2.97	-	-	-	-	-	-	-	2.97	2.97
C408	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00	3.00	3.00
C409	-	-	-	-	-	3.00	3.00	-	-	-	3.00	-	-	-
C410	2.88	2.90	-	-	-	-	2.86	-	-	-	-	-	-	-
C411	2.92	2.76	2.30	-	-	-	-	-	-	-	-	1.97	-	-
C412	2.89	2.55	1.93	1.93	1.93	1.95	1.95	1.94	1.94	1.94	-	1.94	-	-
C413a	2.75	1.94	1.99	-	-	-	1.99	0.97	-	-	-	-	-	-
C413b	2.90	2.90	-	1.93	-	-	-	-	-	-	-	-	2.90	2.90
C414	2.97	2.77	2.98	2.48	1.97	3.00	3.00	-	-	-	-	-	1.97	2.98
C415	3.00	2.50	2.50	2.25	2.33	-	3.00	-	-	-	-	3.00	-	-
C416	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C417	-	-	-	-	-	3.00	3.00	-	-	-	-	3.00	-	-
Direct Attainment	**2.66**	**2.28**	**2.24**	**2.18**	**2.20**	**2.39**	**2.28**	**2.22**	**2.07**	**2.57**	**2.63**	**2.07**	**2.22**	**2.30**
80% of Direct Attainment	**2.13**	**1.82**	**1.79**	**1.75**	**1.76**	**1.91**	**1.83**	**1.78**	**1.66**	**2.06**	**2.11**	**1.66**	**1.78**	**1.84**
Indirect Attainment	**2.58**	**2.68**	**2.39**	**2.62**	**2.88**	**2.39**	**2.51**	**2.61**	**2.47**	**2.52**	**2.62**	**2.68**	**2.72**	**2.83**
20 % of Indirect Attainment	**0.52**	**0.54**	**0.48**	**0.52**	**0.58**	**0.48**	**0.50**	**0.52**	**0.49**	**0.50**	**0.52**	**0.54**	**0.54**	**0.57**
PO/PSO Attainment	**2.64**	**2.36**	**2.27**	**2.27**	**2.34**	**2.39**	**2.33**	**2.30**	**2.15**	**2.56**	**2.63**	**2.20**	**2.32**	**2.41**

Table B.3.3.2f:PO/PSO Target and PO-PSO Attainment (BE 2016-2020 Batch)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
PO/PSO Target	2.83	2.35	2.25	2.25	2.34	2.34	2.28	2.20	2.40	2.55	2.59	2.20	2.30	2.40
PO/PSO Attainment	2.64	2.36	2.27	2.27	2.34	2.39	2.33	2.30	2.15	2.56	2.63	2.20	2.32	2.41

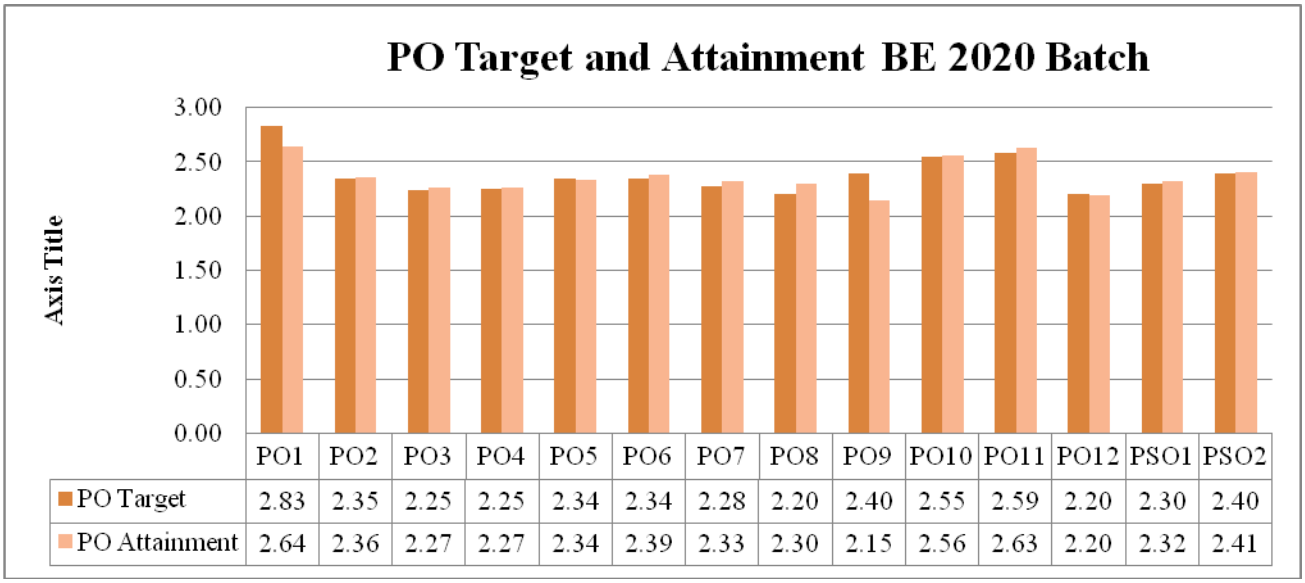
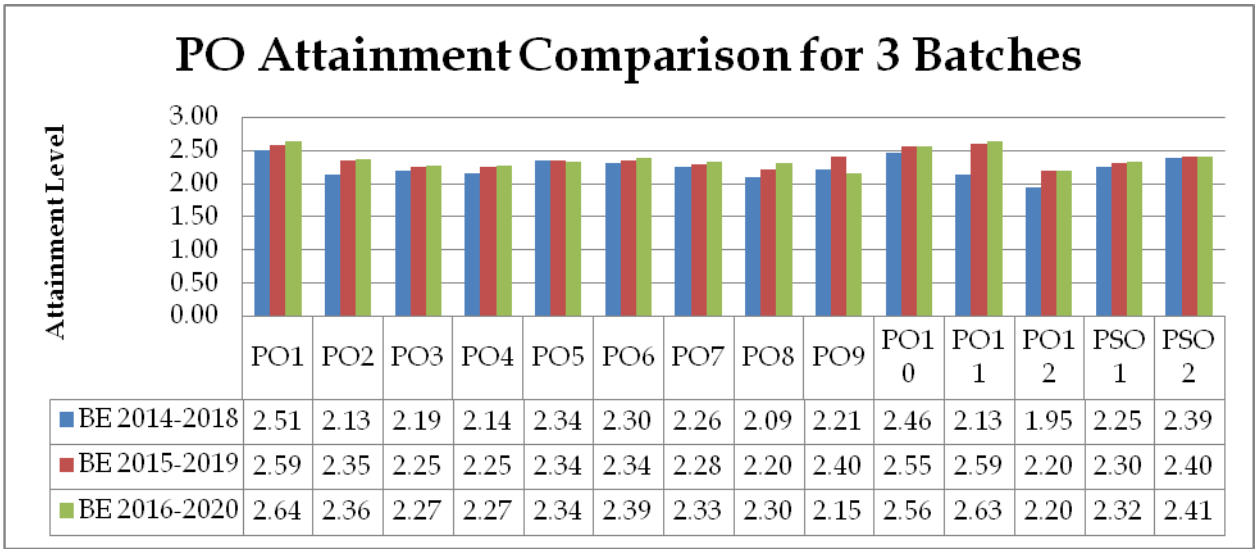


Table B.3.3.2g: PO/PSO Attainment of Last 03 Batches

Batch	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
BE 2014-2018	**2.51**	**2.13**	**2.19**	**2.14**	**2.34**	**2.30**	**2.26**	**2.09**	**2.21**	**2.46**	**2.13**	**1.95**	**2.25**	**2.39**
BE 2015-2019	**2.59**	**2.35**	**2.25**	**2.25**	**2.34**	**2.34**	**2.28**	**2.20**	**2.40**	**2.55**	**2.59**	**2.20**	**2.30**	**2.40**
BE 2016-2020	**2.64**	**2.36**	**2.27**	**2.27**	**2.34**	**2.39**	**2.33**	**2.30**	**2.15**	**2.56**	**2.63**	**2.20**	**2.32**	**2.41**



CRITERION - 04	STUDENTS' PERFORMANCE	150

Total Marks 122.2

Table 4.1: Admission details

Item (Information to be provided cumulatively for all the shifts with explicit headings, wherever applicable)	(2020-21) CAY	(2019-20) CAYm1	(2018-19) CAYm2	(2017-18) CAYm3	(2016-17) CAYm4	(2015-16) CAYm5	(2014-15) CAYm6
Sanctioned intake of the program (N)	60	60	60	60	60	60	60
Total number of students admitted in first year minus number of students migrated to other programs/institutions plus no. of students migrated to this program (N1)	65	69	59	53	52	52	25
Number of students admitted in 2nd year in the same batch via lateral entry (N2)	--	10	12	20	23	27	53
Separate division students, if applicable (N3)	--	--	--	--	--	--	--
Total number of students admitted in the Program (N1 + N2 + N3)	65	79	71	73	75	79	78

Table 4.2: Number of students successfully graduated without backlogs

Year of entry	N1 + N2 + N3 (As defined above)	Number of students who have successfully graduated without backlogs in any semester/year of study (Without Backlog means no compartment or failures in any semester/year of study)			
		I Year	II Year	III Year	IV Year
CAY (2020-21)	65	62	-	-	-
CAYm1 (2019-20)	79	67	76	-	-
CAYm2(2018-19)	71	39	51	49	-
CAYm3(2017-18) LYG	73	38	47	47	46
CAYm4 (2016-17) LYGm1	75	30	39	39	39
CAYm5 (2015-16) LYGm2	79	12	23	23	23
CAYm6(2014-15) LYGm3	78	7	28	27	26

Table 4.3: Number of students graduated successfully

Year of entry	N1 + N2 + N3 (As defined above)	Number of students who have successfully graduated (Students with backlog in stipulated period of study)			
		I Year	II Year	III Year	IV Year
CAY (2020-21)	65	64	-	-	-
CAYm1 (2019-20)	79	69	79	-	-
CAYm2(2018-19)	71	56	68	68	-
CAYm3(2017-18) LYG	73	47	63	63	61
CAYm4 (2016-17) LYGm1	75	48	67	65	65
CAYm5 (2015-16) LYGm2	79	42	64	59	58
CAYm6(2014-15) LYGm3	78	17	51	44	42

4.1 Enrolment Ratio (20)

Institute Marks 20

Enrolment Ratio = N1/N

Table B.4.1.1: Enrolment Ratio

Year of entry	CAY (2020-21)	CAYm1 (2019-20)	CAYm2 (2018-19)	CAYm3 (2017-18)
Sanctioned intake of the program (N)	60	60	60	60
Total number of students admitted in first year minus number of students migrated to other programs/institutions plus no. of students migrated to this program (N1)	65	69	59	53
Enrolment Ratio	**108%**	**115%**	**98.33%**	**88%**
Average		**100.44%**		
Enrolment Ratio	**108%**	**115%**	**98.33%**	
Average	**107.11%**			

4.2 Success Rate in the Stipulated Period of the Program (40)

Institute Marks 24.15

4.2.1 Success rate without backlogs in any Semester/Year of Study (25)

Institute Marks 12

Average SI = Mean of Success Index (SI) for past three batches.
Success rate without backlogs in any year of study =Average SI ×25Average.

Table 4.2.1.1: Success rate without backlogs

Item	LYG (2017-18)	LYGm1 (2016-17)	LYGm2 (2015-16)	LYGm3 (2014-15)
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry division, if applicable	73	75	79	78
Number of students who have graduated without backlogs in the stipulated period	46	39	23	26
Success Index (SI)	**0.63**	**0.52**	**0.29**	**0.33**
Average SI		**0.38**		
Success Index (SI)	**0.63**	**0.52**	**0.29**	
Average SI	**0.48**			

4.2.2 Success Rate with backlogs in Stipulated Period of Study (15)

Institute Marks 12.15

Average SI = mean of Success Index (SI) for past three batches Success rate=15x Average SI. Note: If 100% students clear without any backlog then also total marks scored will be40 as both 4.2.1 &4.2.2 will be applicable simultaneously.

Table 4.2.2.1: Success rate with backlogs in stipulated period

Item	LYG (2017-18)	LYGm1 (2016-17)	LYGm2 (2015-16)	LYGm3 (2015-16)
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry division, if applicable	73	75	79	78
Number of students who have graduated in the stipulated period	61	65	58	42
Success Index (SI)	**0.84**	**0.87**	**0.73**	**0.54**
Average SI		**0.71**		
Success Index (SI)	**0.84**	**0.87**	**0.73**	
Average SI	**0.81**			

4.3 Academic Performance in Third Year (15)

Institute Marks 12.59

Academic Performance = 1.5 * Average API (Academic Performance Index)

Successful students are those who are permitted to proceed to the final year.

Table 4.3.1: Academic performance in 3rd year

Academic Performance	CAYm2 (2018-19)	CAYm3 (2017-18) LYG	CAYm4 (2016-17) LYGm1	CAYm5 (2015-16) LYGm2	CAYm6 (2014-15) LYGm3
Mean of CGPA or Mean Percentage of all successful students(X)	9.72	8.17	7.49	7.39	6.4
Total no. of successful students (Y)	68	63	65	59	44
Total no. of students appeared in the examination (Z)	68	63	67	64	51
API = X* (Y/Z)	**9.72**	**8.17**	**7.27**	**6.81**	**5.52**
Average API = (AP1 + AP2 + AP3)/3			**6.53**		
API = X* (Y/Z)	**9.72**	**8.17**	**7.27**		
Average API = (AP1 + AP2 + AP3)/3	**8.39**				

4.4 Academic Performance in Second Year (15)

Institute Marks 12.26

Academic Performance Level = 1.5 * Average API (Academic Performance Index)

Table 4.4.1: Academic performance in 2nd year

Academic Performance	**CAYm1 (2019-20)**	**CAYm2 (2018-19)**	**CAYm3 (2017-18) LYG**	**CAYm4 (2016-17) LYGm1**	**CAYm5 (2015-16) LYGm2**
Mean of CGPA or Mean Percentage of all successful students(X)	8.83	8.37	7.79	7.39	7.13
Total no. of successful students (Y)	79	68	63	67	64
Total no. of students appeared in the examination (Z)	79	68	67	71	69
API = X* (Y/Z)	**8.83**	**8.37**	**7.32**	**6.97**	**6.61**
Average API = (AP1 + AP2 + AP3)/3			**6.97**		
API = X* (Y/Z)	**8.83**	**8.37**	**7.32**		
Average API = (AP1 + AP2 + AP3)/3		**8.17**			

4.5 Placement, Higher Studies and Entrepreneurship (40)

Institute Marks 35.2

Assessment Points = 40× average placement

Table 4.5.1: Placement, Higher studies and Entrepreneurship for past two years

Item	CAYm1 (2019-20)	CAYm2 (2018-19)	CAYm3 (2017-18)
Total No. of Final Year Students (N)	65	59	44
No. of students placed in companies or Government Sector (x)	52	47	36
No. of students admitted to higher studies with valid qualifying scores (GATE or equivalent State or National Level Tests, GRE, GMAT etc.) (y)	5	2	2
No. of students turned entrepreneur in engineering/technology (z)	2	3	0
x + y + z =	59	52	38
Placement Index : (x + y + z)/N	**0.91**	**0.88**	**0.86**
Average placement= (P1 + P2 + P3)/3	**0.88**		

Table B.4.5a, Table B.4.5b and Table B.4.5c provides the placement information for the CAYm1 (2019-20), CAYm2 (2018-19) and CAYm3 (2017-18):

Table B.4.5a: Program Name: Electronics and Telecommunication Engineering Assessment Year Name : CAYm1 (2019-20)				
Sr. No.	Student Name	Enrollment No	Employee Name	Appointment No
1	Ajin Abraham	71728129K	Quantiphi Analytics Solutions Pvt. Ltd.	Offer letter dated 28/10/2020
2	Adhav Akhil Vithhal	71728127C	Jampot Technologies Pvt. Ltd.	Offer letter dated 19/10/2020
3	Babrah Jiyot Manoharsingh	71809272E	Tata Consultancy Services Ltd.	TCSL/DT20195464472/ Pune
4	Bali Rohini	71728354C	Quantiphi Analytics Solutions Pvt. Ltd.	Offer letter dated 27/10/2020
5	Bhairashetti Yash Annasaheb	718092840J	Infosys Ltd.	HRD/3T/1000987774/21-22
6	Shweta Narkhede	71809476L	Capgemini Technology Services India Ltd.	Joining letter dated on 27 May, 2021
7	Chaus Sajid Saeed	71728165F	Tata Consultancy Services Ltd.	TCSL/DT20195430241/ 1306299/Pune
8	Chitnis Chinmayee Chandrakant	71728169J	Exfo Electro-optical Engg. India Pvt. Ltd.	Appointment letter dated 01/12/2020
9	Darur Sanket Shivputra	71728180K	Byju's-The Learning App	Offer letter dated 29/10/2020
10	Deshmukh Kedar Pramodrao	71728186J	Tata Consultancy Services Ltd.	TCSL/DT20195593620/ 1318024/Pune
11	Divekar Dhanashree Kantilal	71728193M	Dassault Systems Solutions Lab Pvt. Ltd.	3DSINDIALAB/HRD/2019-20/2384
12	Dusane Manasi Shivdas	71728196F	Schlumberger India Technology Centre Pvt. Ltd.	Offer letter dated 06/05/2020
13	Gadhave Rushikesh Sampat	71728197D	Tudip Technologies	Joining letter dated 30/05/2020
14	Gore Omkar Bharat	71728210E	Capgemini Technology Services India Ltd.	HR/Campus/LO2020500041/1(22/8/2019)
15	Itkal Dhananjay Nagnath	71809372M	Tata Consultancy Services Ltd.	TCSL/DT20195563439/ Pune (13/09/2019)
16	Jadhav Pratap Ananda	71809379J	HYT Engineering Company Pvt. Ltd.	HYT/HECPL/PER/2020-2021
17	Jadhav Shivani Ravindra	71809380B	Knorr Bremse Technology Centre India Pvt. Ltd.	Offer letter dated 12/08/2020

18	Jadhav Omkar Hanumant	71809377B	Quality Kiosk Technologies Pvt. Ltd.	Offer letter dated 07/04/2020
19	Jagtap Shweta Dadasaheb	71728228H	Capgemini Technology Services India Ltd.	HR/Campus/LO2020500008/1 (22/08/2019)
20	Jangam Samruddhi Sunil	71728230K	Tata Consultancy Services Ltd.	TCSL/DT20195428993/ Pune (13/09/2019)
21	Kadam Vinay Balasaheb	71728236J	Tata Consultancy Services Ltd.	TCSL/DT20195519583/ 1463596/Pune (17/03/2021)
22	Kakade Shweta Ramesh	71728237G	Birlasoft Limited	BSL/HR/APPT/2021-262614
23	Karandikar Advait Vaibhav	71728241E	Quantiphi Analytics Solutions Pvt. Ltd.	Offer letter dated 27/10/2020
24	Kawale Khushbu Waman	71728253J	Tetra Pak India Pvt. Ltd.	Offer letter dated 19/10/2020
25	Kumbhar Shrushti Sanjay	71809577E	TUV NORD India Pvt. Ltd.	HR/CL/0049/2026
26	Lohkare Swamini Anil	71728268G	Eaton Technologies Pvt. Ltd.	Joining letter dated 23/04/2021
27	Mahajan Kajal Yashwant	71728274M	Infosys Ltd.	HRD/1000422456/20-21
28	Mahajan Nikhil Ravindra	71728275K	Exfo Electro-optical Engg. India Pvt. Ltd.	Appointment letter dated 06/07/2020
29	Mascarenhas Meryl Anthony	71728282B	Birlasoft Limited	BSL/HR/APPT/2020-235804
30	Pareek Ashmit Kailash	71728312H	Capgemini Technology Services India Ltd.	HR/Campus/LO13/473674/1
31	Parmar Bhawarlal Narayanlal	71728313F	Capgemini Technology Services India Ltd.	3393683/709509
32	Patil Pushpa Sharad	71809501E	Evincere Software Solutions Pvt. Ltd.	Appointment Letter Dated 22/07/2020
33	Patil Sojwal Shaligram	71809507D	Nvidia Graphics Pvt. Ltd	Joining letter dated 01/04/2021
34	Patil Gaurav Narendra	71809347L	Nvidia Graphics Pvt. Ltd	Joining letter dated 01/04/2021
35	Patil Prajakta Sandesh	71728321G	Wipro Limited	Appointment Letter Dated 26/06/2020
36	Patil Rupali Sadashiv	71728357H	Expleo India Infosytems Pvt. Ltd.	EIIPL-Sys/HR/20-21/13520
37	Phule Onkar Nagnath	71728308K	Amazon	Offer letter dated 30/01/2020
38	Rade Mohit Prafulla	71728345D	Birlasoft Limited	BSL/HR/APPT/2020-231044

39	Sambare Swaraj Santosh	71728363B	DXC Technology	Offer letter dated 24/06/2020
40	Sambare Shubhangi Tejrao	71728363B	Tata Communications Ltd.	Offer letter dated 26/05/2021
41	Sawant Siddhi Sudesh	71728370E	Capgemini Technology Services India Ltd.	HR/Campus/LO13473484/1 (13/11/2019)
42	Shah Divyansh Chetan	71728195H	Tata Consultancy Services Ltd.	TCSL/DT20195531273/1307554/Pune
43	Shah Masumi Bhavesh	71728371C	Capgemini Technology Services India Ltd.	2543540/538849
44	Shelke Abhijeet Diwakar	71809566K	Newvision Softcom & Consultancy Pvt. Ltd.	Offer letter dated 24/12/2020
45	Shetgaonkar Sanket Balkrishna	71728373K	Amazon Development Centre India	Appointment Letter Dated 01/06/2020
46	Shetiya Pratiksha Sanjay	71728342K	Capgemini Technology Services India Ltd.	Joining letter dated 11/03/2020 2526635/538809
47	Shingate Bhushan Ajit	71728151F	Byju's-The Learning App	Offer letter dated 13/08/2020
48	Thigale Vaibhav Harishchandra	71809599F	Maharashtra state electricity distribution Co. Ltd	Offer Letter received
49	Thorat Pratima Laxman	71809600C	Accenture	Joining letter dated 01/07/2021
50	Wagh Pranjali Raju	71728427B	DXC Technology	Offer Letter Dated 22/06/2020
51	Warade Mayuri Kishor	71809624L	Tata Consultancy Services Ltd.	TCSL/DT20195603908/1307864/Pune
52	Zodge Aishwarya Trimbak	71809632M	IBM India Pvt. Ltd.	Joining letter dated 23/04/2021

Table B.4.5b: Program Name: Electronics and Telecommunication Engineering Assessment Year Name : CAYm1 (2018-19)				
Sr. No	**Student Name**	**Enrollment No**	**Employee Name**	**Appointment No**
1	Agarwal Yash Naresh	71633137D	Esston Technology Pvt. Ltd.	Offer letter dated 20/02/2019
2	Atkare Aarti Abhiman	71754460F	Q Conneqt Business Solutions Ltd.	Joining letter dated 31/01/2020
3	Badkhal Tejas Babanrao	71754481J	Safalya Technologies	Joining letter dated 01/01/2020
4	Daniel Ajit Arun	71633342C	Fiserv	Offer letter dated 06/09/2019
5	Das Subhajit Ajit	71633163C	Tata Consultancy Services Ltd.	TCSL/DT20184409228/ Pune
6	Dave Rudri Kartikey	71633435G	Capgemini Technology Services India Ltd.	HR/CAMPUS/LO20195 0194/1
7	Gidveer Rushikesh Vishwanath	71754462B	RCV Innovation	Offer letter dated 29/05/2020
8	Igve Sonu Jagannath	71754463L	Q Conneqt Business Solutions Ltd.	Joining letter dated 31/01/2020
9	Jadhav Chandrashekhar Shyam	71633336J	Cybage Software Pvt. Ltd.	Offer Letter dated 14/04/2021
10	Jadhav Vishesh Laxman	71633291E	ATOS Global IT Solutions & Services Pvt. Ltd.	Joining letter dated 16/12/2019
11	Jadhav Sayali Sanjay	71754465G	Tata Communications Ltd.	Offer letter dated 22/07/2020
12	Kalbhor Vrushali Sanjay	71633299L	Capgemini Technology Services India Ltd.	Joining letter dated 12/07/2019 2341205/322516
13	Kamble Pooja Kalu	71754467C	Q Conneqt Business Solutions Ltd.	Joining letter dated 31/01/2020
14	Karande Ranjit Tanaji	71633169B	Amol Electricals	Offer letter dated 01/09/2020 ID No. :110
15	Khan Shazad Khalid	71633347D	Capgemini Technology Services India Ltd.	HR/CAMPUS/LO20195 0181/1
16	Kokane Jagruti Ashok	71633237L	Capgemini Technology Services India Ltd.	HR/CAMPUS/LO20195 0188/1
17	Kumar Gaurav Rajeev Ranjan	71633193E	Tata Consultancy Services Ltd.	TCSL/CT20192823985/1 336660/Pune

				(20/12/2019)
18	Kundnani Kiran Gopichand	71633257E	Larsen & Toubro Infotech Ltd.	Offer letter dated 03/09/2018 LTI/HR/Campus/2019
19	Lature Shubham Rajshekar	71754469K	Ladera Technology Pvt. Ltd.	LTPT/2019-20/96
20	Limkar Pratiksha Annasaheb	71754470C	Vanderlande Industries Software Pvt. Ltd.	Joining letter dated 10/06/2019
21	Madurwar Rutuja Mahesh	71754471M	Precient Automation	Joining letter dated July/01/2020
22	Mali Ravindra Dhanraj	71633175G	Allstate Solutions Pvt. Ltd.	Offer letter dated 23/09/2019
23	Mankar Hrishikesh Prakash	71754472K	Capgemini Technology Services India Ltd.	Joining letter dated 20/06/2020 4004059/485478
24	More Narendra Dattatray	71754473H	IBM India Pvt. Ltd.	Joining letter dated 27/11/2019
25	Narsale Yuvraj Bapusaheb	71754474F	ATOS	ATOS/Mar/26/2020
26	Pande Rutuja Pandurang	71633378D	Flextronics Technologies (I) Pvt. Ltd	Joining letter dated 18/10/2019
27	Paratane Deepali Rajendra	71633194C	Esston Technology Pvt. Ltd.	"Esston/Feb/20/2019 "
28	Patil Ashwini Vasantrao	71633148K	Capgemini Technology Services India Ltd.	Joining letter dated 17/07/2019 2363308/322439
29	Patil Shruti Sharanbasappa	71633343M	Birlasoft Limited	Joining letter dated 06/11/2019 00142214
30	Patil Rutuja Akaram	71633410M	Tech Mahindra Limited	706425/1717618/ELTP
31	Salunke Abhishek Jitendra	71633221D	Capgemini Technology Services India Ltd.	HR/CAMPUS/LO20195 0182/1
32	Sawant Snehal Subhash	71754478J	Hexaware Technologies Ltd.	Offer letter dated 22/11/2018
33	Sharma Rohit Chandrabhushan	71628561E	Amazon Development Centre India	Offer letter dated 01/03/2019
34	Shimpi Neha Manohar	71633183H	Tata Consultancy Services Ltd.	TCSL/DT20184549831/ Pune
35	Shinde Pranjal Sanjay	71633275C	Tata Communication	Tata Communication/April/12 /2019

36	Shinde Prajakta Suresh	71633414D	Tata Consultancy Services Ltd.	TCSL/DT20184541659/1186079/Pune
37	Shukla Kautubhi Shrawankumar	71628620D	Amazon Development Centre India	Offer letter dated 14/03/2019
38	Singh Harvinder Inderjit	71633427F	Larsen & Toubro Infotech Ltd.	Offer letter dated 11/03/2019
39	Sinha Shreya Premendra	71633332F	Larsen & Toubro Infotech Ltd.	Offer letter dated 11/03/2019
40	Sonimindia Laxmi Vinod	71754480L	Bombardier Trasnportation India Pvt. Ltd.	Offer letter dated 29/09/2018
41	Taware Shruti Santosh	71633190L	Capgemini Technology Services India Ltd.	HR/CAMPUS/LO201950187/1
42	Wagh Prachi Pramodkumar	71754483E	Amdocs Development Centre India	Joining letter dated 22/03/2021
43	Yadav Ruturaj Shivajirao	71754484C	Esston Technology Pvt. Ltd.	"Esston/Feb/20/2019 "
44	Yadav Shubham Shashikant	71633306G	Capgemini Technology Services India Ltd.	HR/CAMPUS/LO/2019999352/1 3462016/402286
45	Yelwande Mayuri Sanjay	71633277K	Wipro	Appointment letter dated 10/12/2020
46	Zagade Shraddha Krishna	71754485M	Minilec India Pvt. Ltd. (Yashprabha Group Of Companies)	Minilec/Sep/23/2019
47	Zanzane Viraj Dnyaneshwar	71633362H	Capgemini Technology Services India Ltd.	Joining letter dated 22/01/2020 3702535/406551

Table B.4.5c: Program Name: Electronics and Telecommunication Engineering Assessment Year Name : CAYm2 (2017-18)				
Sr. No.	**Student Name**	**Enrollment No**	**Employee Name**	**Appointment No**
1	Apurva Balasaheb Bagal	71559330H	L&T Infotech	LTI/HR/CAMPUS/2018
2	Shubham Avinash Balwadkar	71658458B	UL Control System Pvt.Ltd.	UL/HR/OFFL/2018
3	Swati Ramraje Bembde	71658460D	Tata Motors	HR-CVBU/CONTRACT-19
4	Shashikant Babasaheb Bhadre	71559340E	Wipro Limited	Wipro/July/20/2018
5	Mrunal Bhausaheb Bhilare	71658461B	Schindler India Pvt. Ltd	Schindler/Dec/25/2018
6	Rushikesh Madhukar Chaudhari	71658462L	Next step technologies	Next step technologies/Feb/28/2019
7	Omkar Umesh Devlekar	71658465E	Tata communications Ltd.	TCL/Sep/19/2018
8	Datta Vasanta Dhokane	71658466C	Standard Capacitors	SC/Oct/30/2018
9	Kedar Prakash Dhoke	71559379L	Wipro Limited	Wipro/Nov/22/2018
10	Sanket Balkrishna Gaikwad	71658469H	Tech Mahindra	1625802/713856/PERMT
11	Swapnil Ramchandra Gawas	71658470M	Amazon	Amazon/Oct/11/2017
12	Jerin Geevarughese G	71559416J	Capgemini	HR/CAMPUS/2018/20013
13	Shruti Rajendra Gujar	71559392H	Accenture	Accenture/Nov/24/2018
14	Ashish Pandurang Hatkar	71658472H	Masstrans Technologiies Pvt.Ltd	Masstrans/Dec/19/2018
15	Rameshwar Prakash Jadhav	71658475B	Shini Plastics Technologies India Pvt. Ltd	SHINI/August/01/2019
16	Joshma Joseph	71559421E	Capgemini	HR/CAMPUS/201820006
17	Pratiksha Ramdas Kale	71559424K	Mindtree	Mindtree/May/18/2018
18	Asha Tukaram Kale	71658477J	Amphenol Interconnect (India)	AII/C13789
19	Abhijeet Bhaurao Kasar	71658478G	Tata Communication Limited	Offer letter dated 07 May 2019
20	Nausee Manjur Khan	71658479E	Tata Communication Limited	TCL/Feb/27/2018

21	Sheetal Rajendra Khandke	71658480J	Fujitsu	Fujitsu/Dec/2018
22	Sakshi Janardan Khedekar	71658481G	Silicus Technologies India Pvt. Limited	LO/HR/PUN/SILICUS/2018/173
23	Shekhar Suresh Kokare	71658483C	Reliance resQ	Reliance resQ /Sep/19/2018
24	Harish Prabhakar Kumbhar	71658485K	Jabil Circuits India Pvt. Ltd.	Jabil/June/25/2019
25	V.V Sai Laxmi	71559571H	Amazon	Amazon/Jan/13/2018
26	Umesh Chandrakant Lokhande	71658487F	Masstrans Technologies Pvt. Ltd.	Masstrans/Dec/19/2018
27	Pranali Shridhar Machutre	71658488D	Accenture	Accenture/Jan/18/2019
28	Jyoti Ramdas Mate	71559452E	Rudder Analytics	RA/April/19/2018
29	Rupesh Pandurang Minde	71658492B	Renu Electronics	RE/Sep/17/2018
30	Sudheer Kailas Pachorkar	71658496E	Masstrans Technologies Pvt. Ltd	Masstrans/Dec/19/2018
31	Pradnya Shivaji Padwal	71658497C	HCL Technologies Ltd.	HCL/Feb/07/2019
32	Priyanka Prakash Patil	71658500G	Standard Capacitors	Standard Capacitors/Oct/30/2018
33	Machhindra Yashwant Sawale	71559518M	Flextronics Technologies Pvt. Ltd.	Flex/Feb/04/2019
34	Gauresh Vijay Sawant	71658503M	JBM Group	JBM/Aug/22/2018
35	Rushabh Paresh Shah	71658505H	Nexsel Tech Pvt. Ltd.	NT/Jan/21/2019
36	Yogesh Vilas Tavre	71658508B	Parametric Instruments	PI/Aug/16/2018

4.6 Professional Activities (20)

Institute Marks 18

4.6.1 Professional Societies/Chapters and Organizing Engineering Events (05)

Institute Marks 04

The purpose of student chapters is to help the student members learn professional skills, build strong international connections, etc. To strengthen the POs & PSO's various activities are conducted under student chapters like IEEE, IETE & ETeSA. The details of these chapters are given in table B.4.6.1a.

Table B.4.6.1.a: Details of Professional Societies/Chapters

Sr. No.	Professional Societies/chapters	Recognition Number	Year of Establishment	Student Members
1	Institute of Electrical and Electronics Engineers (IEEE)	STB11406	2019	45
2	The Institution of Electronics and Telecommunication Engineers (IETE)	IETE/MEM/ISF/19	2019	133
3	Electronics & Telecommunication Engineering Students Association (ETeSA)	--	2016	216

1. Institute of Electrical and Electronics Engineers (IEEE):

- **About IEEE**

IEEE is the world's largest leading professional association for the advancement of technology. IEEE & its members inspire a global community through IEEE's highly cited publications, conferences, technology standards, professional & educational activities. IEEE offers a wide range of learning, career enhancement and employment opportunities within the engineering sciences, research and other technology area. IEEE's core purpose is to promote technological innovation and excellence for the benefit of humanity. IEEE will be essential to the global technical community and to technical professionals everywhere and universally recognized for the contributions of technology and technical professionals in improving global conditions. IEEE is the world's largest technical professional society. It is designed to serve professional involved in all aspects of the electrical, electronic and computer fields and related areas of science & technology that underlie modern civilization.

- **Student Branch Vision**

To inspire, enable, empower and energize our student members to enhance their technical interests by providing them a platform to show case their skills.

- **Student Branch Mission**

- To organize the events at college dealing with latest technologies
- To form more technical domain group to encourage project activity among student members
- To organize the technical awareness activity for student members.
- To encourage the students in publishing research papers.
- To inspire more students to become IEEE members through the membership drive.

- **IEEE Student Branch at PCCOE&R**

The IEEE student branch at PCCOE&R was established in the year 2019 and is one of the energetic section in Region-10, Bombay section. Student branch aims to help students to recognize real world challenges by mentoring them. The branch focused activities in the respective area by the way of conducting IEEE SKEP sessions, conferences, industrial visits, seminars, workshops, technical events etc.

- **Student Branch Details**

The IEEE student branch of Pimpri Chinchwad College of Engineering & Research, Ravet comes under the IEEE region 10. Student branch code: **STB11406**.

- **Student Branch Executive Committee**
  - **Student Branch Chairperson:** Miss. Dnyaneshwari Jagtap, Student, BE E&TC
  - **Student Branch Counselor:** Mrs. V.S. Kumbhar, Assistant Professor, E&TC Department
  - **Student Branch Mentor:** Prof. Dr. R.G. Mapari, Professor & HOD, E&TC Department

- Details of Student Branch Activities are given in table B.4.6.1a for the A.Y. 2021-22 B.4.6.1b for the A.Y. 2020-21 B.4.6.1c for the A.Y. 2019-20 and table B.4.6.1d for the A.Y. 2018-19:

Table B.4.6.1a: Organized IEEE Events in A.Y. (2021-22)

Sr. No.	Name of the Event	Level-Institute/ State /National /International	Date of the Event	Class	Resource Person
1	IEEE Epoxy Solar Camp 1.0	International	23rd August 2021 to 28th August 2021	8th to 12th Standard Students	Lorena Garcia (Chair, IEEE Pre-University Education Coordinating Committee), Dr. B Satyanarayana (Chair, IEEE Bombay Section), Abhishek Bhattacharya (Co-Founder, WHRRL) Punyasloka Panda (National Coordinator At Youth For Sustainability) Preethy V Warrier (Siting Engineer, Vestas)
2	Virtual Industrial Visit to Innoses, Shanghai P.R. China	International	27th August 2021	SE, TE Students	Tim Lui CTO and Co-founder , Simay Akar CCO and Co-Founder Innoses, Shanghai P.R China
3	2021 ASIAN Conference on Innovation in Technology (IEEE ASIANCON 2021)	International	28th and 29th August 2021	Research Scholars	Dr. B. Satyanarayana (Chair – IEEE Bombay Section , Scientific Officer (H), TIFR, Mumbai)Dr. Mohammad Faizal Ahmad Fauzi (Faculty of Engineering, Multimedia University , Chair, IEEE Region 10 Newsletter Committee) , Mr. Puneet Kumar Mishra (Vice Chair(Professional Activities), IEEE India Council , Head, Satellite Antenna Characterization, Test Design Section U R Rao Satellite Centre, ISRO, Bangalore , Mr. Aleksandar Mastilovic (Director of Telecommunications at the Communications Regulatory Agency, Bosnia and Herzegovina)

Table B.4.6.1b: Organized IEEE Events in A.Y. (2020-21)

Sr. No.	Name of the Event	Level-Institute/State /National /International	Date of the Event	Class	Resource Person
1	Modeling of Digital Communication Systems using SIMULINK	Institute	28/09/2020	TE Students	Mr. Suraj Gawande, Application Engineer, DesignTech Systems Ltd., Pune
2	How to read Datasheets	Inter-institute	08/10/2020	SE Students	Mr. Anand S Gharpure, CEO, Sonic Multitech Pvt Ltd, Nashik
3	GUI Creation in MATLAB	State	16/10/2020	TE Students	R. Jishnu, Senior Engineer, Embedded Developer, Pantechsolutions, Pvt., Ltd., Chennai
4	Solution engineering using embedded technologies	Institute	20/10/2020	TE Students	Mr.Abhay Phansikar, Director of Azilen Technologies
5	Microelectronics : Advances and exciting career opportunities	Institute	20/10/2020	BE Students	Dr. B. Satyanarayana, Scientific Officer, TIFR, Mumbai
6	Implementation of Networks Security Protocol	Institute	22/10/2020	BE Students	Rakhee Sonawane, Tata Communications Ltd, , Pune,
7	Embedded Design & Product Development	Institute	21/10/2020	TE Students	Mr.Bhanwar Lal Bishnoi, Head - Embedded Design & Development Center -L&T E&A @ Schneider Electric Mumbai
8	Post-COVID19 Rehabilitation - Leveraging opportunities through technology intervention to improve society. (The 3 Days Virtual [i.e. Online Hackathon])	State	27/11/20 to 29/11/2020	UG and PG Students of any stream	Jagdish Shinde, Staff Software Engineer at VMware India Prof. Aarti Karande, Chair SIGHT Bombay section. Member WiE Bombay section. Wie student branch coordinator S.P.I.T, Mumbai

9	Virtual Speaker Program on "Introductory presentation on practical electronics for hobbyists, makers, and beginners"	International	08/02/2021	SE,TE and BE Students	Alberto Tam Yong IEEE Orange County Section. Vice Chair, IEEE Region 6, YP-Students Coordinator, IEEE Region 6. SPAx Coordinator, IEEE Rising Stars. Planning Committee Member, IEEE Day 2020. Region 6 - Regional Lead, Applied Medical. Electrical Engineer III in the Technology and Development Team
10	SKEP Session on "Why and how to write good technical papers?"	State	13/02/2021	Faculties and TE,BE Students	Dr. Satyanarayana Bheesette, Ph.D., Scientific Officer (H) Dept. of High Energy Physics, Tata Institute of Fundamental Research & Visiting Professor, Dept. of Applied Science, American College, Madurai
11	SKEP Session on "Renewable Energy using Concentrated Solar Power"	State	13/04/2021	SE, TE and BE Students	Dr. Y.S. Rao, Vice Principal, Professor, Department of Electronics & Telecommunication Engineering, Sardar Patel Institute of Technology, Mumbai
12	Quiz on "Clean Energy Revolution"	National	25/04/2021 to 28/04/2021	Engineering Students	NA
13	Guest Lecture on PID Controller and its applications using MATLAB	Institute	28/04/2021	SE Students	Mr. Milind Khanderao, Application Engineer (MathWorks), DesignTech Systems Pvt. Ltd.

Table B.4.6.1c: Organized IEEE Events in A.Y. (2019-20)

Sr. No.	Name of the Event	Level- Institute/State /National /International	Date of the Event	Class	Resource Person
1	Lecture on IEEE Membership Orientation	Institute	01/08/2019	SE,TE and BE Students	Mr. Shubham Gupta, IEEE Region 10 Professional Activities Committee, Member & Coordinator
2	LaTeX for thesis And research papers writing (Workshop)	Institute	30/08/2019	BE Students	Dr. Sanjay S. Shitole, HOD, Information Technology, UMIT, Mumbai
3	Industrial Visit to Tata Institute of Fundamental Research, Mumbai	Institute	14/09/2019	BE Students	Dr. Satyanarayana Bheesette, Scientific Officer (H), TIFR, Mumbai
4	SKEP Session on Motivation for students on job opportunities	Institute	16/09/2019	SE Students	Mrs. Rakhee Sonawane, Deputy General Manager, Tata Communications Limited, Pune
5	Machine Learning: Concepts and Applications (with MATLAB or Python)(Hands on Session)	Institute	25/09/2019	BE Students	Mr. Suraj Gawande, Application Engineer,DesignTech Systems Ltd., Pune
6	Interactive Session On Health Care, Hygiene And Sanitation	Institute	01/10/2019	High School Students	Jiyot B, Anagha N, Shweta N, Rajani K, Agalya G &Pooja C BE & TE E&TC Students
7	One Week Workshop On Machine Learning using Python	Institute	16/12/2019 to 20/12/2019	BE Students	Mr. Shantanu Pathak Freelancer
8	Importance of Research at UG Level	Institute	07/02/2020	TE Students	Dr. Sanjay S. Shitole, HOD, Associate Professor in Information Technology, Usha Mittal Institute Of Technology, Mumbai
9	Webinar On Embedded	State	06/05/2020	Faculties & Students	Prof. Dr. Saurabh Mehta, chief academic officer and

	technology: Raspberry pi and Arduino Boards				professor at Vidyalankar Institute of Technology, Mumbai
10	Webinar on Few Tips on Project Selection and Execution	State	18/05/2020	Faculties & Students	Prof. Dr. Saurabh Mehta, chief academic officer and professor at Vidyalankar Institute of Technology, Mumbai
11	Webinar on The interplay between Science, Technology, Engineering & Mathematics	State	19/05/2020	Faculties & Students	Dr. B Satyanarayana Scientific Officer (H) Tata Institute of Fundamental Research, Mumbai, Secretary, IEEE Bombay Section
12	Webinar on Intellectual Property Rights (IPR)	State	20/05/2020	Faculties & Students	Mr. Kiran Talele Associate Professor, Electronics Engineering Department, Sardar Patel Institute of Technology, SAC Chair, IEEE Bombay Section
13	Webinar on Introduction to embedded systems & opportunities	State	21/05/2020	Faculties & Students	Mr. Abhay A. Phansikar Director- Strategy,Azilen Technologies, Chairperson, IEEE Bombay Section
14	Webinar on Role of Satellite Systems in 5G	State	09/06/2020	Faculties & Students	Dr. Mrs. Shweta Shah UBA PI, Co-coordinator Membership: IEEE, IETE, ISTE, ACM, Assistant Professor, Electronics Engineering Department, S.V. National Institute of Technology (SVNIT), Surat, Gujarat, India

Table B.4.6.1d: Organized IEEE Events in A.Y. (2018-19)

Sr. No.	Name of the Event	Level- Institute/State /National /International	Date of the Event	Class	Resource Person
1	Drone Workshop	Institute	06/02/2019 to 09/02/2019	SE Students	Technoyatra Team
2	One day Seminar on Communication Skills	Institute	06/02/2019	TE Students	Prof. Dr. Jyoti Pai
3	IEEE STB Inaugural	Inter-Institute	23/02/2019	TE Students	Mr. Abhay Phansikar (Chair, IEEE Bombay Section) Dr. Vinit Kotak (Vice Chair, IEEE Bombay Section) Dr. Kiran Talale(Student Activity Chair, IEEE Bombay) Dr. Chanakya Kumar Jha (Executive Committee member, IEEE Bombay Section)
4	PCB Workshop	Institute	01/03/2019	BE Students	Mr. Shivam Tekode BE E&TC Student
5	SKEP Session on VLSI: Challenges & Opportunities	Institute	23/03/2019	TE Students	Dr. Satyanarayana Bheesette Scientific Officer (H), TIFR, Mumbai

2. The Institution of Electronics and Telecommunication Engineers (IETE):

- **About IETE**

The Institution of Electronics and Telecommunication Engineers (IETE) founded in 1953 is one of the leading Professional Society in India devoted to the advancement of Science and Technology of Electronics, Telecommunication & IT. In IETE ISFs (IETE Students Forum) can be formed through local IETE Centre at recognized Engineering colleges. The major focus of IETE is to provide engineering education i.e. Degree and Diploma level certifications to younger generation at affordable cost who cannot afford it through regular & private engineering institutions at exorbitant cost.

- **Student Branch Vision**

To provide common platform for students to exchange ideas in interested technical topics.

- **Student Branch Mission**

- To enhance Professional ideas and standards to improve academics.
- Counseling the students in the emerging new opportunities.
- Encourage team spirit and self-reliance among student members.
- To inspire more students to become IEEE members.
- To plan and organize technical programs and activities, such as, special lectures, workshops, seminars, symposia, exhibitions etc for the benefit of student members on a regular basis.
- To help students to recognize real world challenges by mentoring them.

- **IETE Student Branch at PCCOE&R**

- The IETE student branch at PCCOE&R was established in the year 2020 and is in Pune center with 62 student members.
- Student branch aims is to organize the various technical activity for students and to make students familiar with recent technological development in the field of E&TC.
- The branch focused activities in the respective area by way of conducting IETE workshops, technical events, competition etc.

- **Student Branch Details**

The IETE student branch of Pimpri Chinchwad College of Engineering & Research, Ravet comes under the IETE Pune center.

- **Student Branch Executive Committee**

The ISF Co-ordinator- Prof. D.N.Dhake Assistant Professor, E&TC Department

- **President:** Shravani Pulliwar
- **Vice President**: Swaraj Pawar
- **Secretary**: Harshal Golhar
- **Joint Secretary**: Vedangi Thakur
- **Treasurer**: Vaishnavi Patil
- **Prime Member**: Anshika Singh

- Details of Student Branch Activities given in table B.4.6.1.e for the A.Y. 2021-22, B.4.6.1.f for the A.Y. 2020-21 and B.4.6.1.g for the A.Y. 2019-20:

Table B. 4.6.1e: Organized IETE Events in A.Y. (2021-22)

Sr. No.	Name of the Event	Level- Institute/State /National/ International	Date of the Event	Class	Resource Person
1	Webinar on "AI and IoT Blended"	Institute	3/9/2021	SE, TE, BE Students	Mrs.Dipali Shende, Assistant Professor SIT, Lonavla.
2	Webinar on "Master-abroad; timeline, overview and experience"	Institute	8/9/2021	SE, TE, BE Students	Mr. Dharmesh Choudhari BE E&TC from PCCOER

Table B.4.6.1f: Organized IETE Events in A.Y. (2020-21)

Sr. No.	Name of the Event	Level- Institute/State /National/ International	Date of the Event	Class	Resource Person
1	Guest Lecture on "Leading technology of Artificial Intelligence in industry"	Institute	22-10-2020	BE Students	Bhushan Garware Data Scienti Persistent Systems
2	Guest Lecture on "Positive Attitude and Time Management"	Institute	27-11-2020	BE Students	Prof. Mr. S. O. Dahad, Dean- Academics, Government College of Engg. Jalgaon.
3	Guest Lecture on "Motors used in the electric vehicle"	Institute	11-12-2020	SE Students	Omkar Harishchandra Thigale Associate Manager,Engineerin Ather Energy, Bangalore
4	Code competition	State	16/12/2020	SE Students	TE students(E&TC) PCCOEF Ravet
5	Webinar on "Website development"		26/12/2020	SE Students	Joel Joseph TE E&TC student (PCCOER)

Table B.4.6.1.g: Organized IETE Events in A.Y. (2019-20)

Sr. No.	Name of the Event	Level-Institute State /National /International	Date of the Event	Class	Resource Person
1	Workshop on Python and C++	Institute	16/12/2019 to 20/12/2019	SE Students	Mr.Zeeshan Ali, A.K.Shaikh InnoViz Tutors
2	IETE Inauguration	Institute	17/01/2020	SE,TE, BE Students	Shri K. R. Shende, Chairman, IETE Pune Mr.S. K. Khedkar Vice President of IETE, Dr. S. R. Jog Professor and HOD of E&TC in Dr. D. Y. Patil Institute of Engineering and Technology, Pimpri, Pune
3	Guest Lecture on "Recent trends in machine learning, Deep Learning & AI"	Institute	03/02/2020	SE, TE Students	Mr. Suraj Gawande, Application Engineer Design Tech System Ltd., Pune
4	Drone Workshop	Institute	10/02/2020	SE Students	TE E&TC students(6)
5	Technical Event CODE-JANGO Competition	State	15/05/2020	SE, TE, BE Students	IETE Student Members

3. Electronics & Telecommunication Engineering Students Association (ETeSA)

- **About ETeSA**

Electronics & Telecommunication engineering Student's Association (ETeSA) is an association of students, for the students and by the students. ETeSA provide a platform for students to plan, organize and execute various activities, to exchange ideas by organizing/participating technical programs. Plan of curricular and extra-curricular to be conducted in each academic Year. It is formed to motivate students to participate and develop extra skills other than academics.

- **ETeSA Vision**

To create, promote, plan, organize and execute the curricular & extracurricular activities in the interest of student's development.

- **ETeSA Mission**

  - To provide a platform for regular and frequent discussions and exchange of views among students.
  - To provide opportunities for students to develop their leadership and organizational qualities.
  - To develop student's academic, professional and personality development skills through various programs, activities arranged by association.
  - To create awareness amongst the students about professional societies, encouraging them to be a member of these societies.
  - To plan departmental budget of curricular and extra-curricular activities.

- **ETeSA Details**

ETeSA- **E**lectronics & **T**elecommunication **e**ngineering **S**tudent's **A**ssociation, Pimpri Chinchwad College of Engineering & Research, Ravet. ETeSA formed on 19th July, 2016.

ETeSA Office Bearers:

- **ETeSA Faculty Coordinator:** Mrs. Triveni Dhamale , Assistant Professor, E&TC Department
- **ETeSA President:** Vishnoi Tamanna Sharwanlal, TE E&TC
- **ETeSA Vice President:** Patil Shweta Satish, TE E&TC

- Details of Student Branch activities are given in table B.4.6.1.g, h, i , j, k and l for the A.Y. 2021-22, A.Y. 2020-21, 2019-20, 2018-19, 2017-18 and 2016-17 respectively:

Table B.4.6.1g: Organized ETeSA Events in A.Y. (2021-22)

Sr. No.	Name of the Event	Level- Institute/State /National /International	Date of the Event	Class	Resource Person
1	On the Spot /Extempore	Institute	12/08/2021	TE Students	NA
2	Idea Presentation	Institute	07/09/2021	SE, TE Students	Abhijeet Deogirikar Founder & Director at CopperCloud IOTech Pvt Ltd

Table B.4.6.1.h: Organized ETeSA Events in A.Y. (2020-21)

Sr. No.	Name of the Event	Level- Institute/State /National /International	Date of the Event	Class	Resource Person
1	Webinar on BE+MBA – A winning Profile	Inter-Institute	14/08/2020	SE, TE,BE Students	Ranjit Calangutkr, IMS Chief Mentor & IIM Lucknow Alumnus
2	Webinar on Entrepreneurship and its importance in decades ahead	Inter-Institute	18/08/2020	SE, TE,BE Students	Mr. Ajinkya Chopade, Entrepreneur, Educator , Author
3	Resume Making Webinar	Institute	19/11/2020	SE, TE,BE Students	Dr. Jyoti Pai Assistant Professor PCCOER, Ravet
4	Workshop on “Circuit making using Eagle software”	Institute	20/11/2020	TE Students	Mr. Shivam Tekode Alumni, PCCOER, Ravet
5	Webinar on “ Future of Higher Education	Institute	21/11/2020	SE,TE,BE Students	Mr. Ajin Abraham Alumni, PCCOER, Ravet
6	Webinar on “LATEX Technical Writing software"	Institute	23/11/2020	TE, BE Students	Miss. Jiyot Babrah Alumni, PCCOER, Ravet

Table B.4.6.1.i: Organized ETeSA Events in A.Y. (2019-20)

Sr. No.	Name of the Event	Level- Institute/State /National /International	Date of the Event	Class	Resource Person
1	Antenna Design & Fabrication Worksh	Institute	7-8/08/2019	BE Students	Mr. Anirudha Kulkarni, RF Design Head , Academica Labs Pvt.Ltd, Mumbai
2	Code Constructor	Institute	02/08/2019	SE Students	Online code competitio
3	PCB Design Workshop	Institute	05/09/2019	SE Students	Shivam Tekode, Anagh Navale, BE Students
4	Session on “How to	Institute	05/09/2019	TE	Ajin Abrahm, Jiyot

	perform well in GD			Students	Babrah BE Students
5	One week workshop on Machine Learning	Institute	16- 20/12/2019	TE Students	Mr. Shantanu Pathak Freelancer
6	Radiations & it's hazards- Awareness Session	Institute	17/01/2020	SE,TE,BE Students	Prof. Dr. S. R. Jog , Head Dept. of E&TC, DYPCOE
7	Mock Interview- I	Institute	6-7 /01/2020	TE Students	Mr. Ganesh Shridharan Mr. Parsh Kothari Think School, Ravet
8	Mock Interview-II	Institute	25/01/2020	TE Students	Mr. Bhimsen Purohit Mr. Vinod Patil Mr. Sanjog Birla, Magna Styer Pvt. Ltd.Pune
9	Extempore ,GD Sessions	Institute	23/05/2020	SE,TE Students	BE students

Table B.4.6.1.j: Organized ETeSA Events in A.Y. (2018-19)

Sr. No.	Name of the Event	Level- Institute/State /National /International	Date of the Event	Class	Resource Person
1	Guest lecture on GRE and TOEFL	Inter-Institute	25/7/2018	TE Students	Mr. Manoj Rai
2	Recent Trends in VLSI Design & Verification Technology Using EDA Tools Workshop	Institute	19,20/9/2018	BE Students	Mr. Shrikant R. Atkarne, Application Engineer (Microwind), ni logic Pvt. Ltd. (ni2 designs)
3	Workshop on Embedded Linux	Institute	21,22/9/2018	BE Students	Mr. Mangesh Edake, Johnson Controls India Pvt., Ltd., Pune
4	Machine Learning Workshop	Institute	17/09/2018	TE, BE Students	Mr. Shazad Khan, Student, PCCOER, Ravet
5	Seminar on	Institute	29/08/2018	SE	Mr. Sanjay

	Industrial approach to Electronics			Students	Chaudhari Chief Manager, Electronic Center, Nashik
6	Lecture On Humanity Ethics and Values	Inter- Institute	28/09/2018	SE, TE,BE Students	Mr. Subodh Bhau
7	Workshop on PYTHON C C++ for SE students	Institute	18-21/12/2018	SE Students	Mr. Sandip Gadekar I2I specialist
8	Four days workshop on Raspberry Pi with IOT	Institute	18-21/12/2018	TE Students	Mr.Tushar Kute Researcher in MITU Skillilogies Pune
9	Awareness Drive for 11th & 12th Students	Institute	25/01/2019	11th and 12th Students	TE E&TC Students
10	Mock Interviews for TE E&TC Students	Institute	7-8/02/2019	TE Students	Mr. Bhimsen Purohit Mr. Sanjog Birla Mr. Vinod Patil
11	Orphanage Visit at Nachiket Balgram,Akurdi	Institute	30/03/2019	---	Prof. T.D. Dhamale

Table B.4.6.1.k: Organized ETeSA Events in A.Y (2017-18)

Sr. No.	Name of the Event	Level- Institute/State /National /International	Date of the Event	Class	Resource Person
1	One Day Workshop on "Microwave Systems Design and Testing" for BE Students	Institute	28/07/2017	BE Students	Mr. Anirudha Kulkarni, RF Design Head, AcademicaLabs,Mumbai
2	Two Days Workshop on "Electronic System Design" for TE Students	Institute	18 & 19/08/2017	TE Students	Mr. Sanjiv Joglekar Project manager Kanaad Electromation solution Pvt Ltd Sangali
3	Two Days Workshop on "Arduino Interfacing Hands-On" for SE Students	Institute	21 & 22/08/2017	SE Students	Prof. Maithili Andhare Prof. Rupali Kawade Assistant Professor,PCCOER

4	A 3 Days Workshop on "Industrial Approach to Electronics"	Institute	23,24 & 25/01/2018	SE, TE, BE Students	Mr. Sanjay Chaudhari Director, Electronics Study Centre, Nashik

Table B.4.6.1.l: Organized ETeSA Events in A.Y (2016-17)

Sr. No.	Name of the Event	Level-Institute/ State / National/ International	Date of the Event	Class	Resource Person
1	ETeSA Inauguration	Institute	19/07/2016	SE,TE Students	Dr. H.U. Tiwari Principal, All Department HODs
2	Wall Magazine Inauguration	Institute	19-07-2016	SE,TE Students	Dr. H.U. Tiwari Principal, All Department HODs
3	Counter Strike, Snake & Ladder, Ring & Bell, Talent Hunt competition	Institute	17-08-2016	SE,TE Students	Prof. T. D. Dhamale
4	PCB Designing Workshop for SE (E&TC)	Institute	24-08-2016 to 25-08-2016	SE Students	Mr. Ajay Jidgi Managing Director A Square Electro-Engineering Lab Pvt Ltd Pune
5	Workshop on "Product Development"	Institute	12,13 &14/01/2017	TE Students	Mr. Sanjay Marathe
6	Workshop on "Antenna Design & Fabrication"	Institute	01/02/2017	TE Students	Mr.Anirudha Kulkarni, RF Design Head, Academica Labs, Mumbai

4.6.2 Publication of Technical Magazines, Newsletters (5)

Institute Marks 05

Details of technical magazines and newsletters are given in table B.4.6.2.a.

Table B.4.6.2.a: Magazine/Newsletter Details

Sr.No.	Magazine/Newsletter	Frequency of Publication
1	PCCOER UGCON	Yearly
2	CIPCIS	Yearly
3	Department Magazine	Half yearly
4	College Magazine	Yearly
5	Newswire	Half yearly
6	IEEE ASIAN Conference	Yearly
7	INNOTECH IEEE Student Branch	Monthly

1. PCCOER-UGCON:

PCCOER UGCON is the proceeding of project exhibition that contains details about final year projects of all the four departments of institute like E&TC, Mechanical, Computer and Civil Engineering. The details of PCCOER UGCON are given in table B.4.6.2.b.

Table B.4.6.2.b: PCCOER-UGCON details

Sr. No.	Name of the Proceeding	Volume No./Month	ISBN Number	Faculty and Student Coordinators	Publishers
1	PCCOER-UGCON 2020	Volume-3/ November 2020	978-81-937647-4-9	Prof. Dr. R.G.Mapari and ETeSA , IEEE and IETE Students	PCET's PCCOE&R, Ravet
2	PCCOER-UGCON 2019	Volume-2/ November 2019	978-81-937647-1-8	Prof. Dr. R.G.Mapari and ETeSA students	PCET's PCCOE&R, Ravet
3	PCCOER-UGCON 2018	Volume-1/ November 2018	978-81-937647-0-1	Prof. Dr. R.G.Mapari and ETeSA students	PCET's PCCOE&R, Ravet

2. CIPCIS:

It is proceedings of National Conference on Indian Patents, Copyrights, Innovations and Startups (CIPCIS). It contains abstracts from various IP domains like Automobile, Mechanical, Civil, Electronics, Computers & IT, Pharmaceuticals, etc. The objectives of CIPCIS are:

- To help inventors to protect their research and create opportunities for revenue generation.
- To help inventors to overcome the challenges of establishing technology, expertise, knowledge, resources and facilities in all scientific discipline.
- To bridge the gap between the inventors and investors for commercializing new products for the society and the nation.
- To help new future innovators to learn recent developments and technological advancement going on in the field of Intellectual Property.
- To create awareness in the field of IPR, its violations and fighting the threat of forging and piracy to enhance IP culture.
- To provide the platform and guideline to publish the IPR.

CIPCIS proceeding details are given in table B.4.6.2.c.

Table B.4.6.2.c: CIPCIS proceeding details

Name of the Proceeding	Month & Year of Publication	ISBN Number	Faculty and Student Coordinators	Publishers
Conference on Indian Patents, Copyrights, Innovations and Startups (CIPCIS 2020)	February 2021	978-81-937647-2-5	Prof. R. R. Kawade Prof. K. B. Wane Prof. T. D. Dhamale and ETeSA Students	PCET's PCCOE&R, Ravet
Conference on Indian Patents, Copyrights, Innovations and Startups (CIPCIS 2019)	December 2019	978-81-937647-2-5	Prof. R. S. Parbat Prof. K. B. Wane Prof. T. D. Dhamale and ETeSA Students	PCET's PCCOE&R, Ravet

3. Department Magazine:

The department publishes magazine twice in a year. The objective of magazine is to combine the various activities conducted considering current technologies in Electronics & Telecommunication industry. The magazine contains guest lectures, seminars, workshops and industrial visits. The magazine encourages the students to participate in various activities. The details of department magazine are given in table B.4.6.2.d.

Table B.4.6.2.d: Department magazine details

Sr. No.	Academic Year	Month &Year of Publication	Name of the Editor	Publishers
1	2020-21	November 2020, May 2021	Prof. K.B. Bhangale and ETeSA, IEEE, IETE Students	E&TC Department, PCCOE&R, Ravet
2	2019-20	November 2019, May 2020	Prof. R. S. Parbat and ETeSA, IEEE, IETE Students	E&TC Department, PCCOE&R, Ravet
3	2018-19	November 2018, May 2019	Prof. R. S. Parbat and ETeSA Students	E&TC Department, PCCOE&R, Ravet
4	2017-18	November 2017, May 2018	Prof. V. S. Kumbhar and ETeSA Students	E&TC Department, PCCOE&R, Ravet
5	2016-17	May 2017	Prof. V. S. Kumbhar and ETeSA Students	E&TC Department, PCCOE&R, Ravet

4. College Magazine:

The College Magazine is printed every year. Faculties encourage the students to actively participate in writing articles for magazine. The magazine includes the details like Toppers in various department, activities and achievements of all departments etc. The details of college magazine are given in table B.4.6.2.e.

Table B.4.6.2.e: College magazine details

Sr. No.	Academic Year	Name of the Magazine	Month &Year of Publication	Name of Editors	Publishers
1	2020-21	Reflection	E-magazine	Prof. Mahesh Sarada Prof. S. N. Randive and ETeSA Students	PCET's PCCOE&R, Ravet
2	2019-20	Reflection	January 2020-21	Prof. Mahesh Sarada Prof. Kishor Wane and ETeSA Students	PCET's PCCOE&R, Ravet

3	2018-19	Reflection	January 2019-20	Prof. Mahesh Sarada Prof. Kishor Wane and ETeSA Students	PCET's PCCOE&R, Ravet
4	2017-18	क्षितिज	February 2018-19	Prof. Mahesh Sarada Prof. Kishor Wane and ETeSA Students	PCET's PCCOE&R, Ravet
5	2015-16	अथांग	January 2016-17	Prof. Mahesh Sarada Prof. Kishor Wane and ETeSA Students	PCET's PCCOE&R, Ravet

5. Newswire:

The newswire is printed once in a semester and circulated among parents, students & faculties. It is also posted on website. The objectives of new wire are as follows:

- Different activities & events
- Research & publications of students & faculties
- Different seminars, conferences, guest lectures, industry lectures, workshops, FDP
- Other curricular activities, competitions, sports
- Participation, winners, awards & achievements in different domains by different departments
- Contributions to institute, society etc
- Staff training (Attended / Conducted)
- Activities of national / social interest
- T&P activities

The details of newswire are given in table B.4.6.2.f:

Table B.4.6.2.f: Newswire details

Sr. No.	Name of the News Letter	Volume No./Year	Name of Chief Editor	Publishers
1	Newswire	Volume-4/2019-20	Prof. T. D. Dhamale & ETeSA, IEEE, IETE Students	PCET's PCCOE&R, Ravet
2	Newswire	Volume-2/January 2019	Prof. T. D. Dhamale & ETeSA Students	PCET's PCCOE&R, Ravet
3	Newswire	Volume-3/2018-19	Prof. T. D. Dhamale & ETeSA Students	PCET's PCCOE&R, Ravet
4	Newswire	Volume-1/2017-18	Prof. T. D. Dhamale & ETeSA Students	PCET's PCCOE&R, Ravet

6. IEEE ASIAN Conference 2021

2021 Asian Conference on Innovation in Technology (ASIANCON '2021) is an International Conference technically sponsored by IEEE Bombay Section and Hosted by Pimpri Chinchwad College of Engineering and Research, Pune (One of the eminent institutions of Savitribai Phule Pune University). It provides a platform for students and professionals from all around the world to share their findings in the fields of Engineering and Technology and others innovative Technologies. This year a special emphasis is to be placed on, Data Science, Artificial Intelligence automation technologies and robotics.

Table B.4.6.2.g: IEEE ASIAN Conference 2021

Sr. No.	Name of the Conference	ISBN No.	Publishers	Host Institute
1	ASIANCON 2021	978-1-7281-8400-5	IEEE	PCET's PCCOE&R, Ravet

7. INNOTECH IEEE student branch News-letter

INNOTECH is a IEEE student branch news-letter, it gives information about research work carried out in a particular month. It will be published once one month. INNOTECH IEEE student branch News-letter details are given in table B.4.6.2.h.

Table B.4.6.2.h: IEEE student branch News-letter details

Sr. No.	Name of the News Letter	Volume No./Year	Name of Chief Editor	Publishers
1	INNOTECH	Volume-3/2020-21	Prof. V.S. Kumbhar & IEEE Students	PCET's PCCOE&R, Ravet
2	INNOTECH	Volume-2/2019-20	Prof. V.S. Kumbhar & IEEE Students	PCET's PCCOE&R, Ravet
3	INNOTECH	Volume-1/2018-19	Prof. V.S. Kumbhar & IEEE Students	PCET's PCCOE&R, Ravet

The Career Guidance handbook details are given in table B.4.6.2.i.

Table B.4.6.2i: Career guidance handbook details

Name of handbook	Month &Year of Publication	ISBN Number	Name of Chief Editor	Publishers
Career guidance handbook for engineering students	March 2020	978-81-937647-3-2	Prof. Dr. R.G. Mapari	PCET's PCCOE&R, Ravet

4.6.3 Participation in inter-institute events by students of the program of study (10)

Institute Marks 09

Students are motivated to participate in various inter-institute events at different levels like state, national & international. Technical events like technovate, technospark are also conducted at the institute level which includes various events like poster presentation, paper presentation, project exhibition, I Know Everything Competition, brain games, robo wrestling etc. The students from other institute also participate in these events.

- Details of students participation in International level conference is given in table B.4.6.3.a.
- Student participation in National level conference is given in table B.4.6.3.b.
- Students participation in project exhibition is given in table B.4.6.3.c
- Student participation in various events winner details is given in table B.4.6.3.d.
- Details of extra-curricular activities organized by National Service Scheme (NSS) are given in table B.4.6.3.e.
- Sports participation details are given in table B.4.6.3.f.

Table B.4.6.3.a: Student participation in International level conference

Sr. No.	Name of the Student	Paper Title	Name of the Conference	Volume/Issue
1	Piyush Ingale Divyashri Desale Rajani Kanase	Multi-view Multi-pose Robust Face Recognition based on VGGNet	2nd International Conference on Image Processing and Capsule Networks (ICIPCN2021) (May-28,29-2021)	Springer Conference
2	Laukik Deshmukh Prashant Gode Ankit Gaikwad	Agriculture Protection from Animals using Smart Scarecrow System	International Conference on Soft Computing for Security Applications (ICSCS2021)	Springer Conference
3	Annamaraju Jayasree Sakshi Kulkarni Gayatri Bokey	Design and Simulation of UWB Antenna for 4G Applications	3rd International Conference on Sustainable Communication Networks and Application ICSCN 2021, (Springer - Lecture Notes on Data	Springer Conference

			Engineering and Communications Technologies)	
4	Ajin Abraham	Pandemic Security System for Police using Neural Networks	International Conference on Future Intelligence in Science & Technology. MuktShabd Journal	Volume IX, Issue VI, JUNE/2020, ISSN NO: 2347-3150
5	Divyansh Shah Khushbu Kawale Masumi Shah	Malaria Parasite Detection Using Deep Learning, Beneficial to humankind	Proceedings of the International Conference on Intelligent Computing and Control Systems (ICICCS 2020)	IEEE Xplore Part Number:CFP20K74-ART; ISBN: 978-1-7281-4876-2

Table B.4.6.3.b: Student participation in National level conference

Sr. No.	Participants	Paper Title	Journal Name	Name of the Conference
1	Tiwari Rahul Anil Yadav Ruturaj Shivajirao Yadav Shubham Shashikant	All Purpose Biometric Punch In System	International Journal of Scientific Research in Science, Engineering and Technology, Volume 5 | Issue 7 | Print ISSN : 2395-1990	National Conference on Information, Communication and Energy Systems and Technologies – 2019
2	Salunke Abhishek Khan Shazad Khalid Jadhav Chandrashekhar Shyam	Detection of Diabetic Retinopathy	IOSR Journal of Engineering (IOSR JEN) www.iosrjen.org ISSN (e): 2250-3021 PP 65-67	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM-19
3	Pacharne Vaibhav Pagar Shubham Bandu Zanzane Viraj	Overview Of Bike Automation using Voice Recognition Chip	IOSR Journal of Engineering (IOSR JEN) www.iosrjen.org ISSN (e): 2250-3021 PP 29-31	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM-19
4	Kukkar Priyanshu Kumar Gaurav Pawar Mahesh	Smart Electrical Vehicle	IOSR Journal of Engineering (IOSR JEN) www.iosrjen.org ISSN (e): 2250-3021, ISSN (p):	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM-19

			2278-8719 PP 07-09	
5	Daniel Ajit Das Subhajit Sawant Snehal	Wall Climbing Rover Using Propellers	IOSR Journal of Engineering (IOSR JEN) www.iosrjen.org ISSN (e): 2250-3021 PP 27-30	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM-19
6	Sinha Shreya Sonimindia Laxmi Taware Shruti	Agrobot	IOSR Journal of Engineering (IOSR JEN) www.iosrjen.org ISSN (e): 2250-3021 PP 66-68	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM-19

Table B.4.6.3.c: Project exhibition winner details

Sr. No.	Name of the Student	Name of the Event	Place	Date	Award/Participation
1	Meenakshi R Raghupathy Akshada Navnath Kharade Mustafa Moiz Baldiwala Kalyani Vijay Yadav Vishnupratap Surendra Singh Devendra Dattatrya Huse	Navdhara 2021 - Project Contest (State Level)	Pimpri Chinchwad College of Engineering and Research, Ravet	8/21/2021	2nd prize
2	All FE E&TC Students	Navdhara 2021 - Project Contest (State Level)	Pimpri Chinchwad College of Engineering and Research, Ravet	8/21/2021	Participated
3	Hardik Saklikar	PBL Competition	Pimpri Chinchwad College of Engineering and	07/08/2021	3rd Position

			Research, Ravet		
4	Aarya Panse	UGCON Poster and Project Competition (National Level)	Pimpri Chinchwad College of Engineering and Research, Ravet	07/08/2021	3rd Position
5	Shantanu sunil pawar	PCCOER UGCON 2K21	Pimpri Chinchwad College of Engineering and Research, Ravet	07/07/2021	1st Position
6	Darshana Kishor Bhavsar	Poster Making Competition	Pimpri Chinchwad College of Engineering and Research, Ravet	06/26/2021	Winner
7	Manasi Mohan Kulkarni Shruti S. Shinde	GMRT Virtual Science Day Exhibition held on 28th February 2021.	GMRT, Khodad, Pune	28th February 2021	Rank 5th, Group V - BE, ME, MSC (National level project competition) Presented project titled “Integrated Solar based Oil and Waste Extraction System” and Winners
8	Suyash Satish Choudhari Siddhant Yogesh Jain Sanket Chavan Ajinkya Chintamani Deshpande Tejveer Gurpreet Anand	GMRT Virtual Science Day Exhibition held on 28th February 2021.	GMRT, Khodad, Pune	28th February 2021.	Presented project on “Hybrid electric bicycle” at National level project competition
9	Vrushali Shete Shruti Shinde Rushikesh Waghmare	Technovation-2K21	Department of Electronics and Telecommunication of PVG COET and GKWPIM with TESA	8th April 2021.	Participation (State Level Project Competition)
10	All BE students	UGCON 2021 national Level Project	Pimpri Chinchwad College of Engineering and	07 & 08 July 2021	Participation (national Level

		Competition	Research, Ravet		Project Competition)
11	Jiyot Babrah Shweta Narkhede Anagha Navale Rutuja Sonawane Rohini Bali Mansi Zope	'ABHIKALP 2020' Savitribai Phule Pune University, Pune	'ABHIKALP 2020' Institute Research Park Foundation Cell, SPPU, Pune	13-14/03/2020	2nd Rank for the theme Waste Management, Clean Water & Selected for Start-up Selected for Start-up
12	Jiyot Babrah Shweta Narkhede Anagha Navale	AgroFest Hi-Tech Farming Project Exhibition	Padmabhooshan Vasantdada Patil Institute of Technology, Pune	29/01/2020	1st Rank
13	Divyansh Shah Khushbu Kawale Masumi Shah	"TechnoSpark-2020 @ PCCOER"	PCCOE&R, Ravet	29-30/05/2020	Runner-up
14	Sajid Chaus Omkar Gore Shivam Tekode	CIPCIS-2019	PCCOE&R, Ravet	21-22/12/2019	3rd Rank
15	Koshti Sanket Age Kishor Patil Dhiraj	SAE India Electronics forum, Electronic community Confluence (ECC)-2019	PCCOE, Pune	17/09/2019	5th Rank
16	Dave Rudri Kalbhor Vrushali Kalbhor Yuga Tiwari Rahul	PCCOER-UGCON	PCCOE&R, Ravet	10/06/2019	1st Rank 2nd Rank

	Yadav Ruturaj				
	Yadav Shubham				
	Kumbhar Yugandhara				3rd Rank
	Pooja Mane				
	Ingle Nikesh				
17	Pranali Machutre,	PCCOER-UGCON	PCCOE&R, Ravet	22/06/2018	1st Rank
	Pradnya Padwal				
	Nausee Khan				
	Sudheer Pacharkar				2nd Rank
	Umesh Lokhande				
	Ashish Hatkar				
	Gauresh Sawant				3rd Rank
	DattaDhokne				
	Kishor Pailwan				
18	Khedekar Sakshi	Project Exhibition	KK Wagh COE, Nashik	28/01/2018	3rd Rank
	Kale Pratiksha				
	Bagdure Deepa				

Table B.4.6.3.d: Student participation in various events winner details

Name of the Student	Event Details			Date	Award/ Participation
	Name of the activity	Place	Level- Institute/State /National /International		
Shravani Pulliwar	Extempore-2021	Virtual Event PCET's	Institute	16/08/2021	2nd Prize
Abhijeet Patil	Extempore-2021		Institute	08/14/2021	3rd Prize

Mahesh Kope	Extempore-2021	PCCOER, Ravet	Institute	08/12/2021	2nd Prize
Sanika Sunklod	Extempore-2021		Institute	08/11/2021	1st Prize
Prajwal Gaikwad	Extempore-2021		Institute	08/08/2021	3rd Prize
Aarya Panse	C-cube Technical Blog writing	Virtual Event PCET's PCCOER, Ravet	Institute	08/04/2021	3rd Prize
Aarya Panse	Book Review	Virtual Event PCET's PCCOER, Ravet	State	06/19/2021	Consolation Prize
Vaishnavi Nandkishor Patil	IEEE HAC/SIGHT Trivia Challenge	Virtual Event	International	28/04/2021	1st Rank
Aachal Chhotelal Tembhare	IEEE HAC/SIGHT Trivia Challenge	Virtual Event	International	28/04/2021	1st Rank
Vrushali Pravin Shete	COVID-19 VACCINE: Public Awareness Campaign Contest	NSS, PCCOER, Ravet	State	21/04/2021	2nd Rank
Chitra Patgar	Video making contest	IEEE WIE AG Bombay Section	National	4/03/2021	1st Rank and Cash Prize worth Rs.2000/-
Shweta Rahate	Video making contest	IEEE WIE AG Bombay Section	National	4/03/2021	1st Rank and Cash Prize worth Rs.2000/-
Darshana Kishor Bhavsar	Elocution Competition	PCCOER, Ravet	Institute	09/06/20	Participated
Nimesh Narayan Dhumal	Power Electronics Quiz	PCCOER, Ravet	Institute	06/06/2020	Participated
Darshana Kishor Bhavsar	Article Writing Competition	PCCOER, Ravet	Institute	04/06/20	Participated
Mansi Mohan Kulkarni	National Level Poster Competition 2020	Internal Quality Assurance Cell of Pillai HOC College of Engineering and Technology	National	---	Participated
Shweta Satish Patil	National Level Poster Competition 2020	Internal Quality Assurance Cell of Pillai HOC College of Engineering and Technology	National	---	Participated

Mansi Mohan Kulkarni	Minor Project Competition	PCCOER, Ravet	Institute	29 & 30/05/20	Participated
Mansi Mohan Kulkarni	Idea Making Competition	PCCOER, Ravet	Institute	29 & 30/05/20	Participated
Ashwini Shivaji Waghmare	Minor Project Competition	PCCOER, Ravet	Institute	29 & 30/05/20	Participated
Shweta Satish Patil	Technoquiz competition	PCCOER, Ravet	Institute	29 & 30/05/20	Participated
Aman Abhijit Soitkar	Techno Spark 2020- A State level online competition	PCCOER, Ravet	Institute	29 & 30/05/20	Participated
Richa Patil	Covid Equipment making competition	PCCOER, Ravet	Institute	29 & 30/05/20	Participated
Nimesh Narayan Dhumal	Brainthon Quiz Competition	PCCOER, Ravet	Institute	2020	Participated
Labhesh Lalka	Robo Wrestling Technovate-2020	PCCOER, Ravet	Institute	14/02/20	3rd Prize Won Cash Prize of Rs. 2000/-
Shweta Satish Patil	Technovate 2k20 PBL poster competition	PCCOER, Ravet	Institute	13/02/2020	Participated
Shivani Khot	Smart India Hackathon (SIH)	PCCOER, Ravet	Institute	04/02/20	Winner of Internal Hackathon (Hardware)
Shruti Shinde	Smart India Hackathon	PCCOER, Ravet	Institute	04/02/20	Winner of Internal Hackathon (Hardware)
Mansi Kulkarni	Smart India Hackathon	PCCOER, Ravet	Institute	04/02/20	Winner of Internal Hackathon (Hardware)
Pranjal Patil Joel Joseph Shruti Londhe Shivani Khot Neel Deshmukh Gayatri Kharche Nehul gupta	Infusion	PCCOER, Ravet	Institute	18/09/2019	Rs. 1,50,000 for students training on communication for social media team, guidance on event day

Tamanna vishnoi Shriyash Thorat Raj Girase Ayush Kedari Vaishnavi Patil Yash Gupta Shreenalini Nambiyar					preparation, zero delay training etc.
Jiyot Babrah Jagtap Dnyaneshwari Lakade Salim	National Level Technology Dissemination Contest for students TDCS-2019 / Eu-Reka organized by IEEE Pune Section	MIT COE, Pune	National	July-August 2019	Secured 1st Prize & cash worth Rs. 20000/-
Harita Selvakumari	Digimania Contest organized under silicon fusion	AISSMS COE, Pune	Industry-Institute	18-20 September 2019	Secured Second Prize & cash prize worth Rs. 5000/-
Anagha Navale	Model United Nations Conference (Conducted by the literary club of PCCOER)	Mechanical Department PCCOER, Ravet	Inter-Institute	9 Jan 2019	Participated
Priyanshu Kukkar	GO-KART	Arya COE & IT Jaipur, Rajsthan	National	Dec 2018	2nd Runner up "Team – Mechaholics" won Cash Prize worth Rs. 50,000/- & Best CAE Award with Cash prize of Rs. 15,000/-
Rohini Bali	National Level Workshop on Internet of things	DYPCOE, Akurdi	National	22-23/09 2017	Second Prize
Ajin Abraham	National Level Workshop on Internet of things	DYPCOE, Akurdi	National	22-23/09 2017	Second Prize
Yash Aadhav	Byldan in Mindspark' 17	COE, Pune	Intra-Institute	22-24/09 2017	Second Prize
Snehal Sawant	Poster Presentation on the topic Conservation of water Technovate-	PCCOER, Ravet	Institute	17/02/17	Winner

	2018				
Machindra Sawale	Poster Presentation on the topic PoliticsTechnovate-2018	PCCOER, Ravet	Institute	17/02/17	Runner-up
Pradnya Padwal Nausee Khan	Paper presentation on the topic Digital Watermarking Technovate-2018	PCCOER, Ravet	Institute	17/02/17	Winner
Pranali Machutre V.V. Sailaxmi	Paper presentation on the topic Image Compression Technovate-2018	PCCOER, Ravet	Institute	17/02/17	Runner-up
Datta Dhokane Ashish Hatkar Machindra Sawale	Project Exhibition on the topic Robotic Arm control using Haptic Technology Technovate-2018	PCCOER, Ravet	Institute	17/02/17	Winner
Tejas Badhkal Rohit Sharma Saurav Mahajan	Project Exhibition on the topic Self-Balanced robot Technovate-2018	PCCOER, Ravet	Institute	17/02/17	Runner-up
Pallavi Malagi Yuga Kalbhor Ruturaj Yadav Snehal Sawant	I Know Everything Competition Technovate-2018	PCCOER, Ravet	Institute	18/02/17	Winner
Tejas Badhkal Rohit Sharma Saurav Mahajan Narendra More	I Know Everything Competition Technovate-2018	PCCOER, Ravet	Institute	18/02/17	Runner-up
Mrunal Bhilare Manasi Dandekar Swati Bembde Shubham Balwadkar	Brain Games Technovate-2018	PCCOER, Ravet	Institute	18/02/17	Winner

Table B.4.6.3.e: Details of extra-curricular activities organized by National Service Scheme (NSS)

Academic Year	Name of the Activity	Level- Institute/State /National /International	Date
2020-21	COVID-19 Vaccine: Public Awareness Campaign Contest	Institute	11/04/2021 to 14/04/2021
	Women's Day Celebration	Institute	08/03/2021
	Tree Plantation	Institute	1/7/2020 to 7/7/ 2020
	Making of face shield and Survey of families for Fight against Covid 19	Institute	1/4/2020 to 30/6/2020
2019-20	Blood Donation	Institute	22/02/2020
	Gandhi Jayanti Celebration	Institute	2/10/2019
	Yoga one week Workshop for students	Institute	14/8/19 to 18/08/19
	Guinness world record Event	International	23/6/2019
	International Yoga day	Institute	21/06/2019
2018-19	Blood Donation Camp	Institute	15/02/2019
	Swachhata Abhiyan	Institute	13/01/19
	Sardar Vallabhbhai Patel Jayanti	Institute	31/10/18
	Gandhi Jayanti Celebration : Gifts to Swachhata Karmachari , Rangoli Competition, Elocution Competition, Swachhata Abhiyan, Street Play Competition	Institute	26/9/2018 To 2/10/18
	Tree Plantation	Institute	5/7/2018
	Yoga Day	Institute	21/06/2018
2017-18	Sardar Vallabhbhai Patel Jayanti	Institute	31/10/2017
	Blood Donation Camp	Institute	15/10/17
	Swachhata Pakhawada	Institute	1/8/17 to 15/8/2017
	Pune Cyclothan	State	17/07/2017
	Tree Plantation week	Institute	1/7/2017 to 7/7/2017

Table B.4.6.3.f: Sports participation details

Name of Student	Name of Activity	Level- Institute/State /National /International	Place	Remark
Ashmit Pareek	University Level Cricket Matches	State	Sinhgad Institute of Technology, Lonavala	Participated
Sakshi Mukkirwar	University Level Basketball Matches	State	Dhole Patil College of Engineering, Vithallnagar, Kharadi	Participated
Neha Dodake	University Level Basketball Matches	State	Dhole Patil College of Engineering, Vithallnagar, Kharadi	Participated
Rohini Bali	University Level Korf Ball competition	State	E.S.Divekar college of Arts & commerce, Varwand	Participated
Ashmit Kailash Pareek	University Level Cricket	State	Trinity COE, Kondhava	Participated
Prashant M Gode	University Level Volleyball	State	Sinhgad Institute of Technology, Lonavala	Participated
Rohini Bali	University Level Basketball (Girls)	State	DP, Wagholi	Participated

CRITERION - 5	FACULTY INFORMATION AND CONTRIBUTIONS	200

Table B: 5: Faculty Information of (AY 2020-2021)

Total Marks 150

											Academic Research				
Sr. No.	**Name of The Faculty member**	**Degree(Highest degree)**	**University**	**Year of attaining higher qualification**	**Association with the Institution**	**Designation**	**Date on which Designated as Professor/ Associate Professor**	**Date of Joining the Institution**	**Department**	**Specialization**	**Research Paper Publications**	**Ph.D. Guidance**	**Faculty Receiving Ph.D. during the Assessment Years**	**Currently Associated (Y/N) Date of Leaving (In case Currently Associated is ("No")**	**Nature of Association (Regular/Contract)**
1	Rahul Ganpat Mapari	ME and PhD	Sant Gadge Baba Amravati University	27/06/2016	PCCOER	Professor	28/08/2019	06/07/2017	E&TC	Power Converters	-	-	-	Y	Regular
2	Vijayalaxmi Sandeep Kumbhar	ME	SPPU	01/08/2015	PCCOER	Assistant Professor	-	12/06/2015	E&TC	VLSI & Embedded Systems	01	-	-	Y	Regular
3	Santosh Nagnath Randive	M. Tech	SGGSIE &T, Nanded	08/07/2012	PCCOER	Assistant Professor	-	16/06/2015	E&TC	Electronics	-	-	-	Y	Regular
4	Maithili Shailesh Andhare	ME	SPPU	20/07/2010	PCCOER	Assistant Professor	-	01/07/2015	E&TC	Digital Systems	02	-	-	Y	Regular
5	Kiran Malhari Napte	ME	SPPU	20/11/2014	PCCOER	Assistant Professor	-	13/06/2016	E&TC	VLSI & Embedded Systems	03	-	-	Y	Regular

6	Triveni Deepak Dhamale	ME	SPPU	17/12/2012	PCCOER	Assistant Professor	-	13/06/2016	E&TC	VLSI & Embedded Systems	02	-	-	Y	Regular
7	Arti Avinash Tekade	ME	SPPU	20/05/2015	PCCOER	Assistant Professor	-	15/06/2016	E&TC	Digital Systems	02	-	-	Y	Regular
8	Rupali Ramdas Kawade	ME	SPPU	05/06/2013	PCCOER	Assistant Professor	-	20/06/2016	E&TC	Digital Systems	01	-	-	Y	Regular
9	Kishor Bhaskar Wane	ME	SPPU	28/11/2014	PCCOER	Assistant Professor	-	27/06/2016	E&TC	VLSI & Embedded Systems	03	-	-	Y	Regular
10	Dipali Nilesh Dhake	ME	SPPU	18/07/2014	PCCOER	Assistant Professor	-	15/12/2017	E&TC	Signal processing	02	-	-	Y	Regular
11	Rahul Sopan Parbat	ME	SPPU	26/11/2015	PCCOER	Assistant Professor	-	17/12/2018	E&TC	Microwave Engineering	-	-	-	Y	Regular
12	Kishore Barsu Bhangale	ME	SPPU	31/10/2014	PCCOER	Assistant Professor	-	11/01/2021	E&TC	VLSI & Embedded Systems	03	-	-	Y	Regular

Table B: 5: Faculty Information of (AY 2019-2020)

										Academic Research				
Sr. No.	Name of The Faculty member	Degree(Highest degree)	University	Year of attaining higher qualification	Association with the Institution	Designation	Date on which Designated as Professor/ Associate Professor	Date of Joining the Institution	Department	Specialization	Research Paper Publications	Ph.D. Guidance	Faculty Receiving Ph.D. during the Assessment Years	Currently Associated (Y/N) Date of Leaving (In case Currently Associated is ("No")	Nature of Association (Regular/Contract)
1	Rahul Ganpat Mapari	ME and PhD	Sant Gadge Baba Amravati University	27/06/ 2016	PCCOER	Professor	28/08/ 2019	06/07/ 2017	E & T C	Power Converters	04	-	-	Y	Regular
2	Vijayala xmi Sandeep Kumbhar	ME	SPPU	01/08/ 2015	PCCOER	Assistant Professor	-	12/06/ 2015	E & T C	VLSI & Embedded Systems	03	-	-	Y	Regular
3	Santosh Nagnath Randive	M. Tech	SGGSIE& T, Nanded	08/07/ 2012	PCCOER	Assistant Professor	-	16/06/ 2015	E & T C	Electronics	04	-	-	Y	Regular
4	.Maithili Shailesh Andhare	ME	SPPU	20/07/ 2010	PCCOER	Assistant Professor	-	01/07/ 2015	E & T C	Digital Systems	03	-	-	Y	Regular
5	Kiran Malhari Napte	ME	SPPU	20/11/ 2014	PCCOER	Assistant Professor	-	13/06/ 2016	E & T C	VLSI & Embedded Systems	-	-	-	Y	Regular

6	Triveni Deepak Dhamale	ME	SPPU	17/12/ 2012	PCCOER	Assistant Professor	-	13/06/ 2016	E & T C	VLSI & Embedded Systems	01	-	-	Y	Regular
7	Arti Avinash Tekade	ME	SPPU	20/05/ 2015	PCCOER	Assistant Professor	-	15/06/ 2016	E & T C	Digital Systems	03	-	-	Y	Regular
8	Rupali Ramdas Kawade	ME	SPPU	05/06/ 2013	PCCOER	Assistant Professor	-	20/06/ 2016	E & T C	Digital Systems	01	-	-	Y	Regular
9	Kishor Bhaskar Wane	ME	SPPU	28/11/ 2014	PCCOER	Assistant Professor	-	27/06/ 2016	E & T C	VLSI & Embedded Systems	02	-	-	Y	Regular
10	Dipali Nilesh Dhake	ME	SPPU	18/07/ 2014	PCCOER	Assistant Professor	-	15/12/ 2017	E & T C	Signal processing	02	-	-	Y	Regular
11	Rahul Sopan Parbat	ME	SPPU	26/11/ 2015	PCCOER	Assistant Professor	-	17/12/ 2018	E & T C	Microwave Engineering	04	-	-	Y	Regular

Table B: 5: Faculty Information of (AY 2018-2019)

											Academic Research				
Sr. No.	**Name of The Faculty member**	**Degree(Highest degree)**	**University**	**Year of attaining higher qualification**	**Association with the Institution**	**Designation**	**Date on which Designated as Professor/ Associate Professor**	**Date of Joining the Institution**	**Department**	**Specialization**	**Research Paper Publications**	**Ph.D. Guidance**	**Faculty Receiving Ph.D. during the Assessment Years**	**Currently Associated (Y/N) Date of Leaving (In case Currently Associated is ("No")**	**Nature of Association (Regular/Contract)**
1	Rahul Ganpat Mapari	ME and PhD	Sant Gadge Baba Amravati University	27/06/ 2016	PCCOER	Associate Professor	-	06/07 /2017	E & T C	Power Converters	05	-	-	Y	Regular
2	Vijayalaxmi Sandeep Kumbhar	ME	SPPU	01/08/ 2015	PCCOER	Assistant Professor	-	12/06 /2015	E & T C	VLSI & Embedded Systems	04	-	-	Y	Regular
3	Santosh Nagnath Randive	M. Tech	SGGSIE& T, Nanded	08/07/ 2012	PCCOER	Assistant Professor	-	16/06 /2015	E & T C	Electronic s	01	-	-	Y	Regular
4	Maithili Shailesh Andhare	ME	SPPU	20/07/ 2010	PCCOER	Assistant Professor	-	01/07 /2015	E & T C	Digital Systems	04	-	-	Y	Regular

5	Kiran Malhari Napte	ME	SPPU	20/11/ 2014	PCCOER	Assistant Professor	-	13/06 /2016	E & T C	VLSI & Embedded Systems	06	-	-	Y	Regular
6	Triveni Deepak Dhamale	ME	SPPU	17/12/ 2012	PCCOER	Assistant Professor	-	13/06 /2016	E & T C	VLSI & Embedded Systems	05	-	-	Y	Regular
7	Arti Avinash Tekade	ME	SPPU	20/05/ 2015	PCCOER	Assistant Professor	-	15/06 /2016	E & T C	Digital Systems	04	-	-	Y	Regular
8	Rupali Ramdas Kawade	ME	SPPU	05/06/ 2013	PCCOER	Assistant Professor	-	20/06 /2016	E & T C	Digital Systems	05	-	-	Y	Regular
9	Kishor Bhaskar Wane	ME	SPPU	28/11/ 2014	PCCOER	Assistant Professor	-	27/06 /2016	E & T C	VLSI & Embedded Systems	05	-	-	Y	Regular
10	Dipali Nilesh Dhake	ME	SPPU	18/07/ 2014	PCCOER	Assistant Professor	-	15/12 /2017	E & T C	Signal processing	03	-	-	Y	Regular

Table B: 5: Faculty Information of (AY 2017-2018)

										Academic Research				
Sr. No.	Name of The Faculty member	Degree(Highest degree)	University	Year of attaining higher qualification	Association with the Institution	Designation	Date on which Designated as Professor/ Associate Professor	Date of Joining the Institution	Department	Specialization	Research Paper Publications	Ph.D. Guidance	Faculty Receiving Ph.D. during the Assessment Years	Currently Associated (Y/N) Date of Leaving (In case Currently Associated is ("No")	Nature of Association (Regular/Contract)
1	Rahul Ganpat Mapari	ME and PhD	Sant Gadge Baba Amravati University	27/06/ 2016	PCCOER	Associate Professor	-	06/07/ 2017	E & T C	Power Converters	02	-	-	Y	Regular
2	Vijayalaxmi Sandeep Kumbhar	ME	SPPU	01/08/ 2015	PCCOER	Assistant Professor	-	12/06/ 2015	E & T C	VLSI & Embedded Systems	01	-	-	Y	Regular
3	Santosh Nagnath Randive	M. Tech	SGGSIE& T, Nanded	08/07/ 2012	PCCOER	Assistant Professor	-	16/06/ 2015	E & T C	Electronics	-	-	-	Y	Regular
4	Maithili Shailesh Andhare	ME	SPPU	20/07/ 2010	PCCOER	Assistant Professor	-	01/07/ 2015	E & T C	Digital Systems	01	-	-	Y	Regular
5	Kiran Malhari Napte	ME	SPPU	20/11/ 2014	PCCOER	Assistant Professor	-	13/06/ 2016	E & T C	VLSI & Embedded Systems	-	-	-	Y	Regular

6	Triveni Deepak Dhamale	ME	SPPU	17/12/2012	PCCOER	Assistant Professor	-	13/06/2016	E&TC	VLSI & Embedded Systems	-	-	-	Y	Regular
7	Arti Avinash Tekade	ME	SPPU	20/05/2015	PCCOER	Assistant Professor	-	15/06/2016	E&TC	Digital Systems	-	-	-	Y	Regular
8	Rupali Ramdas Kawade	ME	SPPU	05/06/2013	PCCOER	Assistant Professor	-	20/06/2016	E&TC	Digital Systems	-	-	-	Y	Regular
9	Kishor Bhaskar Wane	ME	SPPU	28/11/2014	PCCOER	Assistant Professor	-	27/06/2016	E&TC	VLSI & Embedded Systems	-	-	-	Y	Regular
10	Dipali Nilesh Dhake	ME	SPPU	18/07/2014	PCCOER	Assistant Professor	-	15/12/2017	E&TC	Signal processing	-	-	-	Y	Regular
11	Chandrashekhar Bhavsar	M. Tech	SGGSIE&T, Nanded	30/05/2008	PCCOER	Assistant Professor	-	21/07/2014	E&TC	Electronics	-	-	-	N (31/05/2018)	Regular
12	Snehal Rushikesh Pawar	ME	SPPU	17/12/2012	PCCOER	Assistant Professor	-	17/07/2017	E&TC	VLSI & Embedded Systems	-	-	-	N (31/05/2018)	Regular

5.1 Student-Faculty Ratio (SFR) (20) **Institute Marks 12**

No. of UG Programs in the Department (n): 01

No. of Students =Sanctioned Intake + students admitted through lateral entry

S=Number of Students in the Department =UG1+UG2+UG3

F=Total Number of Faculty Members in the Department (excluding first year faculty) (To be calculated at Department Level)

Table B: 5.1: Student Faculty Ratio (CAY 2019-20)

Year	CAY 2019-20	CAYm1 2018-19	CAYm2 (2017-18)
u1.1 (SE)	66	72	72
u1.2 (TE)	72	72	72
u1.3 (BE)	72	72	72
Total no. of students in the department(**S**)	210	216	216
No. of Faculty in the Department (**F**)	10	9	10
Student Faculty Ratio (SFR)	**21.00**	**24.00**	**21.60**
Average SFR	**22.20**		

Table B: 5.1: Student Faculty Ratio (CAY 2020-21)

Year	CAY 2020-21	CAYm1 2019-20	CAYm2 2018-19
u1.1 (SE)	66	66	72
u1.2 (TE)	66	72	72
u1.3 (BE)	72	72	72
Total no. of students in the department(**S**)	204	210	216
No. of Faculty in the Department (**F**)	10	10	9
Student Faculty Ratio (SFR)	**20.40**	**21.00**	**24.00**
Average SFR	**21.80**		

5.1.1 Provide the information about the regular and contractual faculty as per the format mentioned below:

Table B: 5.1.1: Regular And Contractual Faculty Details

Year	Total number of regular faculty in the department	Total number of contractual faculty in the department
2019-20	11	-
2018-19	10	-
2017-18	11	-

Table B: 5.1.1: Regular And Contractual Faculty Details

Year	Total number of regular faculty in the department	Total number of contractual faculty in the department
2020-21	11	-
2019-20	11	-
2018-19	10	-

5.2 Faculty Cadre Proportion (25)

Institute Marks 16.73

Table B 5.2: Faculty Cadre Proportion (Excluding first year faculty)

YEAR	Professors		Associate Professors		Assistant Professors	
	Required RF1	Available AF1	Required RF2	Available AF2	Required RF3	Available AF3
2019-20	01	01	02	00	06	09
2018-19	01	00	02	01	06	08
2017-18	01	00	02	01	06	09
Average Nos.	**01**	**0.34**	**02**	**0.66**	**06**	**8.66**

Cadre Proportion ratio :

$$((\frac{AF1}{RF1})+ (\frac{AF2}{RF2}) \times 0.6 + (\frac{AF3}{RF3}) \times 0.4) \times 12.5$$

$$[((\frac{0.34}{1})+ (\frac{0.66}{2}) \times 0.6 + (\frac{8.66}{6}) \times 0.4)] \times 12.5$$

= **13.93**

As per calculation,

CPR=13.93

Table B 5.2: Faculty Cadre Proportion (Excluding first year faculty)

YEAR	Professors		Associate Professors		Assistant Professors	
	Required RF1	Available AF1	Required RF2	Available AF2	Required RF3	Available AF3
2020-21	01	01	02	00	06	09
2019-20	01	01	02	00	06	09
2018-19	01	00	02	01	06	08
Average Nos.	**1**	**0.66**	**02**	**0.34**	**06**	**8.66**

Cadre Proportion ratio :

$$((\frac{AF1}{RF1})+ (\frac{AF2}{RF2}) \times 0.6 + (\frac{AF3}{RF3}) \times 0.4) \times 12.5$$

$$[((\frac{0.66}{1})+ (\frac{0.34}{2}) \times 0.6 + (\frac{8.66}{6}) \times 0.4)] \times 12.5$$

= **16.73**

As per calculation,

CPR=16.73

5.3 Faculty Qualification (25)

Institute Marks 10.64

X=number of regular faculty with Ph.D.
Y=Number of regular Faculty with M. Tech.
F= Number of regular Faculty required to comply 20:1 faculty students ratio.

Table B 5.3: Faculty Qualification as per CAY 2019-2020

Year	X	Y	F	FQ=2.5 x [(10X +4Y)/F)]
2019-20	1	9	10.5	10.95
2018-19	1	8	10.8	09.72
2017-18	1	9	10.8	10.62
Average assessment				**10.43**

Table B 5.3: Faculty Qualification as per CAY 2020-2021

Year	X	Y	F	FQ=2.5 x [(10X +4Y)/F)]
2020-21	1	9	10.2	11.25
2019-20	1	9	10.5	10.95
2018-19	1	8	10.8	9.72
Average assessment				**10.64**

5.4 Faculty Retention (25)

Institute Marks 25

Faculties retained during the period of assessment keeping CAYm2 as base year
Base year = 2017-18

Table B 5.4: Faculty Retention

Description	2018-2019	2019-2020
No. Of faculty Retained	09	09
Total No. of faculty (CAYm2)	11	11
% of faculty Retained	82%	82%

Total retention is 82%

Faculties retained during the period of assessment keeping CAYm2 as base year
Base year = 2018-19

Table B 5.4: Faculty Retention

Description	2019-2020	2020-2021
No. Of faculty Retained	10	10
Total No. of faculty (CAYm2)	10	10
% of faculty Retained	100	100

Total retention is 100%

5.5 Innovations by the faculty in Teaching and learning (20) **Institute Marks 18**

In view of strengthening the teaching-learning process, teachers adopt innovative methods for content delivery. The activities used in the teaching and learning process contribute to the student's overall development. These activities include innovations not limited to use of ICT, instruction delivery, instructional methods, assessment, evaluation and inclusive classrooms that lead to effective, efficient and engaging instruction. In addition to this, 10 min Yoga Session at the start of the day is followed by faculty and students.

A. <u>Innovative Practices:-</u>

1. Game pedagogy and other innovative methods used by faculties:-

Faculty assesses students using different Game pedagogies:-

- **Crosswords:**

  Crossword puzzles are used to enhance learning among students in a joyful manner. Using free online resources, faculty creates a crossword puzzle for particular topic. The faculty uses crossword puzzles to provide a simple and creative way to incorporate active learning into the classroom. Crossword puzzles enhanced students learning and oriented them to the important topics.

- **Quizzes:**

  Quizzes are designed by faculties for particular topics, grading for questions is done automatically. Quizzes are fast, efficient and cover a lot of content. It helps students to find a state of knowledge, conceptual understanding and thinking skills in course topics.

- **Emoji puzzle:**

  Faculty design emoji puzzles and it is shared with students through mail and social media. These puzzles come in various forms to guess terminologies related to a particular course. Students show interest to learn new topics through emoji puzzles.

Innovative methods used by faculties

- To make students more attentive in class, students are asked to summarize the topic, at the end of the lecture.
- To create interest among students, they are asked to write the next step of derivation.

- Faculties discuss university questions with appropriate BT levels in the class.

Objectives: 1) Engaging Students with content-area vocabulary. 2) Develop critical thinking in the teaching-learning process.

Outcomes: 1) Improve content-area vocabulary. 2) Active participation during the teaching-learning process and develop fundamental concepts. 3) Gain knowledge; seek opportunities to excel beyond academics.

2. Project Based Learning

It is learning by doing activity in which students acquire a deeper knowledge through active exploration of real-world challenges and problems. PBL is added as a regular part of the teaching-learning process. Group of students choose curriculum or relative topics and prepare posters for the same which includes literature, block diagram, working, applications and advantages. A project exhibition is organized to present the student's prototype models.

Table B.5.5a: Outcome of Project Based Learning

Name of Activity	Aim	No. of Students Benefitted	Assessment Tools	Relevance to PO and PSO	Impact/Outcomes
Project Based Learning (PBL)	To acquire a deeper knowledge through active exploration of real-world challenges and problems by implementation.	All SE and TE E&TC Students	Poster presentation and project exhibition	PO1-PO12, PSO1, PSO2	35 prototype models are available in laboratories for study purpose Helps to finalize final year project.

3. Video Based Learning

To enhance self-learning, learning material created by faculty is made available through Blogs, Google classroom and YouTube Channels. Topics are explained to students in classrooms with e-content in the form of animated videos to make them understand more clearly about the concepts, mechanisms and applications in real life. Faculties choose videos of well-known professors, technocrats and NPTEL courses to share their expertise with the students. Table B.5.5b shows a list of topics covered using videos and table B.5.5c shows faculty videos available online on their YouTube channel.

Table B.5.5b: List of Topics Covered Using Videos

Sr. No	Subject	Class	Topic Covered
1	Analog Communication	SE	Block Diagram of AM Transmitter, Broadcast technical standards.
2	Control System		GATE Exam Numerical based on Time Response Analysis,
3	Object Oriented Programming		life cycle of an applet, types of applets, creating a simple applet
4	Employability Skill Development		Business Communication, Fundamentals of good listening, on-verbal Communication
5	Power Electronics	TE	Hybrid vehicles
6	Business Management		Globalization
7	Information Theory and Coding Techniques		Network Models
8	System Programming and OS		Operating System
9	Broadband Communication System	BE	Optical Fiber Fabrication Process
10	Mobile Communication		GSM Channels and Services
11	Robotics		Industrial application of Robotics
12	Wireless Sensor Network		Directed Diffusion, Collection Tree Protocol
13	Audio and Video Engineering		Studying the open source codecs of video compression like AVC & Studying the open source audio codec like AAC

Table B.5.5c: Videos available online on YouTube Channel

Sr. No	Name of Faculty	YouTube link
1	Dr. R G Mapari	https://www.youtube.com/channel/UCruIasLpe3z6aPJt8lbjbRw
2	Mrs. V. S. Kumbhar	https://www.youtube.com/channel/UCtbC2Mal35XT0fvMs3Gc1ew
3	Mr. S. N. Randive	https://www.youtube.com/channel/UCuj5AWw1QWyIow_2obrbmzg/featured
4	Mrs. M. S. Andhare	https://www.youtube.com/channel/UCcdqk4nJneP6I-q1vf1AjHw
5	Mr. K. M. Napte	https://www.youtube.com/channel/UCDnJNPVoUj5EgAU03Bzqdag/featured

6	Mrs. T. D. Dhamale	https://www.youtube.com/channel/UC362LYDzEYqL2L3G00Tcssw/
7	Mrs. A. A. Tekade	https://www.youtube.com/channel/UCZ1LTeplUul-48RcCZ5hFFA
8	Mrs. R. R. Kawade	https://www.youtube.com/channel/UCnOUWW161QZpqFbRwJJ5s3Q
9	Mr. K. B. Wane	https://www.youtube.com/channel/UCQS3-OQf87iDa4ujZeOFO8A
10	Mrs. D. N. Dhake	https://www.youtube.com/channel/UCTNgDJJ6yHQwRT-HxES-Wkw/featured
11	Mr. R. S. Parbat	https://www.youtube.com/channel/UCYVQ_a6dmFBnoeprIaLpKgQ
12	Mr. K. B. Bhangale	https://www.youtube.com/channel/UC5i1hgOcoaA9jszIQIcJIZw

Objective: To highlight the importance and benefits of analytics and to support faculty with the appropriate e-resources for improving the use of their courses.

Outcome: Self-learning skill and analytical thinking improved which reflect in results.

Table B.5.5e: Outcome of Video Based Learning

Name of Activity	Aim/Objective	No. of Students Benefitted	Assessment Tools	Relevance to PO and PSO	Impact/ Outcomes
Video Based Learning	To highlight the importance and benefits of analytics and to support faculty with the appropriate resources for improving the use of their courses.	All E&TC Students	Through Feedback (Indirect Assessment)	PO1, PO2, PO8, PO9, PO10, PO12	Self-learning skill and analytical thinking improved which reflect in the results

4. Flipped classroom

A flipped classroom is a pedagogical approach in which students gain necessary knowledge before class and faculties guide students to actively clarify and apply that knowledge during class. During class sessions, the students roll shift from passive recipients to the active constructors of knowledge. Faculties also prefer laboratories or places other than the classroom to teach students a particular topic. Table B.5.5d shows the topic covered using flipped classes. The faculties assign the topics of flipped class in advance and put the material like short lecture videos, images, animations or PowerPoint presentations in the study group through WhatsApp or e-mail for students to go through the material in advance. The

faculty also discusses the questions and queries about the topic of students and builds additional knowledge on the subject during the class.

Table B.5.5d: Topic covered using flipped Classes

Sr. No.	Subject	Class	Topic Covered
1	Analog Communication	SE	Sources of Noise, Types of Noise, White Noise, Thermal noise, shot noise
2	Control System		Steady-state error constants
3	Object Oriented Programming		A Simple C++ Program, More C++ statements Moving from C to C++:
4	Employability Skill Development		Reading and its strategies, comprehensions passages
5	Information Theory and Coding Techniques	TE	Guided & Unguided Transmission Media
6	Advanced Processor		On-Chip DAC for Waveform Generation
7	Power Electronics		EM Interference and minimizing techniques
8	Business Management		Recent trends in human Resource Development
			Women entrepreneurship
9	System Programming and OS		Design of single and two pass assembler;
			Loaders: Compile and go, General Loader Scheme, Absolute loaders;
10	Audio and Video Engineering	BE	Display devices: OLED, LCD, TFT, Plasma, Camcorder, Digicam
			Digital broadcasting, case study (Cricket match, Marathon, Football match).
11	Broadband Communication System		History of Satellite Communication
12	Mobile Communication		Evolution of Mobile Technologies
13	Robotics		Drivers for Robot
14	Wireless Sensor Network		Error Control, Naming & Addressing
			Topology Control

Objective: To enhance the student's learning and achievement by reversing traditional classroom teaching model.

Outcome: It Increases self- learning capabilities, stage daring, communication and working in team ability.

5. Hands on Workshops:

At the start of every semester, the department organizes hands-on workshops for all the classes. The objective of this workshop is to bridge the gap between industry and academia by providing hands-on exposure to the students. These workshops cover the curriculum gap topics as well as content beyond syllabus topics. The details of the hands-on workshops organized are given in table B.5.5e.

Table B.5.5e: List of Hands-on Workshops

AY (2020-21)					
Sr. No.	**Topic Covered**	**Date**	**Resource Person with Designation**	**% Students**	**Relevance to PO's and PSO's**
1	Web Development	8/03/2021 to 13/03/2021	Mr. Nilesh Korde, Assistant Professor, PCCOER	80%	PO3, PO5, PO9,PO12
2	Electronics skill Development lab	3/12/2020 to 4/12/2020	Mr. Abhijeet Deogirikar	82%	PO12,PSO1
AY (2019-20)					
Sr. No.	**Topic Covered**	**Date**	**Resource Person with Designation**	**% Students**	**Relevance to PO's and PSO's**
1	Television fault finding and Troubleshooting	30/1/2020	Mr. Sanjay Auti(Proprietor, PRCOM Enterprises, Echalkaranji)	71%	PO2, PO3, PO4, PO5, PO12
2	C++ and Python Workshop	16/12/2019 to 20/12/2020	Zeeshan Ali A. K. Shaikh Proprietor , InnoViz Tutors, Pune	94%	PO1,PO2,PO3,PO5
3	Machine Learning using python	16/12/2019 to 20/12/2029	Mr. Shantanu Pathak (Mentor and trainer)	67%	PO1,PO2,PO3,PO5
4	PCB Design & Simulation	17/6/2019 to 20/6/2019	Mr. Sunny Hapse (Chief executive and Members of ESTON)	70 %	PO12,PSO1
5	Antenna Design and fabrication	7/8/2019 to 8/8/2019	Mr. Anirudhha Kulkarni (RF Design Head , Academica	77 %	PO3, PO5, PO7, PO9, PO12, PSO2

			Labs Pvt. Ltd, Mumbai)		
6	Latex for Thesis and Research Paper Writing	30-08-2019	Sanjay S. Shitole, (HOD, Information Technology, Usha Mittal Institute Of Technology, Mumbai.)	64 %	PO5,PO9,PO11,PO12
AY (2018-19)					
1	Recent Trends In VLSI Design And Verification Technology Using EDA Tools Workshop	19-09-2018 to 20-09-2018	Mr. Shrikant R. Atkarne (Application Engineer (Microwind), NI logic Pvt. Ltd. (ni2designs)	88%	PO5, PO12
2	Advanced Embedded Linux for industry use	21-09-2018 to 22-09-2018	Mr. Mangesh Edake (Technical Engineer, Johnson Controls India Pvt. Ltd. Pune)	87%	PO5,PO12
3	Programming in Python	18-12-2018 to 21-12-2018	Mr. Avinash Pathak (Director of I2I specialist)	84%	PO3, PO4, PO5, PSO1
4	Hands-on of Raspberry pi with IOT	18-12-2018 to 21-12-2018	Mr. Tushar Kute(Researcher in MITU Skillologies ,Pune)	85%	PO1,PO5,PO12,PSO1
AY (2017-18)					
1	Microwave System Design and Testing	28-07-2017	Mr. Anirudhha Kulkarni (RF Design Head , Academica Labs Pvt. Ltd)	89%	PO5, PO9, PO12
2	Design issues of SMPS	18-08-2017-19-08-2017	Mr. Sanjay Jogalekar (Director of Kanad Industry)	95%	PO12,PSO1
3	Industrial Approach to Electronics	23-01-2018 to 25-01-2018	Sanjay Chaudhari	91%	PO1, PO3,PSO1
4	Drafting Project report in Latex Document tool	23-04-2018	Mr. Ashok Shinde (Assistant Prof. E&TC Dept. I^2IT, Hinjewadi Pune)	95%	PO5,PO9,PO11,PO12

Objective: To give hands on experience.

Outcome: Received hand-on experience, developed skills like learning, communicating, listening and leadership qualities.

6. Industry Expert Lectures:

The objective of the industry expert lecture is to provide exposure to the students with recent happenings in the industry. The industry expert teaches the students industrial applications of curriculum topics. They provide students with knowledge about Industry needs, latest technical appraisals and channels for higher studies. The details of the industry expert lecture organized are given in table B.5.5f.

Table B.5.5f: List of Industry expert lecture organized

AY (2020-21)					
Sr. No.	**Topic Covered**	**Date**	**Resource Person with designation**	**% Students**	**Relevance to PO's and PSO's**
1	Design of SMPS	23/10/2020	Mr. S.S. Kendre, CTO, PERI Solutions, Shivane, Pune	90%	PO1,PO2, PO3, PO4, PO5, PO12, PSO1
2	How to read Datasheets	08/10/2020	Mr. Anand S Gharpure, CEO, Sonic Multitech Pvt Ltd, Nashik	85%	PO8, PO9, PO10,PO12
3	Utilization of motors in electric vehicle	11/12/2020	Mr. Omkar Harishchandra Thigale Associate Manager, Engineering Ather Energy, Bangalore	75%	PO6,PO7, PO8,PO12
4	GUI Creation in MATLAB	16/10/2020	R. Jishnu, Senior Engineer, Embedded Developer, Pantech solutions, Pvt., Ltd., Chennai	70%	PO3, PO5, PO12
5	Applications of DSP in AI	19/10/2020	Mr. Parag Hirulkar, Sr. Data Scientist, TabSquare Pte. Ltd. Singapore	80%	PO6, PO8, PO11
6	Microelectronics : Advances and exciting career opportunities	20/10/2020	Dr. B. Satyanarayana, TIFR, Mumbai	80%	PO5, PO8, PO9, PO12
7	Implementation of	22/10/2020	Rakhee Sonawane,	80%	PO6, PO7, PO8,

	Networks Security Protocol		Tata Communications Ltd, , Pune,		PO12
8	High frequency circuit measurements	20/10/2020	Mr. Anniruddha Kulkarni, CEO, RF Labs solutions Pvt. Ltd, Pune	80%	PO6,PO7, PO12
9	Leading technology of Artificial Intelligence in industry.	22/10/2020	Bhushan Garware Data Scientist, Persistent Systems.	79%	PO5, PO6, PO12

AY (2019-20)					
Sr. No	**Topic Covered**	**Date**	**Resource Person with designation**	**% Students**	**Relevance to PO's and PSO's**
1	Real world interfacing with LPC2148 Microcontroller	11/03/2020	Mr. Tejas Badkhal, JAVA Developer, Safalya Technologies, Pune	92%	PO3,PO5, PO12
2	Assembler, MACRO and Basics of System Programming	3/01/2020	Mr. Ruturaj Yadav, Junior Engineer, Exa Mobility India Pvt. Ltd. Pune	95%	PO1,PO2
3	Features, Benefit and Application of OOP	31/01/2020	Mr. Abhishek Naroliya Assistant VP, City Bank, Pune	90%	PO1, PO2, PO3
4	Audio Video Recording	11/02/2020	Mr. Rohit Sharma (Engineer, Cotmac Electronics Pvt. Ltd. Pune)	80%	PO12
5	Use of Digital Signal Processing in Artificial Intelligence	29/07/2019	Mr. Parag Hirulkar (Data Analyst (TABSquare. Banglore)	85%	PO4, PO6, PO12

AY (2018-19)					
Sr. No	**Topic Covered**	**Date**	**Resource Person with designation**	**% Students**	**Relevance to PO's**

					and PSO's
1	Recent development in Drone technology	14/08/2018	Mr. Meghshyam Raju, Value Thaughts IT Solutions, Hyderabad	89%	PO5, PO12

Objective: To enrich students with the latest updates of the Industries and challenges.

Outcome: Created awareness about recent trends in industries.

7. Industrial visit/training: - Industrial visits and trainings are organized for students to bridge the gap between theoretical learning and practical training in real-life environments. Students understand the industrial practice and organizational hierarchy during industrial visits. Industrial visits provide opportunities for active/interactive learning experiments outside the classroom environment in addition to usual classroom learning.

Objective: To bridge a gap between academia and industry.

Outcomes: 1) To learn the working culture of corporate field.

2) To know how the problems are solved by using modern tools & techniques.

8. Activity-Based Learning: - Co-curricular and extracurricular activities are conducted to motivate the students and to improve problem-solving capabilities, leadership abilities in multi-disciplinary, co-operation in teamwork, consciousness in professional ethics and administering critical situations. These activities include webinar, aptitude training, social welfare camp, problem-solving, critical thinking, group discussion, entrepreneurship development cell etc.

Objective: To engage students in a self-initiated activity to improve self-learning skills.

Outcomes: 1) To solve the problems related to societal needs. 2) To develop professional ethics.

B. Innovative tools:-

1. Innovative teaching using Moodle

Moodle is an open-source online educational platform that provides a custom learning environment for students. Students can use Moodle to review the class calendar, record the attendance, submit assignments and take quizzes. Students can access course contents like syllabus, lecture notes, video lectures. Faculty assesses students using different Game pedagogies like Crosswords, Quizzes, Millionaire and Snake & Ladder with grading.

Millionaire & Snake & Ladder: Millionaire & Snake & Ladder game pedagogies actively engage students in the learning process. They are an effective Moodle tool for active learning. Moodle is an activity-based module that makes use of questions, quizzes and glossaries to create a variety of interactive games for students.

Objective: To provide custom learning environment for students.

Outcome: It increases conceptual understanding, logical and thinking skills in course topics.

2. ICT Software Tools

Classrooms are equipped with computers having internet connectivity, LCD Projector, portable voice amplifiers and sound system. Students use various simulation software for different courses listed in table B.5.5g.

Table B.5.5g: ICT Software Tools

Sr. No.	Topic / Software	Subject
1.	Micro wind 3.5	VLSI Design and Technology
2.	MATLAB R2019a	Digital Signal Processing, Digital Image and Video Processing, BE Project
3.	Xilinix	VLSI Design and Technology, Digital Electronics
4.	Latex	BE Project
5.	Code Composer Studio Arduino IDE, Raspbian OS MPLAB IDE (2.0), Eclipse (4.1), Flashmagic (9.81) Keil, Eagle PCB maker	BE Project, Mini Project, PBL Project, Microcontroller and Applications
6.	Multisim 14.2	Electronic Devices and Circuits, Electronic System Design, PBL Project

Objective: To become competent who can use the basic knowledge and skills acquired to assist them in their daily lives.

Outcome: Helped in core company placement

3. Smart Classrooms

All classrooms are well equipped with network connectivity, green board, projector, standard teaching aids (audio-video components, etc), in addition to this, department has one classroom with an interactive

smartboard. Smartboards make learning more dynamic since it facilitates a different form of presenting the information. In smart classes, all interactive modules like video and presentation are used. This visually attractive method of teaching becomes appealing to students. In fact, smart classes help students to easily relate the concept with the animated visual. Here the audiovisual sense of student is targeted and it helps the student to grab the information effectively.

Objective: To make better learning and understanding.

Outcomes: 1) Understand lectures more effectively.

2) Improve better visualization and creativity

4. Use of Online Resources for Content Delivery

Different types of courses are available on Coursera, Free and Open-Source Software (FOSS) and NPTEL. A student chooses courses (Curriculum/CBS) with the help of faculties, complete the course and appear for the exams. It helps to improve the self-learning abilities of the students. Table B.5.5h shows e-resources used by students.

Table B.5.5h: E-resources used by students

Sr. No	Name of Online Resources	Objectives	Number of students benefited	Assessment Tools
1.	Coursera	To provide life-transforming e-learning experiences to students.	484	Coursera Exam
2.	FOSS	To promote IT literacy for education and improve the employment potential of learners in India, using FOSS.	725	Online Exam assessment
3.	NPTEL	To provide learning materials in Science and Engineering by adhering to the syllabi of AICTE and the slightly modified curricula of major affiliating Universities	35	NPTEL Exam

Teaching methods adopted to improve student learning through the following resources available at centralized / department level:

1. E-shodhsindhu.
2. Plagiarism checking using Turnitin plagiarism software.
3. E-learning portal where we upload subject-related material like (PPT, notes, a question bank, etc).

5.6 Faculty as Participants in Faculty Development/ Training Activities STTP's (15)

Institute Marks 15

Faculties regularly attend Faculty Development Programs, STTPs, Workshops conducted by SPPU and other colleges. Such activities provide platform for the faculties to interact with outside world to improve their knowledge and skillsets.

Table B. 5.6: List of Faculty Members Participated in Faculty Development / Training Activities /STTPs (CAY 2019-2020)

Sr. No.	Name of Faculty	Max. 5 per Faculty		
		A.Y 2018-19	A.Y 2017-18	A.Y 2016-17
1	Prof. Dr. R G Mapari	5	3	NA
2	Mrs. V. S. Kumbhar	5	5	3
3	Mr. S. N. Randive	5	-	3
4	Mrs. M. S. Andhare	5	3	3
5	Mr. K. M. Napte	5	3	3
6	Mrs. T. D. Dhamale	5	5	5
7	Mrs. A. A. Tekade	5	3	5
8	Ms. R. R. Kawade	5	5	5
9	Mr. K. B. Wane	5	5	3
10	Mrs. D. N. Dhake	5	5	NA
11	Mr. R. S. Parbat	5	NA	NA
	Sum	**55**	**37**	**30**
RF= Number of Faculty required to comply with 20:1 Student-Faculty ratio as per 5.1		**10.5**	**10.8**	**7.2**
Assessment= 3*(Sum/0.5 RF) (Marks limited to 15)		**31.43**	**20.56**	**25**
Average assessment over three years (Marks limited to 15)		**25.66 (15)**		

Table B. 5.6: List of Faculty Members Participated in Faculty Development / Training Activities/STTPs (CAY 2020-2021)

Sr. No.	Name of Faculty	Max. 5 per Faculty		
		A.Y 2019-20	A.Y 2018-19	A.Y 2017-18
1	Prof. Dr. R G Mapari	5	5	3
2	Mrs. V. S. Kumbhar	5	5	5
3	Mr. S. N. Randive	5	5	-
4	Mrs. M. S. Andhare	5	5	3
5	Mr. K. M. Napte	5	5	3
6	Mrs. T. D. Dhamale	5	5	5
7	Mrs. A. A. Tekade	5	5	3
8	Ms. R. R. Kawade	5	5	5
9	Mr. K. B. Wane	5	5	5
10	Mrs. D. N. Dhake	5	5	5
11	Mr. R. S. Parbat	5	5	NA
	Sum	**55**	**55**	**37**
RF= Number of Faculty required to comply with 20:1 Student-Faculty ratio as per 5.1		**10.5**	**10.8**	**10.8**
Assessment= 3*(Sum/0.5 RF) (Marks limited to 15)		**31.42**	**30.55**	**20.55**
Average assessment over three years (Marks limited to 15)		**27.50**		

5.7 Research and Development (30)

Institute Marks 19

5.7.1 Academic Research

5.7.1. A Number of quality publications in refereed/SCI Journals, citations, Books/Book Chapters etc (06)

Institute Marks 06

The details of the count of paper publications, book publications, patents and copyrights by faculties are given in table B.5.7.1a.

Table B. 5.7.1a: Count of publications by faculties

Sr. No.	Name of Faculty	Research Paper Publications	Books / Chapters	IPR	
				Patent	Copyright
1	Prof. Dr. R G Mapari	11	6	3	5
2	Mrs. V. S. Kumbhar	09	5	1	3
3	Mr. S. N. Randive	05	3	-	2
4	Mrs. M. S. Andhare	10	5	-	4
5	Mr. K. M. Napte	09	5	-	1
6	Mrs. T. D. Dhamale	08	5	1	5
7	Mrs. A. A. Tekade	09	5	2	-
8	Mrs. R. R. Kawade	07	5	1	3
9	Mr. K. B. Wane	10	4	1	3
10	Mrs. D. N. Dhake	07	4	1	4
11	Mr. R. S. Parbat	10	3	0	-
12	Mr. K. B. Bhangale	03	3	0	2
Supporting Staff					
1	Ms. Bhagyashree-Gawali- Lab Assistant	-	-	1	-
2	Ms. Snehal Gholap-Lab Assistant	-	-	1	-

The detail of the list of paper publications by faculties is given in table B.5.7.1b.

Table B.5.7.1b: List of publications by faculties

AY (2020-21) Journal						
Sr. No	**Name of the Faculty**	**Title of Paper**	**Name of Journal**	**Volume/Issue**	**ISSN/DOI**	**Month and Year**
1	Kishor Barsu Bhangale	A Review On Speech Processing Using Machine Learning Paradigm	International Journal Of Speech Technology	Online First Article/Open Volume	DOI:- Https://Doi.Org/10.1007/S10772-021-09808-0	20 January 2021
2	Mr. Kiran M. Napte	Liver Segmentation And Liver Cancer Detection Based On Deep Convolutional Neural Network: A Brief Bibliometric Survey	Library Philosophy And Practice (E-Journal)	Online First Article	ISSN: 1522-0222	February 2021
3	Prof. R. R. Kawade	Wireless Weather Monitoring System Using GSM	International Journal Of Innovative Research In Technology	Vol.8 Issue-1 Pp.1316-1320	ISSN: 2349-6002	2021
4	Prof. T. D. Dhamale	Design And Simulation Of Single Band Rectangular Microstrip Patch Antenna For 5g Application	International Research Journal Of Engineering And Technology (IRJET)	Vol.8 Issue-6 Pp.2565-2568	E-ISSN: 2395-0056, P-ISSN: 2395-0072	2021
5	Prof. K. B. Wane	Futuristic Smart Mirror Using Raspberry Pi	Journal Of Huazhong University Of Science And Technology	Vol.50 Issue-7 Pp.1-5	ISSN-1671-4512	2021

6	Prof. M. S. Andhare	LORAWAN Based Smart Farming Modular IOT Architecture	International Research Journal Of Engineering And Technology (IRJET)	Vol.8 Issue-5 Pp.4558-4560	E-ISSN: 2395-0056, P-ISSN: 2395-0072	2021
7	Prof. V. S. Kumbhar	Autonomous Floor Cleaning Robot	International Research Journal Of Engineering And Technology (IRJET)	Vol.8 Issue-5 Pp.3142-3144	E-ISSN: 2395-0056, P-ISSN: 2395-0072	2021
8	Prof. K. B. Wane	Secure Contactless Automatic Ration Distribution System Using Internet Of Things	Journal Of Huazhong University Of Science And Technology	Vol.50 Issue-5 Pp.1-5	ISSN-1671-4512	2021
9	Prof. K. M. Napte	Camera-Based Driver Drowsiness Detector	International Research Journal Of Engineering And Technology (IRJET)	Vol.8 Issue-7 Pp.698-701	E-ISSN: 2395-0056, P-ISSN: 2395-0072	2021
10	Prof. D. N. Dhake	Teleoperated Animatronics Robot	Journal Of Huazhong University Of Science And Technology	Vol.50 Issue-5 Pp.1-5	ISSN-1671-4512	2021
11	Prof. D. N. Dhake	Eye Blink Actuation Using Human Computer Interface	International Journal For Research In Applied Science & Engineering Technology (IJRASET)	Vol.9 Issue-6 Pp.4807-08	ISSN: 2321-9653	2021

12	Prof. T. D. Dhamale	Covid-19 Patient Care Robot	Journal Of Huazhong University Of Science And Technology	Vol.50 Issue-6 Pp.1-6	ISSN-1671-4512	2021
13	Prof. A. A. Tekade	Portable Air Conditioner Based On Hybrid Method Of Peltier Effect Cooling And Liquid Based Cooling	International Journal For Research In Applied Science & Engineering Technology (IJRASET)	Vol.9 Issue-5 Pp.1104-1107	ISSN: 2321-9653	2021
14	Prof. A. A. Tekade	Real Time Object Detection Using YOLO V3 Tiny With Voice Feedback For Visually Impaired	International Journal For Research In Applied Science & Engineering Technology (IJRASET)	Vol.9 Issue-5 Pp.1650-1655	ISSN: 2321-9653	2021
15	Prof. K. M. Napte	Quadcopter For E&TC Department	Journal Of Huazhong University Of Science And Technology	Vol.50 Issue-5 Pp.1-8	ISSN-1671-4512	2021
16	Prof. Kishor B. Bhangale	Plant Disease Detection Using Deep Learning Framework	Journal Of Huazhong University Of Science And Technology	Vol.50 Issue-6 Pp.1-7	ISSN-1671-4512	2021
17	Prof. M. S. Andhare	Emr Analysis To Predict Various Disease	Journal Of Huazhong University Of Science And Technology	Vol.50 Issue-6 Pp.1-8	ISSN-1671-4512	2021
18	Prof. Kishor Wane	Fire Extinguisher Robot	International Journal Of Innovative Research In Technology	Vol.8 Issue-1	ISSN: 2349-6002	2021

19	Prof. Kishor B. Bhangale	Multi-View Multi-Pose Robust Face Recognition Based On Vggnet	Lecture Notes in Networks and Systems	LNNS, volume 300, Pp 414-421	NA	2021

AY (2020-21) Conference

Sr. No	Name of the Faculty	Title of Paper	Name of Conference	Venue	Conference Level	Date of Conference
1	Prof. Rupali Kawade	Speech Emotion recognition based on Wavelet packet coefficients.	Communication & Cyber Physical Engineering	G.H. Raisoni COEM, Wagholi	International Conference	09,10/04/2021
2	Prof. V.S. Kumbhar	Design and Technology Co-optimization for investigating Power, Performance, Area and Cost trade-offs in FinFET Technologies	Communication & Cyber Physical Engineering	G.H. Raisoni COEM, Wagholi	International Conference	09,10/04/2021
3	Prof. Kishor B. Bhangale	Multi-view Multi-pose Robust Face Recognition based on VGGNet	2nd International Conference on Image Processing and Capsule Networks	Online Mode	International Conference	28,29/05/2021
4	Prof. R. G. Mapari, Mr. K. B. Bhangale	Agriculture Protection from Animals using Smart Scarecrow System	International Conference on Soft Computing for Security Applications ICSCS2021	Online Mode	International Conference	10-11/06/2021
5	Triveni Dhamale, Kishor Bhangale	Design and Simulation of UWB Antenna for 4G Applications	3rd International Conference on Sustainable Communication Networks and Application ICSCN 2021	Online Mode	International Conference	29-30/07/2021

AY (2019-20) Journal						
Sr. No	**Name of the Faculty**	**Title of Paper**	**Name of Journal**	**Volume/Issue**	**ISSN/DOI**	**Month and Year**
1	Dr. Rahul G. Mapari, Mr. Kishor B. Wane	Pandemic Security System for Police using Neural Networks	International Journal of Future Generation Communication and Networking	Vol. 13 No.3s (2020) Special Issue	ISSN: 2233-7857 (Online)	July-2020
2	Dr. Rahul G. Mapari	Design of Microstrip Patch Antenna with Enhanced Bandwidth and Harmonic Suppression for WLAN Applications	International Journal of Recent Technology and Engineering (IJRTE)	Volume-8,Issue-5	ISSN: 2277-3878	January-2020
3	Dr. Rahul G. Mapari, Mr. Rahul S. Parbat	Mathematical Modeling, Control Design, Simulation & Implementation of Electric Vehicle Charger	International Journal of Engineering and Advanced Technology (IJEAT)	Volume-9,Issue-2	ISSN: 2249 – 8958	December-2019
4	Mr. Santosh N Randive	A review on computer-aided recent developments for automatic detection of diabetic retinopathy	Journal of Medical Engineering & Technology(JMET)	Volume-4,Issue-2	ISSN: 0309-1902	June-2019
5	Mr. Santosh N Randive	A self-adaptive optimization for diabetic retinopathy detection with neural classification	International Journal of Nano and Biomaterials(IJNBM)	Volume-8,Issue-3	https://doi.org/10.1504/IJNBM.2019.104935	February-2020
6	Mr. Santosh N Randive	Intelligent model for diabetic retinopathy diagnosis: a hybridized approach	International Journal of Bioinformatics Research and Applications(IJBRA)	Volume-16,Issue-2	https://doi.org/10.1504/IJBRA.2020.108398	August-2020

7	Mr. Santosh N Randive	Tri-Concomitant Local Feature Learning for Diabetic Retinopathy Classification	International Journal of Engineering and Advanced Technology (IJEAT)	Volume-9,Issue-2	ISSN: 2249 –8958	December-2019
8	Mrs. Vijayalaxmi S. Kumbhar, Mrs. Maithili S. Andhare	3-Level Authentication for Bank Locker Security	International Journal of Scientific Research in Multidisciplinary Studies(IJSRMS)	Volume-5,Issue-6	ISSN: 2454-9312	Junuary-2019
9	Mrs.Vijayalaxmi S. Kumbhar,Mrs. Maithili S. Andhare,Mrs. Arti A. Tekade	Control System Analysis using Root Locus Method	Journal of Control System and its Recent Developments(JCSRD)	Volume-3,Issue-1	DOI: http://doi.org/10.5281/zenodo.3760453	April-2020
10	Rahul Mapari	Automatic Waste Segregator and Monitoring System	International Journal of Advanced Computer Research (IJACR)	Volume-10,Issue-49	ISSN:2277-7970	July-2020
11	Rahul Parbat	Smart Water Meter and Distribution System based on IoT	Industrial Engineering Journal(IEJ)	Volume-1,Issue-11	ISSN:2581-4915	June-2020
12	Triveni Dhamale, Mr. Rahul Parbat	Design and Simulation of Microstrip Multiband Antenna for Wireless Applications	Journal of Science & Technology (JST)	Volume 5,Issue 4	ISSN: 2456 – 5660	August- 2020
13	Mr. K.B. Wane	Library Automation Using Neural Network And IoT	International Journal for Research in Applied Science & Engineering Technology (IJRASET)	Volume-8,Issue-7	ISSN: 2321-9653	July-20

14	Prof. Arti A. Tekade	ATM Surveillance & Security Using Image Processing	International Research Journal of Modernization in Engineering Technology and Science(IRJMETS)	Volume-2,Issue-7	ISSN: 2582-5208	July-2020
15	Prof. Rahul Parbat	Design of Micro strip UWB Antenna for Wireless Application	International Journal of Engineering Research & Technology(IJERT)	Volume-9,Issue-7	ISSN: 2278-0181	July-2020
16	Prof M. S. Andhare	Diabetic Retinopathy Detection Using Deep Learning	Mukt Shabd Journal	Volume-9, Issue-7	ISSN: 2347-3150	July-2020
17	Prof. V.S. Kumbhar	Making India Paperless using cloud for documentation	MuktShabd Journal	Volume-9, Issue-7	ISSN: 2347-3150	July-2020
18	Prof. Dipali Dhake	ATM Security System using Iris Recognition by Image Processing	International Journal of Engineering Research & Technology (IJERT)	Volume-9,Issue-7	ISSN: 2278-0181	July- 2020
19	Prof. Arti Tekade,	Design and implementation of FIR filter using Vedic Multiplier	International journal of Advances in Engineering and Management (IJAEM)	Volume-2, Issue-4	ISSN: 2395-5252	July-2020
20	Prof. Dipali Dhake	Animatronic Robot with Telepresence Vision	International Journal of Innovative Research In Technology(IJIRT)	Volume-7,Issue-3	ISSN: 2349-6002	August-2020

21	Prof. Rupali Kawade	Underwater Signal and Image Processing	International Journal of Engineering Research & Technology (IJERT)	Volume-9,Issue-7	ISSN: 2278-0181	July-2020

AY (2019-20) Conference

Sr. No	Name of the Faculty	Title of Paper	Name of Conference	Venue	Conference Level	Date of Conference
1	Mr. Santosh N Randive, Dr. Rahul Mapari	Malaria Parasite Detection Using Deep Learning (Beneficial to humankind)	4th International Conference on Intelligent Computing and Control Systems (ICICCS 2020)	Vaigai College of Engineering, Madurai, India	International	May-2020
2	Kishor Wane, Rahul Mapari	Pandemic Security System for Police using Neural Networks	International Conference on Future Intelligence in Science & Technology. MuktShabd Journal	Andaman (online)	International	June-2020

AY (2018-19) Journal

Sr. No	Name of the Faculty	Title of Paper	Name of Journal	Volume/Issue	ISSN/DOI	Month and Year
1	Dr. Rahul G. Mapari, Mr. Rahul S. Parbat	Analysis of Single Phase Bi-Directional Converter for Improvements in Power Factor and Reduction in Harmonic Distortions	International Journal of Applied Engineering Research (IJAER)	Volume-14, Issue-16	ISSN 0973-4562	May-2019
2	Dr. Rahul G. Mapari, Mr. Rahul S. Parbat, Mr. Kiran M. Napte	Extraordinary Authentication and Security to Credit/Debit Cards with Biometric and Two Step Verification: Review	International Journal of Engineering and Technology (IJET)	Volume-11,Issue-2	ISSN:0975-4024	May-2019

3	Mr. Rahul Parbat, Dr. Rahul G. Mapari, Mr. Kiran M. Napte	Overview of Multiple Input-Multiple output Antenna System	IOSR Journal of Engineering (IOSR JEN)	Volume-4,PP 55-57	ISSN:2250-3021	February-2019
4	Mr. Santosh N Randive	LVP extraction and triplet-based segmentation for diabetic retinopathy recognition	Evolutionary Intelligence(EI)	Volume-11, Issue-2	https://doi.org/10.1007/s12065-018-0158-0	June-2018
5	Mrs.Vijayalaxmi S. Kumbhar,Mrs. Maithili S. Andhare,Mrs. Arti A. Tekade	Person Recognition using Image Fusion of Face and Ear based on Linear Discriminant Analysis	International Journal of Research in Advent Technology(IJRAT)	Volume-7, Issue-4	ISSN:2321-9637	April-2019
6	Mrs.Vijayalaxmi S. Kumbhar,Mrs. Maithili S. Andhare,Mrs. Arti A. Tekade	BER Evaluation for Power Control in DS-CDMA	International Journal of Innovative Research in Technology(IJIRT)	Volume-5, Issue-12	ISSN:2349-6002	May-2019
7	Mrs. Triveni D. Dhamale,Ms. Rupali R. Kawade,Mrs. Dipali N. Dhake	Mobility aware and energy efficient medium access control protocol in WSN	IOSR Journal of Engineering (IOSR JEN)	Volume-4, PP 37-41	ISSN:2250-3021	February-2019
8	Ms. Rupali R. Kawade,Mrs. Triveni D. Dhamale,Mrs. Dipali N. Dhake	Image Processing based Silkworm Engg counting Methods	IOSR Journal of Engineering (IOSR JEN)	Volume-5,PP 56-60	ISSN: 2250-3021	February-2019

9	Mrs. Dipali N. Dhake,Ms. Rupali R. Kawade,Mrs. Triveni D. Dhamale	Distance Regularization Level set evolution for Blood cell image segmentation	IOSR Journal of Engineering (IOSR JEN)	Volume-4, PP 51-55	ISSN:2250-3021	February -2019
10	Mr. Kiran Napte, Mr. Kishor. B. Wane, Mr. Rahul S. Parbat	Lifetime Enhancement of WSN Using Fuzzy Method and A-Star Algorithm	IOSR Journal of Engineering (IOSR JEN)	Volume-5 PP 20-24	ISSN:2250-3021	February -2019
11	Mr. K.B. Wane	All Purpose Biometric Punch In System	International Journal of Scientific Research in Science, Engineering and Technology(IJSRSET)	Volume-5,Issue-7	ISSN:2395-1990	April-2019
12	Mr. K.M. Napte	Auto dual converter With power factor improvement	International Journal of Scientific Research in Science, Engineering and Technology (IJSRSET)	Volume-1, Issue 06	ISSN: 2395-1990	February -2019
13	Mr. Kiran Napte	Advanced Military Spying And Bomb Disposable Robot	Research Review International Journals of Multidisciplinary(RRIJM)	Volume-4, Issue-2	ISSN: 2455-3085	February -2019
14	Mrs. Triveni Dhamale	Intelligent Layer Farming	Research Review International Journals of Multidisciplinary RRIJM)	Volume-3, Issue-5	ISSN: 2455-3085	February -2019
15	Dr. Rahul G. Mapari	Automatic Weed killing Robot for Agriculture Purpose and Insect Killing	International Journal of Research in Advent Technology	Volume-5, Issue-1	ISSN: 2321-9637	January-2019
16	Mrs. V.S. Kumbhar	E-Rationing Management System	International Journal of Research in Advent Technology(IJRAT)	Volume-7, Issue-1	ISSN: 2321-9637	January-2019

17	Dr. R. G. Mapari	Real time identification of crop Diseases, Pest Damage and Nutrient Deficiency System	International Journal of Research in Advent Technology(IJRAT)	Volume-5, Issue-1	ISSN: 2321-9637	January-2017
18	Mr. K.B. Wane	Agricultural Commodities Marketing Network	Research Review International Journals of Multidisciplinary(RRIJM)	Volume-4,Issue-2	ISSN: 2455-3085	February -2019
19	Ms. Rupali. R. Kawade	Smart Border Security System Using High Speed Vision Technology	International Journal of Research in Electronics and computer Engineering(IJRECE)	Volume-7,Issue-1	ISSN: 2348-2281	January-2019
20	Mrs. M.S. Andhare	Building Health Monitoring System	International Journal for Science and Advance Research In Technology (IJSART)	Volume- 5, Issue-4	ISSN-2395-1052	April-2019
21	Ms. R. R. Kawade	IOT Based Smart Water Distribution and Leakage Detection System Using WSN	Research Review International Journals of Multidisciplinary(RRIJM)	Volume-3,Issue-5	ISSN: 2455-3085	May-2018
22	Mrs. Triveni D. Dhamale	Water Dispenser System (Water ATM)	Journal of Emerging Technologies and Innovative Research (JETIR)	Volume-4,Issue-6	ISSN: 2349-5162	February-2019
23	Mr. Kishor. B. Wane, Prof. K.M.Napte	Effect of Mobility model on analysis of MANET routing Protocol	IOSR Journal of Engineering (IOSR JEN)	Volume-4, PP 14-19	ISSN: 2250-3021	May-2019

24	Mrs. V.S. Kumbhar	Agrobot	IOSR Journal of Engineering (IOSR JEN)	Volume-3,PP 66-68	ISSN: 2250-3021	May-2019
25	Mrs. A. A. Tekade	Voice controlled Digit Writer For Handicapped People	International Journal of Research in Advent Technology(IJRAT)	Volume-5, Issue-1	ISSN: 2321-9637	February -2019
26	Mr. K.B. Wane	Automatic Medicine Dispensary System Using Aerial Vehicle	Journal of Emerging Technologies and Innovative Research (JETIR)	Volume-5, Issue-3	ISSN: 2349-5162	March-2019
27	Mrs. M.S. Andhare	Cattle Farming Drone	Research Review International Journals of Multidisciplinary(RRIJM)	Volume-3, Issue-5	ISSN: 2455-3085	May-2018
28	Mrs. A. A. Tekade	Smart BRT Sentinel Using Digital Image Processing	International Journal of Research in Advent Technology(IJRAT)	Volume-5, Issue-1	ISSN: 2321-9637	January-2017

AY (2018-19) Conference

Sr. No	Name of the Faculty	Title of Paper	Name of Conference	Venue	Conference Level	Date of Conference
1	Mr. Santosh N Randive	Spherical Directional Feature Extraction with Artificial Neural Network for Diabetic Retinopathy Classification	IEEE 13th International Conference on Industrial and Information Systems (ICIIS)	IIT, Ropar	International	December-2018

2	Mr. Rahul Parbat, Dr. Rahul G. Mapari, Mr. Kiran M. Napte	Overview of Multiple Input-Multiple output Antenna System	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM	Sharadchandra Pawar College of Engineering , Junnar	National	February- 2019
3	Mrs. Triveni D. Dhamale,Ms. Rupali R. Kawade, Mrs. Dipali N. Dhake	Mobility aware and energy efficient medium access control protocol in WSN	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM	Sharadchandra Pawar College of Engineering , Junnar	National	February- 2019
4	Ms. Rupali R. Kawade,Mrs. Triveni D. Dhamale,Mrs. Dipali N. Dhake	Image Processing based Silkworm Engg counting Methods	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM	Sharadchandra Pawar College of Engineering , Junnar	National	February- 2019
5	Mrs. Dipali N. Dhake,Ms. Rupali R. Kawade, Mrs. Triveni D. Dhamale	Distance Regularization Level set evolution for Blood cell image segmentation	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM	Sharadchandra Pawar College of Engineering , Junnar	National	February- 2019
6	Mr. Kiran Napte, Mr. Kishor. B. Wane, Mr. Rahul S. Parbat	Lifetime Enhancement of WSN Using Fuzzy Method and A-Star Algorithm	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM	Sharadchandra Pawar College of Engineering , Junnar	National	February- 2019
7	Mrs. V.S. Kumbhar	Agrobot	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM	Sharadchandra Pawar College of Engineering , Junnar	National	February- 2019

8	Mr. Kishor. B. Wane	All Purpose Biometric Punch In System	National Conference on Information, Communication and Energy Systems and Technologies – 2019	SKN COE, Lonavala	National	April-2019
9	Mr. Kishor. B. Wane, Prof. K.M. Napte	Effect of mobility model on analysis of MANET routing Protocol	National Conference on "Recent Innovations in Engineering and Technology" MOMENTUM	Sharadchandra Pawar College of Engineering , Junnar	National	February- 2019

AY (2017-18) Journal

Sr. No	Name of the Faculty	Title of Paper	Name of Journal	Volume/Issue	ISSN/DOI	Month and Year
1	Dr. Rahul G. Mapari, Mr. Rahul S. Parbat	Design of 4X1 Microstrip Array Antenna for X-Band Satellite Communication Application	International Journal of Pure and Applied Mathematics (IJPAM)	Volume-118,Issue- 24	ISSN: 1314-3395	May-2018
2	Dr. Rahul G. Mapari ,Mr. Rahul S. Parbat	A Systematic Study on Mutual Coupling Reduction Methods in MIMO Antenna	International Journal of Research in Advent Technology (IJRAT)	Volume-5,Issue-5	ISSN: 2321-9637	March-2017
3	Mrs. Vijayalaxmi S. Kumbhar, Mrs. Maithili S. Andhare	Review on Performance Enhancement Techniques for Microstrip Patch Antenna Using Metamaterials	International Journal of Recent Trends in Engineering & Research(IJRTER)	Volume 3, Issue 11	ISSN-2455-1457	November-2017

The detailed summary of publications by faculties is given in table B.5.7.1c.

Table B.5.7.1c: Summary of publications by faculty

Sr. No.	Academic Year	International Journals	International Conference	National Conference
1	2020-21	19	07	-
2	2019-20	27	04	-
3	2018-19	42	01	19
4	2017-18	04	-	-

The details of the Citation index, h-index and i10-Index are given in table B.5.7.1d

Table B.5.7.1d: Details of Citations index and h-index and i10-index

Sr. No	Name of Faculty	Number of papers published in peer reviewed journal	Citation Index	h – Index	i10-Index
1	Prof. Dr. R. G. Mapari	11	17	02	00
2	Mr. S. N. Randive	05	47	06	01
3	Mrs. V. S. Kumbhar	09	1	1	0
4	Mrs. M. S. Andhare	10	1	1	0
5	Mrs. T. D. Dhamale	08	01	01	00
6	Ms. R. R. Kawade	07	09	01	00
7	Mr. K. B. Wane	10	09	02	00
8	Mrs. D. N. Dhake	07	01	01	00
9	Mr. R. S. Parbat	10	35	04	01
10	Mr. K. B. Bhangale	03	60	4	2

The details of the books published by faculty are given in table B.5.7.1e

Table B.5.7.1.e: Details of Book Published

AY (2020-21)					
Sr. No	**Name of the Book/chapter**	**Authors Name**	**ISBN/ASIN**	**Year**	**Publisher**
1	Automatic waste segregator and monitoring system	Dr. R. G. Mapari	ASIN: B0925Z6JJQ	2021	Amazon Kindle

2	Microstrip Multiband Antenna for Wireless Applications: Design and Simulation	Mr.K.B. Bhangale, Mrs.T.D.Dhamale	ASIN : B093H55J5N	2021	Amazon Kindle
3	Neural network in Library Automation	Mr.K.B.Wane, Mr.K.M.Napte, Mr.K.B.Bhangale	ASIN : B093QHN44L	2021	Amazon Kindle
4	Making India Paperless using Cloud for Documentation: A step towards Digital India	Mrs.V.S.Kumbhar Mr. K.B. Bhangale Mrs. M.S.Andhare Mrs. A. A. Tekade	ASIN : B093H3CSHM	2021	Amazon Kindle
5	Bank ATM Security : By using Image Processing	Mrs.D.N.Dhake, Ms.R.R.Kawade	ASIN:1639049037	2021	Notion Press
6	Underwater Signal & Image Processing: An Experimentation	Ms.R.R.Kawade Mrs.T.D. Dhamale	ASIN : B093B9XS1X ISBN-13 : 979-8741342985	2021	Amazon
7	E-BIKE EFFICIENT WIRELESS CHARGING SYSTEM: Smart way for battery charging	Mrs. A. A. Tekade Mrs.V.S.Kumbhar Mrs.M.S.Andhare	ASIN : B093XRN3TQ	2021	Amazon Kindle
AY (2019-20)					
1	Electrical Circuits	Dr.R.G.Mapari	978-81-947209-0-4	2020	Tech-Neo Publications
2	Analysis and Design of Single phase Bi-Directional Power Converter	Dr.R.G.Mapari, Mr. R. S. Parbat	978-620-2-51823-9	2020	LAMBERT Academic Publishing
3	Bit Error Rate Performance Analysis of DS- CDMA over AWGN channel	Mrs. V.S.Kumbhar, Mrs.D.N.Dhake, Ms.R.R.Kawade	978-620-2-51978-6	2020	LAMBERT Academic Publishing
4	DWT Complex Wavelet Transform and THFB for Iris Recognition	Mr.S.N.Randive, Mr.R.S.Parbat, Mr.K.M.Napte	978-620-2-53146-7	2020	LAMBERT Academic Publishing

5	Arbitrary Ratio Image Resizing using DCT	Mrs.M.S.Andhare, Mr.S.N.Randive, Mr.K.M.Napte	978-620-2-52784-2	2020	LAMBERT Academic Publishing
6	Hybrid Scalable and efficient routing Method for WSN	Mr.K.M.Napte, Mr.S.N.Randive, Mrs.M.S.Andhare	978-620-2-52052-2	2020	LAMBERT Academic Publishing
7	Implementation of MEMAC Protocol in Wireless Sensor Network	Mrs.T.D.Dhamale, Mr.K.B.Wane, Mrs.A.A.Tekade	978-620-2-51866-6	2020	LAMBERT Academic Publishing
8	Fusion of Face and Ear for Person Identification	Mrs.A.A.Tekade, Mr.K.B.Wane, Mrs.T.D.Dhamale	978-620-2-52345-5	2020	LAMBERT Academic Publishing
9	Automatic Silkworm Egg counting mechanism	Ms.R.R.Kawade, Mrs.D.N.Dhake, Mrs.V.S.Kumbhar	978-620-2-51897-0	2020	LAMBERT Academic Publishing
10	Analysis of Routing Protocols for MANETs using RSS	Mr.K.B.Wane, Mrs.T.D.Dhamale, Mrs.A.A.Tekade	978-620-2-52519-0	2020	LAMBERT Academic Publishing
11	Canny Operator based DRLSE Algorithm for Medical Image Segmentation	Mrs.D.N.Dhake, Ms.R.R.Kawade, Mrs.V.S.Kumbhar	978-620-2-52032-4	2020	LAMBERT Academic Publishing
12	Dual Polarized Multi-band Microstrip Antenna	Mr.R.S.Parbat, Dr. R.G. Mapari, Mr. K.M.Napte	978-620-2-51685-3	2020	LAMBERT Academic Publishing
AY (2018-19)					
13	Computer Networks & Security	Dr. Rahul Mapari, V. S. Bagad, I. A. Dhotre	978-93-332-1966-2	2018	Technical Publications
AY (2017-18)					
14	Performance Analysis of Single-Phase Bi-directional Converter for Power Factor Correction and Voltage Stabilization	Dr. Rahul Mapari	978-981-10-1675-2	2017	Proceedings of the International Conference on Data Engineering and Communication Technology

The details of faculty patents are given in table B.5.7.1f.

Table B.5.7.1f: Faculty Patent Details

Sr. No	Title of Patent	Name of Author	CBR Number / Patent Number	Date
AY 2019-20				
1	Advanced Onion Storage system	Mrs. Triveni Dhamale	201921052356	17-12-2019
2	Multipurpose hair belt for hairstyle	Mrs. Dipali Dhake	201921052353	17-12-2019
3	An efficient vehicle registration number recognition system	Ms. Rupali Kawade	201921052302	17-12-2019
4	A smart tool for testing deficient elements in soil	Mrs. Vijayalaxmi Kumbhar	201921052371	17-12-2019
5	Water bottle with storage container	Mrs. Arti Tekade	201921052362	17-12-2019
6	Pure coconut oil preservation in winter season	Bhagyashree Gawali-Lab Assistant	201921052263	17-12-2019
7	Fault detection of Industrial pipe using application of image processing	Snehal Gholap- Lab Assistant	201921052334	17-12-2019
8	Aquatic wall garden	Ashwini Jagnade-Lab Assistant	201921052327	17-12-2019
AY 2017-18				
9	An Intelligent Audio Visual Bullet Counting Firearms	Dr. R. G. Mapari	201721038387	30-10-2017
10	A smart Digital Stapler	Dr. R. G. Mapari	201821002806	24-1-2018
11	An Intelligent Fingerprint & Voice Operated Firearms	Dr. R. G. Mapari	201821002803	24-1-2018
AY 2016-17				
12	Smart Mobile Universal Charger With Different Current Ratings	C. A. Bhavsar, K. B. Wane	201721016665	12-05-2017

13	Advanced Switch Module For Efficient Mobile Charging	A. A. Tekade	201721016767	12-05-2017

The details of faculty copyrights are given in table B.5.7.1g.

Table B.5.7.1g: Faculty Copyright Details

Sr. No	Diary Number	Name of Author	Title of Copyright
A.Y 2020-21			
1	9047-2021-CO/L	Dr. R.G. Mapari	Smart SCARECROW System to avoid crop raiding and man animal conflict.
2	9178/2021-CO/L	Mrs. T. D. Dhamale	Design & Simulation of Microstrip Patch antenna for 5G applications
3	9161/2021-CO/L	Mrs. T. D. Dhamale	COVID-19 Patient Care Robot
4	9072/2021-CO/L	Mrs. D. N. Dhake	Teleoperated Animatronics Robot
5	9250/2021-CO/L	Mrs. D. N. Dhake	Solar Grass Cutting Robot
6	9504/2021-CO/L	Mrs. R.R. Kawade	Wireless Weather Monitoring System using GSM technology
7	9092/2021-CO/L	Mrs. M. S. Andhare	EMR analysis to predict various diseases
8	9150/2021-CO/L	Mrs. M. S. Andhare	LoRaWAN based smart farming using modular IOT architecture
9	9144/2021-CO/L	Mrs. V.S. Kumbhar	Autonomous floor Cleaning Robot
10	9091/2021-CO/L	Mr. K. B. Bhangale	Multiview Multipose Robust Face Recognition using VGGNet
11	9136/2021-CO/L	Mr. K. B. Bhangale	IOT based Real Time Plant Leaf Disease Detection using Raspberry PI
12	9210/2021-CO/L	Mr. S. N. Randive	Spark-A Humanoid Robot
13	9191/2021-CO/L	Mr. K. M. Napte	Camera Based driver drowsiness detector

14	9069/2021-CO/L	Mr. K.B. Wane	Smart Mirror using Raspberry PI for displaying staff schedule
15	8912/2021-CO/L	Mr. K.B. Wane	Secure contactless automatic ration distribution system
A.Y 2019-20			
16	17457/2019-CO/L	Mrs. M. S. Andhare	SMARISA: A Raspberry Pi based Smart Ring for Women Safety Using IoT
17	17442/2019-CO/L	Mr. S. N. Randive	Malaria parasite detection using deep learning
18	17525/2019-CO/L	Mrs. T.D. Dhamale	IOT Based Real Time System for Industrial Boiler Safety
19	17533/2019-CO/L	Mrs. D. N. Dhake	ATM security system using iris recognition by image processing
20	17449/2019-CO/L	Mrs. V.S. Kumbhar	Soil Analyzing Tool
21	17444/2019-CO/L	Mrs. V.S. Kumbhar	Making India Paperless Using Cloud Storage for Documentation
A.Y 2017-18			
22	11057/2018-CO/L	Dr. R.G. Mapari	Automatic Weed Killing Robot
23	670/2018-CO/L	Mrs. M. S. Andhare	IoT based smart container
24	756/2018-CO/L	Mrs. T.D. Dhamale	RF Electromagnetic Pulse Generation & its Effects
25	726/2018-CO/L	Mrs. T.D. Dhamale	Implementation of MEMAC protocol using WSN
26	744/2018-CO/L	Mrs. R.R. Kawade	Implementation of algorithm for counting of silkworm eggs
27	733/2018-CO/L	Mrs. D.N. Dhake , Mrs. R.R. Kawade	Presentation on “Diode Circuits”
28	627/2018-CO/L	Mr. K.B. Wane	P2P Data transfer without PC (pen drive to pen drive data transfer without computer)
29	13418/2017-CO/L	Dr. R.G. Mapari	A smart bi-directional power converter for vehicle to vehicle, vehicle to home and home to vehicle power transmission

30	14361/2017-CO/L	Dr. R.G. Mapari	A Smart Digital Stapler
31	16790/2017-CO/L	Dr. R.G. Mapari	Firearm Security

5.7.1. B Ph.D. guided /Ph.D. awarded during the assessment period while working in the institute (04)

Institute Marks 02

The details of Ph.D. registered faculty information are given in table B.5.7.1h.

Table B.5.7.1h: Ph.D. registered faculty information.

Sr. No.	Faculty Name	Specialization	Year of Registration	Guide	University	Status
1	Mr. S. N. Randive	ECE	January 2015	Dr. Ranjan Senapati	KLU, Vijayawada	Thesis Submitted
2	Ms. R. R. Kawade	E&TC	November 2019	Dr. D. G. Bhalke	G H Raisoni College of Engineering and Management, Pune affiliated to SPPU	Ph.D. Pursuing
3	Mr. K. M. Napte	ECE	August 2019	Dr. Anurag Mahajan	Symboisis International University	Ph.D. Pursuing
4	Mr. K. B. Wane	E&TC	December 2019	Dr. N. B. Chopade	Savitribai Phule Pune University	Ph.D. Pursuing
5	Mrs.V. S. Kumbhar	E&TC	January 2021	Dr. Vaishali Raut	G H Raisoni College of Engineering and Management, Pune affiliated to SPPU	Ph.D. Pursuing
6	Mrs. T. D. Dhamale	E&TC	January 2021	Dr. Sheetal U. Bhandari	Savitribai Phule Pune University	Ph.D. Pursuing
7	Mrs. D. N. Dhake	E&TC	January 2021	Dr. Y. S. Angal	Savitribai Phule Pune University	Ph.D. Pursuing
8	Mr. K. B. Bhangale	E&TC	July 2019	Dr. Mohan Prasad K.	Vellore Institute of Technology, Chennai	Ph.D. Pursuing

5.7.2 Sponsored Research (05)

Institute Marks 03

Table B.5.7.2a: Sponsored research projects A.Y. 2020-21

Sr. No.	Project Title	Duration	Funding Agency	Amount
1	Epoxy Based Solar Panel Making Workshop	06 Month	IEEE Pre-University STEM Portal	**2,000 USD**
2	Autonomous floor cleaning robot	06 Month	IEEE Region 10 & HTA	**322 USD**
3	International Conference (IEEE)	01 Year	Asian Society and JSR Limited	**1,500 USD**
Total Amount				**3822 USD**

Table B.5.7.2b: Sponsored research projects A.Y. 2019-20

Sr. No.	Project Title	Duration	Funding Agency	Amount
1	ePGPEX-2019	22/06/2019 1 day	BCUD (Savitribai Phule Pune University, Pune)	**98,000/-**
2	AVISHKAR-2019	12/01/2020 1 day	BCUD (Savitribai Phule Pune University, Pune)	**29,072/-**
			Total Amount	**1,27,072/**

Table B.5.7.2c: Sponsored research projects funded by BCUD A.Y. 2018-19

Sr. No.	Project Title	Duration	Funding Agency	Amount
1	Syllabus Revision workshop for VLSI Design & Technology Subject BE E&TC	10/07/18 1 day	BCUD (Savitribai Phule Pune University, Pune)	**23,400/-**
2	Faculty Orientation Workshop on BE E&TC Revised Syllabus 2015 Course for the Subject Broadband Communication Systems	13/12/2018 to 14/07/2018 2 days	BCUD (Savitribai Phule Pune University, Pune)	**29,072/-**
3	AVISHKAR-2018	14/12/2018 1 day	BCUD (Savitribai Phule Pune University, Pune)	**94,260/-**
			Total Amount	**1,46,732/-**

Table B.5.7.2d: Sponsored research projects AY 2018-2019

Sr. No.	Project Title	Duration	Funding Agency	Amount Saved
1	Smart Ration Card Systems	01 Year	Megavesre Tech. Pvt. Ltd, Pune	**33,500/-**
2	IOT based Green House Monitoring and Controlling	01 Year	Esston Tech, Pvt. Ltd., Pune	**23,000/-**
3	Smart Water Distribution Using IOT	01 Year	Nexsel Tech, Pvt. Ltd., Pune	**27,000/-**
			Total Amount	**83,500.00/-**

Table B.5.7.2e: Sponsored research projects AY 2017-2018

Sr. No.	Project Title	Duration	Funding Agency	Amount saved
1	Syllabus Revision workshop for SPOS Subject TE E&TC	14-16 December 2017 3 days	Savitribai Phule Pune University, Pune	**30,000/-**
			Total Amount	**30,000/-**

Table B.5.7.2b: Sponsored research projects AY 2016-2017

Sr. No.	Project Title	Duration	Funding Agency	Amount Saved
1	Two Days State Level Workshop on Recent Trends in Mechatronics	13-14 December 2016 2 days	Savitribai Phule Pune University, Pune	**85,000/-**
			Total Amount	**85,000/-**

5.7.3 Development Activities (10)

Institute Marks 08

5.7.3. A. Product Development

Various development activities are being conducted on a regular basis which is as shown in table B.5.7.3a

Table B.5.7.3a: List of Products developed for 2017-18 to 2019-20

Sr. No.	Product Name	Faculty Incharge	Photos
AY (2021-22)			
1	Lab Automation	Mrs. M.S. Andhare Dr. R. G. Mapari	
2	Energy Saving Kit	Dr. R. G. Mapari Mr. Kishor B. Bhangale	
AY (2020-21)			
1	Hand Sanitizer	Ayush Kedari, Mr. K. M. Napte, Mrs. M.S. Andhare, Dr. R. G. Mapari	

2	UV Disinfectant	Dr. R. G. Mapari, Mr. K. M. Napte	
3	Power Supply	Mr. K. M. Napte , Dr. R. G. Mapari	
AY (2019-20)			
1	Smart Lift	Mr. R. S. Parbat	
2	Fan Automation for Laboratories	Mr. R. S. Parbat	

3	Automatic Hand Sanitizer with Water Dispenser	Mr. R. S. Parbat, Mrs. A. A. Tekade, Mrs. M. S. Andhare	
4	Service Robot “SETU” (Smart Electronic Transport Unit)	Prof. Dr. R. G. Mapari	
5	Electric Vehicle	Mr. R. S. Parbat	
6	Humanoid Robot “SPARK”(in process)	Mr. S. N. Randive	
AY (2018-19)			

1	Electric Bicycle	Mr. K. M. Napte	
2	Three Application Drones a. Spray Painting b. Payload c. Video Shooting	Mrs. D. N. Dhake	
3	Biometric operated bike	Prof. Dr. R. G. Mapari	
AY (2017-18)			
1	Smart Cylinder Trolley	Prof. Dr. R. G. Mapari	

2	Automatic curtain movement for Inaugural function	Prof. Dr. R. G. Mapari	

5.7.3. B. Research& Innovation Laboratories

- Research laboratories are developed with the aim of enhancing the research capabilities that promote innovation in Electronics and telecommunication and allied interdisciplinary fields.
- It provides a platform for faculties and students in the department to gain knowledge in their respective domains.
- It helps to understand the basic necessity by doing research and to acquire guidance from the experts in the respective domains.
- Research Lab is used for different research projects and special Projects for students and faculty members.

We have separate Research and Innovation Lab for research and innovation activities. Below mentioned specialized facilities, software and hardware is being used by faculty members as well as students for various technical activities that offer hands-on experience.

Table B.5.7.3b: Details of Research& Innovation Laboratories

Name of the lab	Facilities/Items/Software available
Research and Innovation Lab	Solar panel, Battery, Charge controller, DC refrigerator, DC air conditioner, DC washing machine, DC cooker, DC cookstove, Solar System
	Wi-Fi
	Subscription of Turnitin software for plagiarism checking
	J-Gate Science and Technology E Journals
	GPU Systems
	DSO
	Multimeter, Components, Soldering facilities etc
	MATLAB (Licensed)
	Xilinx (Licensed)
	Microwind 3.5 (Licensed)

	Multisim (Licensed)
	SCILAB (Open source)
	EAGLE (Open source)
	Python-Pycharm (Open source)
	Blender (Open source)
	Dev-CPP (Open source)
	Tensorflow, Keros Toolboxes (Open source)
	Eclipse (Open Board)

5.7.3. C. Instructional Materials:-

All the faculties of the department are required to develop their own course materials for the course allotted to them. In this approach, the following course materials for the theory as well as lab manuals have been developed for the following courses for every academic year (Table B.5.7.3c and Table B.5.7.3c').

Table B.5.7.3c: Course Material

Sr. No	Name of Faculty	Course Material	Link
1	Prof. Dr. R G Mapari	Audio Video Engineering	https://classroom.google.com/c/NDgzODg0ODI2Nzha
2	Mrs. V. S. Kumbhar	Digital Circuits	https://vskumbharpccoer.gnomio.com/
		Digital Communication	https://vskumbhardcs.gnomio.com
3	Mr. S. N. Randive	Digital Image and Video Processing	https://classroom.google.com/u/0/c/MjQ5MTA1MzAxNjA5
4	Mrs. M.S.Andhare	Microcontrollers	https://classroom.google.com/u/1/c/MjEyNzkxODAwMzA4
5	Mr. K.M.Napte	Power Electronics and Mechatronics	https://classroom.google.com/c/MjQ5MTkzNjM1NjI5?cjc=idyx3bo
6	Mrs. T. D. Dhamale	Electromagnetics	https://trivenidhamale.gnomio.com https://classroom.google.com/c/MzcxNjg4MDE3Mzcz?cjc=tl2ecj6
7	Mrs. A. A. Tekade	Electronic Circuits	https://classroom.google.com/c/MzgzNTMxMDAwOTU0?cjc=klfr22i

8	Mrs. R. R. Kawade	Data Structures	https://rupalikawade.gnomio.com
		VLSI design and Technology	https://classroom.google.com/c/MzY3MjE2MTY1NTA0?cjc=e7hw35r
9	Mr.K.B.Wane	Basic Electronics Engineering	https://wanekb.gnomio.com
		Database Management System	https://classroom.google.com/c/MzcyNzM5NDk3MzI0?cjc=hiqj6mt
10	Mrs.D.N.Dhake	Electrical Circuits	https://dipalindhake.gnomio.com https://classroom.google.com/u/0/c/Mzg1OTA4MTc4NDA4
11	Mr.K.B.Bhangale	Basic Electronics	https://classroom.google.com/u/1/c/MzU4MDg5MDQzMDUw

Table B.5.7.3c': Instructional Manual Developed

Sr. No.	Name of the Instructional Manual	Developed by Faculty
1	Electronics Devices & Circuits	Mrs. A.A.Tekade
2	Digital Electronics (2012 Pattern)	Mrs. V.S.Kumbhar
3	Digital Electronics (2015 Pattern)	Ms. R.R.Kawade
4	Analog Communication (2012 Pattern)	Mrs. V.S.Kumbhar
5	Analog Communication (2015 Pattern)	Dr. R.G.Mapari
6	Integrated Circuits	Mrs. A.A.Tekade
7	Electric Circuits and Machines	Dr. R.G.Mapari
8	Data Structures & Algorithms	Mr. K.B.Wane
9	Object Oriented Programming	Ms. R.R.Kawade
10	Digital Communication	Mrs. V.S.Kumbhar
11	Digital Signal Processing	Dr. R.G.Mapari
12	Microcontrollers	Mrs. M.S.Andhare
13	Power Electronics	Mr. K.M.Napte
14	Mechatronics	Mr. R.S.Parbat
15	Advanced Processors	Ms. R.R.Kawade
16	VLSI Design & Technology	Mrs. V.S.Kumbhar

17	Computer Network & Security	Mrs. A.A.Tekade
18	Antenna & Wave Propagation	Mrs. T.D.Dhamale
19	Embedded Systems & RTOS	Mrs. M.S.Andhare
20	Radiation & Microwave Techniques	Mrs. T.D.Dhamale
21	Mobile Communication	Mrs. A.A.Tekade
22	Broadband Communication Systems	Mrs. T.D.Dhamale
23	Audio Video Engineering	Dr. R.G.Mapari
24	Digital Image and Video Processing	Mr. S.N. Randive

5.7.3. D. Working Models/Charts/Monograms etc.

A1. Working Models

Table B.5.7.3d: Working Models Developed by faculty members and students

Sr. No.	Name of the Models	Prepared By
1	Cut section Model of Dynamo	Prof. K. M. Napte, Prof. S. N. Randive and students
2	Cut section Model of Servo Motor	
3	Cut section Model of Stepper Motor and DC Motor	
4	Cut section Model of BLDC Motor	
5	Cut section Model of Electromagnetic Flow Sensor	
6	Cut section Model of Capacitive Sensor	
7	Cut section Model of Inductive Sensor	
8	Cut section Model of LVDT	
9	Cut section Model of Temperature Sensor (K Type, PT 100, J type etc)	
10	Model of Load Cell	
11	Cut section Model of Proxy metric Sensor	
12	Cut section Model of Relay	
13	Model of various heat Sink	Prof. A. A. Tekade, Prof. R. S. Parbat and students
14	Display model of various Switches	
15	Display model of various Fuse	
16	Models of Buzzer	
17	Cut section Model of Ammeter	
18	Cut section Model of Voltmeter	
19	Cut section Model of Multimeter	
20	Models of Resistors	
21	Models of Inductors	
22	Model of Microchips	
23	Model of Transistors	

24	Model of Capacitor	
25	Display model of various Diodes	
26	All type of MOSFET	
27	Cut section Model of Timer	Prof. M. S. Andhare, Prof. K. B. Wane and students
28	Cut section Model of Contactor	
29	Cut section Model of Temperature Controller	
30	Cut section Model of Battery	
31	Model of input output connectors	
32	Cut section Model of cables	
33	Telephone to Mobile transformation	
34	Display Types	
35	CRO	Prof. T. D. Dhamale, Prof. R. R. Kawade and students
36	Function generator	
37	Power supply SMPS	
38	Computer Peripheral Cut Section Model	
39	All type of antenna with dish	
40	All type of microprocessor and microcontroller	Prof. M. S. Andhare and students
41	All type of speaker	Dr. R. G. Mapari and students
42	All type of Microphone	
43	All type of memory cards (Floppy to Memory card)	Prof. V. S. Kumbhar, Prof. D. N. Dhake and students
44	Cut section of Radio and FM	
45	Cut section of Wacky-Talky	
46	Cut section of Printer and Scanner	Dr. R. G. Mapari and students
47	Cut section of Inverter (500VA)	
48	CCTV System with DVR with two to three camera with Display	

A2. Charts Prepared

Table B.5.7.3e: Charts Prepared by faculty members and students

Sr. No.	Name of the course	Design and Developed by
1	Electronic Devices & Circuits	Mrs. A.A.Tekade and students
2	Digital Electronics	Ms. R.R.Kawade and students
3	Analog Communication	Mrs. V.S.Kumbhar and students
4	Integrated Circuits	Mrs. A.A.Tekade and students
5	Object Oriented Programming	Mr.K.B.Wane and students
6	Digital Communication	Mrs. V.S.Kumbhar and students
7	Microcontrollers	Mrs. M.S.Andhare and students
8	Power Electronics	Mr. S.N.Randive and students

9	Embedded Processors	Mrs. M.S.Andhare and students
10	VLSI Design & Technology	Mrs. V.S.Kumbhar and students
11	Electric Circuits and Machines	Mrs. T.D.Dhamale and students
12	Antenna & Wave Propagation	Mrs. T.D.Dhamale and students
13	Embedded System Lab	Mrs. M.S.Andhare and students

5.7.4 Consultancy (from Industry) (05)

Institute Marks 00

Table B.5.7.4a: Consultancy projects AY 2018-2019

Project Title	Duration	Funding Agency	Amount Saved
Smart Ration Card Systems	01 Year	Megavesre Tech. Pvt. Ltd, Pune	33500.00
IOT based Green House Monitoring and Controlling	01 Year	Esston Tech, Pvt. Ltd., Pune	23000.00
Smart Water Distribution Using IOT	01 Year	Nexsel Tech, Pvt. Ltd., Pune	27000.00
		Total Amount	83,500.00

5.8 Faculty Performance Appraisal and Development System (FPADS) (30)

5.8. Performance Appraisal System

Institute Marks 26

Pimpri Chinchwad College of Engineering and Research has a self-appraisal system for the assessment of faculty and supporting staff performance in the academic year. The system is communicated to all faculty members and supporting staff during their joining.

The total marks allocated for the Self-Appraisal Form (SAF) is:

Faculty: Maximum 300 Marks

(Divided into three categories such as ‘Teaching-learning and evaluation’ (150 Marks), ‘Co-curricular, Extension and Professional Development’ (75 Marks) and ‘Research and Development’ (75 Marks).

Supporting Staff: Maximum 150 Marks

(Divided into three categories such as 'Professional Competence,(50 Marks), 'Performance' (50 Marks), and 'Personal Characteristics' (50 Marks).

Marks scored against various criteria are considered as a performance indicator.

Faculty and supporting staff are required to fill the self-appraisal form at the end of each academic year.

The evaluation is done in the following steps:

1. **Self-assessment by faculty/supporting staff :**

   The assessment should be filled and evaluated by respective faculty/supporting staff based predominantly on the criterion mentioned in the Self-Appraisal Form.

2. **Evaluation by Head of the Department :**

   The assessment was filled and evaluated by the respective HOD based predominantly on the criterion mentioned in the SAF.

   The overall utility/ contribution of the faculty/supporting staff to the department and institute are assessed.

   In the case of interdepartmental or FE assignments, HOD should seek remarks from the concerned HOD/ FE Coordinator as the case may be.

   The marks allotted by faculty /staff are assessed by HOD in one to one interaction. HOD gives a remark and forwards it to the Principal.

3. **Evaluation by Principal :**

   Once the evaluation by HOD is done, the Principal would complete the Assessment with his/her remarks.

   The Principal interacts with faculty and staff on a one-to-one basis. The assessment is reviewed based on self and HOD's comments. The principal gives the appreciation, feedback and suggestion to the individual based on his/her performance.

   - Appreciation for the faculty/supporting staff, who had an excellent track record during the academic year.
   - Improvement for the underperforming faculty/supporting staff, for better performance in the upcoming academic year.

5.8. A Performance Appraisal System for Teaching Faculty

The Self-Appraisal Form (Teaching Faculty) has three subsections as mentioned below (copy of form attached)

Category-I-Teaching learning and evaluation- (150 M)

The teacher submits self-assessment on the following point:-

1.1 Lectures, Tutorials, Practical plan conducted

- The number of lectures as per the SPPU syllabus.
- Prepare a teaching plan for a particular course.
- Course presentation in front of higher authorities
- Effectiveness of practical and tutorial conduction
- CO-PO understanding and mapping of the respective course.

1.2 Additional Efforts:-

- Innovative teaching methods, efforts for a weak and quick learner, etc. are additional efforts consider for the self-assessment.

1.3 Student Feedback:-

- Faculty converts average student feedback as per policy defined by the institute (Marks distribution is mentioned in the form).

1.4 Students Attendance:-

- Faculty converts average student attendance as per policy defined by the institute (Mentioned in table no. 4).

1.5 Teaching Material:-

- Faculties prepare and provide teaching material to students in the form of self-handwritten notes, PPT, Record**ed** lecture, NPTEL lecture, etc.

1.6 Result:-

- Faculty assess respective course results as stated by table no .5 given in SAF.

1.7 Evaluation by HOD:-

All these above factors are considered and verified by HOD. Further, the assessment marks are forwarded to the Principal by HOD.

Types of appreciation done at the department level:

- Faculty members having 100% results in their respective courses are felicitated with appreciation letters at the department level.

- Faculty members having excellent student feedback in their respective courses are felicitated with appreciation letters at the department level.
- Extra or over and above performance in the teaching-learning process is appreciated.

Category-II-Cocurriculalar, Extension and Professional Development- (75 M)

2.1 The faculties and staff are evaluated depending on their involvement in Student Centric Activity at the college or department level.

2.2 The faculties and staff are assessed for their contribution to Academic and Administrative Committees & Responsibilities.

2.3 The College/Department encourages faculty members to be a member of professional societies such as IETE, IEEE, ACM, IEI, QCFI, ISHRAE, ASHRAE, BAI, IIRS Outreach Centers, etc. by paying partial membership amount.

2.4 The college motivate and promote the professional development of faculty by encouraging them to attend general orientation courses, refresher courses, training programs, faculty development program (FDP) and workshops organized by the reputed Institutions/universities/corporate.

2.5 Institute provides required funding for organizing national /international seminars/guest lecturers/ workshops/ conferences.

2.6 College grants On-duty leave for attending state/national seminars/workshops/FDPs etc.

Category-III- Research and Development- (75 M)

3.1 Targets given by HOD to faculty members regarding R&D activities such as paper publications, copyrights, product developments, patents, etc.

3.2 Evaluation of research and development is based on the filing patent/copyrights and publish research paper/book.

3.3 The College /department provide required funds for presenting a research paper in renowned conferences as per college policy.

3.4 In SAF, the weightage is also given for the development of a research lab for faculty and student research.

Category-IV-Extra Achievement

This category covers the extra achievements such as Research award from a well-known organization, topper in NPTEL courses, a grant for filed patent or copyright, the excellent result of respective course as compared to other institutes and other achievements which are not covered in Category I to Category III.

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SELF APPRAISAL FORM (SAF) 2018-19

TEACHING STAFF

(Period of Appraisal: From to)

EMPLOYEE DETAILS:

Name of the Faculty:						
Highest Qualification	**Department**	**Designation**	**Date of Joining**	**Institute Experience**	**Total Experience**	**Gross Salary**

LEAVE RECORDS (TO BE FILLED BY THE OFFICE)

Sr. No	**Type of Leave**	**No. of Leaves Availed**		**Remarks if any**	**Signature of HOD**
		Term - I	**Term - II**		
1	Casual Leave (CL)				
2	Duty Leave (OD)				
3	Leave Without Pay (LWP)				
4	Comp Off (COFF)				

CATEGORY – I : TEACHING, LEARNING & EVALUATION

Sr. No.	**SAFs**	**SAF Score Allotted**	**Self Evaluation**		**Evaluation By HOD**	
			Sem-I	**Sem-II**	**Sem-I**	**Sem-II**
1	Lectures, Tutorials, Practical Planned and conducted	[1]*25				
2	Additional Efforts	[2]*20				
3	Student Feedback	[3]*25				
4	Student Attendance (Use Multiplying Factor)	[4]*20				
5	Teaching Material / Learning Resources	[5]*10				
6	Subject Result-1	[6]*25				
	Subject Result-2	[6]*25				
	Total (Avg. if two subject in a Semister)	25				
7	Evaluation by HoD for over and above contribution in teaching	25				
	TOTAL (I)	**By Faculty 125** **By HoD 150**				
		Average Marks				

(Note: Attach supporting documents to validate the claim

1) 1*All documents related to above mention point, UT Marks, Prelim Marks, Online/In-sem Marks, End-Sem Marks (Comparison with Last Sem Performance) etc
2) 2*Extra Lectures, Mini Projects/Poster, Students Activities related to Subject, Remedial Classes for Weak Learners etc
3) 3*Convert Average student feedback and Students Attendance.
   More than 85%=25, 80-84.99=20, 70-79.99=15, 60-69.99=10, Below 60%=0.
4) 4* See the details as follows

Sr. No	Year	Avg. Attendance of Respective Subject in %	Multiplying Factor	*Total = Avg. Attendance X Multiplying Factor X 20
1	FE		1	
2	SE		1.05	
3	TE		1.10	
4	BE		1.15	

*For example Avg. attendance of SE students of any one subject is 80%,
Total Marks = 0.8581 X 1.05 X 20 = 16.8

5) 6*

Sr. No.	Detail Description	Total Marks out of 25
1	Result of subject is more than 10 % of previous year's avg. result of college of respective subject.	25
2	Result of subject is equal to college Avg. Result of respective subject.	23
3	Result of subject is upto than 5% previous year's avg. result of college of respective subject.	21
4	Result of subject is less upto 10% of previous year's avg. result of college of respective subject.	19
5	Result of subject is below 10% previous year's avg. result of college of respective subject.	00

Note: *Minimum 80 % compliance is mandatory for point 1, below which no scores may be assigned.

CATEGORY – II: CO-CURRICULAR, EXTENSION & PROFESSIONAL DEVELOPMENT

Sr. No.	SAFs	SAF Score Allotted (Max)	Self Evaluation	Evaluation By HOD
1	**Student Centric Activity** • College Level Activity/ Event Convener/ Coordinator **(10)** Member **(5)** • Certificate Course/ Add on Course **(10)** • Guest Lecture for Students **(3)** • Any other (3)	10		
2	**Academic and Administrative Committees & Responsibilities** • College level : Incharge **(10)** Member **(5)** • Department level : Incharge **(5)** Member **(3)**	10		
3	**Professional & Self Development Activities** (attending seminars, conferences, workshops, talks, lectures, dissemination, general articles, invited lecture or talk, keynote talk, NPTEL Workshop, etc of duration not less than 1 week,) **(5 each)**	20		
4	Industrial Training or Equivalent • Minimum 1 weeks (20)	20		
5	**Contribution through department level activities/portfolios (5 each)**	10		
6	**Library Utilization**	05		
	TOTAL (II)	**75**		

CATEGORY – III: RESEARCH & DEVELOPMENT

Sr. No.	SAFs	SAF Score Allotted (Max)	Self Evaluation	Evaluation By HOD
1	**Publications (International Journal/Conferences)** International Journal 15 Conf. Proceedings (full paper with ISBN No.) (10) Conf. Proceedings (full paper without ISBN No.) (5) **Technical Articles (5)** **Book Publication (20)**	30		
2	**Consultancy & / or Product Development**	20		
3	Patent Filed/ Copyright (5 Each, Max-15)	15		
4	Department Level Lab Development for Research (10 Each)	10		
	TOTAL (III)	**75**		

CATEGORY – IV: EXTRA ACHIEVEMENT

Sr. No.	SAFs	SAF Score Allotted (Max)	Self Evaluation	Evaluation By HOD
1	**Extra Ordinary Achievement / Contribution (25)** (Attached Separate Sheet)	**25**		
Note:	✓ Conducted approximately **230 lectures** (Combine div A & B) of a subject Strength of Material in semester-I. ✓ No any single student joined the coaching classes for this subject. ✓ Secured the result of Strength of Material Subject in **top three at university level**. ✓ Continuously get top students feedback.			

EVALUATION SUMMARY

SAFs	Maximum Marks	Self Evaluation	Evaluation By HOD
Category – I : Teaching, Learning & Evaluation	**150**		
Category – II : Co-Curricular, Extension & Professional Development	**75**		
Category – III : Research and Development	**75**		
Category – IV : Extra Achievement			
TOTAL (III)	**300**		

(Note: Attach supporting documents to validate the claim)

ADDITIONAL COMMENTS (if any) by THE FACULTY

(Faculty can write other activities completed during that academic year which is not covered in above three categories. Also they can give their opinion or suggestion for betterment of department and college.)

Date: **Signature of Faculty**

ASSESSMENT by The HoD

(The assessment should be based predominantly on the criterion mentioned. The opinion of colleagues, subordinates, superiors will be given due weightage. The overall utility/ contribution of the candidate to the department and institute are assessed. In case of interdepartmental or FE assignments, HoD should seek remarks from the concerned HoD/ FE Coordinator as the case may be)

Date: **Head of Department**

REVIEW Of ASSESSMENT & RECOMMENDATION By The PRINCIPAL

Date: **Principal**

Figure 5.8a.A sample copy of the Self-Appraisal Form of Teaching faculty

5.8. B. Performance Appraisal System for Supporting Staff

The Self-Appraisal Form (Supporting staff) has three subsections as mentioned below (copy of form attached)

Category-1-Professional Competence - (50 M)

The staff submits self-assessment on the following point:-

1.1Knowledge of rules, regulation and procedure:

- Evaluation of staff is based on the understanding of college rules, regulation and act on code of conduct.

  (Example: staff should communicate his absence to the superiors and also, do the necessary alternate arrangement)

1.2Ability to organize work and carry it out:

- Evaluation is based on the staff's performance to perform his assigned duties and also to communicate his higher authority on a time**ly** basis.

  (Example: Keep a log of his work and show to superiors etc)

1.3Ability and willingness to take up an additional load in times of exigencies:

- Evaluation is based on staff performance on the basis of additional duties performed.

  (Example: Ability to work in scenarios like gathering, events, etc.)

1.4Creativity and innovation:

- Evaluation is based on the creativity and innovation done in the assigned work. (Example: Smartness of work like performing his/her task in optimum time with zero errors etc)

1.5Ability to learn new duties:

- Evaluation is based on the staff to take on new assignments on his own and complete it, within a stipulated time frame.

  (Example: Take new task related to college activity and perform self-analysis and provide the same to the superiors)

Category-2-Performance- (50 M)

2.1Maintenance of Files/Records:

- The Performance will be evaluated based on maintaining the records of his assigned work.

  (Example: Maintaining Deadstock register, student attendance,etc)

2.2 Accuracy & Speed of work:

- The performance will be measured by taking into consideration his/her load and speed of the work on the assigned tasks. (Example: Performing the experiments on a setup with all necessary equipment on time)

2.3 Neatness & tidiness of work:

- The performance will be measured by his/her punctuality of work and also maintaining the assigned work in the desired manner to be readable by anyone.
  (Example: Maintain the dead stock register so that if any other member comes for checking he/she will be able to understand without any hassle)

2.4 Completion of work on schedule:

- The performance will be evaluated by the higher authority based on the time taken by the staff for the completion of the assigned duties. (Example: Staff should be able to complete the preparation of experiments, prior to the start of practical sessions)

2.5 Diligence and sense of responsibility:

- The performance of the staff will be evaluated based on his sense of responsibility and ability to perform his/her task thoroughly.
  (Example: Staff performing some activity likes conducting practical sessions in the absence of staff etc.)

Category-3- Personal Characteristics - (50 M)

3.1 Attendance:

- Evaluation of the staff will be measured based on his attendance during the academic year.
  (Example: Staff's attendance in college for his assigned duties like events, practical sessions, college attendance, etc.)

3.2 Punctuality:

- Evaluation of the staff will be measured on his punctuality.
  (Example: Staffs availability during the practical session, events, etc.)

3.3 Discipline:

- Evaluation of the staff will be measured based on the discipline.
  (Example: Staff discipline with superiors/ juniors/students during his interaction in any sessions, events etc)

3.4 Interaction with colleagues:

- Evaluation of the staff will be measured based on his behavior with other team members.

  (Example: Staff performance with other colleagues in an event where a joint event is performed) Integrity and behavior

3.5 Integrity and behavior:

- Evaluation of the staff will be measured based on the overall integrity and behavior with the college activities

  (Example: Staff's overall behavior with subordinates, superiors, students during the entire tenure)

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ANNUAL PERFORMANCE ASSESSMENT REPORT (NON-TEACHING STAFF)
Assessment for the year : 2018 – 2019

1. Name :	2. Department/Section:
3. Date of joining :	4. Date of Birth:
5. Designation :	6. Category:
7. Total Experience In Years :	8. Experience In PCCOER In Years:
9. Qualification :	10. Gross Salary:
11. Details of Educational courses being pursued :	12. Leave Record:
12. Any other information to be pointed out:	

TYPE OF LEAVE	TAKEN	BAL
CASUAL LEAVE (CL) :		
COMP OFF (C.OFF) :		
DUY LEAVE (OD) :		
LEAVE WITHOUT PAY (LWP):		
SIGNATURE OF HOD		

Date : **Signature of the staff member**

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ANNUAL PERFORMANCE ASSESSMENT REPORT (Technical, Administrative and Others)

NAME :				YEAR OF ASSESSMENT :			
DESIGNATION :				DATE OF APPOINTMENT TO THE POST :			
GROSS SALARY:							
DEPARTMENT/CENTRE/SECTION : Admin Office							
CATEGORY	**OUTSTANDING**	**EXCELLENT**	**VERY GOOD**	**GOOD**	**SATISFACTORY**	**MARGINAL**	**POOR**
	10	9	8	6	5	4	2
1. PROFESSIONAL COMPETENCE							
1.1 Knowledge of rules, regulation and procedure							
1.2 Ability to organize work and carry it out							
1.3 Ability and willingness to take up additional load in times of exigencies							
1.4 Creativity and innovation							
1.5 Ability to learn new duties							
2. PERFORMANCE							
2.1 Maintenance of Files/Records							
2.2 Accuracy & Speed of work							
2.3 Neatness & tidiness of work							
2.4 Completion of work on schedule							
2.5 Diligence and sense of responsibility							

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3. PERSONAL CHARACTERISTICS	OUTSTANDING	EXCELLENT	VERY GOOD	GOOD	SATISFACTORY	MARGINAL	POOR
	10	9	8	6	5	4	2
3.1 Attendance							
3.2 Punctuality							
3.3 Discipline							
3.4 Interaction with colleagues							
3.5 Integrity and behavior							
TOTAL POINTS :				**/150**			

4. OVERALL EVALUATION						
OUTSTANDING	**EXCELLENT**	**VERY GOOD**	**GOOD**	**SATISFACTORY**	**MARGINAL**	**POOR**

5. **Any outstanding contribution made by the Employee :**

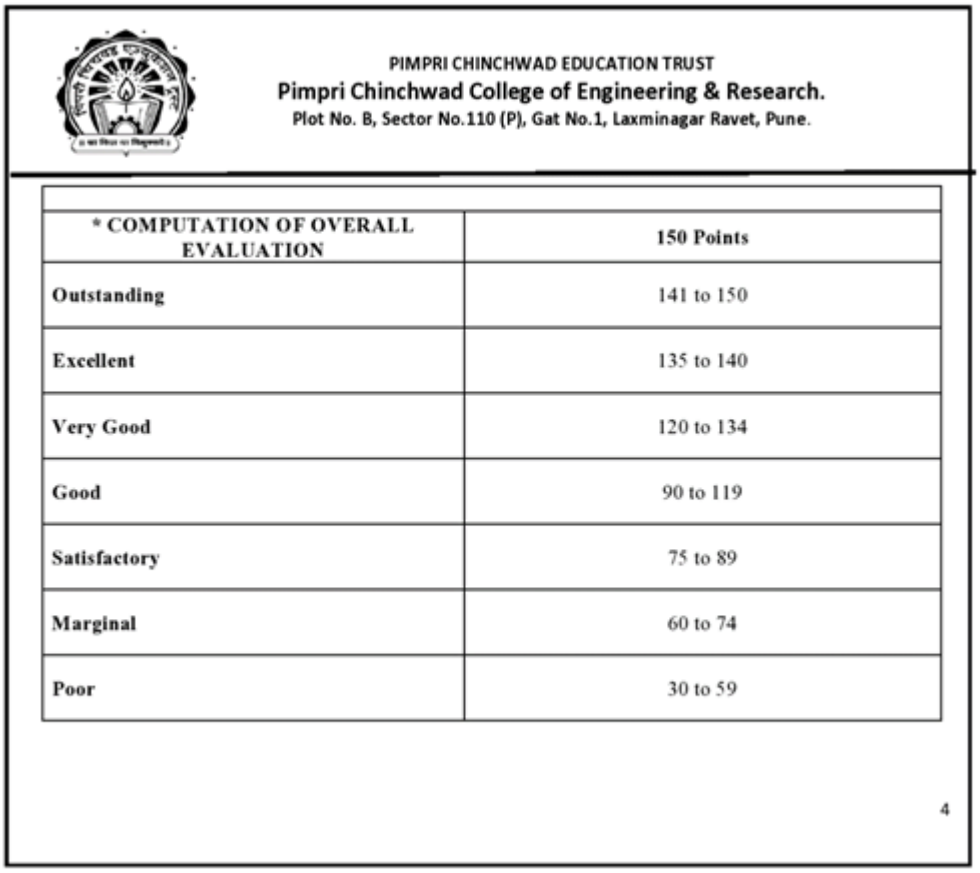
6. **Special remarks if any of the HOD :**

Date : **SIGNATURE OF THE HEAD OF THE DEPARTMENT**

7. **Remarks if any of Principal :**

Date : **SIGNATURE OF THE HEAD OF THE INSTITUTE**

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* COMPUTATION OF OVERALL EVALUATION	150 Points
Outstanding	141 to 150
Excellent	135 to 140
Very Good	120 to 134
Good	90 to 119
Satisfactory	75 to 89
Marginal	60 to 74
Poor	30 to 59

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Figure5.8b.A sample copy of the Self-Appraisal Form of Supporting Staff

5.8. C Implementation and Effectiveness of Self-Appraisal System

Table 5.8a: Implementation and Effectiveness of Self-Appraisal System

Sr. No.	Number of Faculty awarded	Reward
01	01	Promotion from Associate Professor to Professor
02	01	Awarded with trophy and certificate for published research papers in SCI-indexed journals
03	09	Appreciation Letter for 100% subject result
04	11	Appreciation Letter for excellent student feedback
05	02	Awarded with trophy for an excellent result in the NPTEL exam
06	15	Awarded as best teacher

5.9 Visiting/Adjunct/Emeritus Faculty etc. (10)

Institute Marks 08

Professors and experts from renowned institutes and industries conduct the sessions for students to develop professional and personal competency in research, publications and innovation. The details of experts and professors are given in table B.5.9a.

Table B.5.9a: Visiting /adjunct/emeritus Faculty members

Sr. no	Academic Year	Name of faculty	Designation & Organization	No of hours
1	2020-21	Mr. Tushar Kute	Researcher in MITU Skillologies ,Pune	55
		Mr. Abhijeet Deogirikar	Copper Cloud IOTech Pvt. Ltd.	51
		Mrs. Pranjali Chiwhane	Assistant Professor	54
2	2019-20	Dr. VirendrakumarVarma	Ex. Director, DRDO, Pune	52
3	2018-19	Mr. Tushar Kute.	Researcher in MITU Skillologies ,Pune	24
4	2017-18	Dr. Jyoti Pai	Soft Skill Professor, Pune	36

CRITERION - 06	FACILITIES AND TECHNICAL SUPPORT	80

Total Marks 75

Institute Marks 28

6.1 Adequate and well-equipped laboratories, and technical man power (30)

Table 6.1: List of laboratories with technical man power

Sr. No.	Name of the Laboratory	No. of students per setup (Batch Size)	Name of the Important equipment/Software	Weekly utilization status (all the courses for which the lab is utilized)	Technical Manpower support		
					Name of the technical staff	Designation	Qualification
1.	Basic Electronics Laboratory	4	CRO (20 &25MHz), Function Generator, Digital IC Circuit Boards for Digital IC Gates etc.	FE- BXE	Mrs. Bhagyashri Gawali	Lab Assistant	BE-E&TC
2.	Electronics Hardware Laboratory	4	9 in 1 Testab: Comp Tester, DC Power Supply, Fixed Power Supply,Function Generator, Freq. Counter, 3,1/2 Digit True RMS Multimeter with LED Display,70 MHz 2 Channel Digital Storage Oscilloscope etc.	SE E&TC- EDC, IC	Mr. Krushna Bhalekar	Lab Assistant	Diploma-Electronics
3.	Communication Laboratory	4	Spectrum Analyzer- (9KHz - 1.5GHZ with Tracking Generator & Min RBW 10Hz)Aplab SA3015, Fiber	SE E&TC - AC, EMIT TE E&TC - DC BE E&TC - BCS	Mr. Krushna Bhalekar	Lab Assistant	Diploma-Electronics

			Optic Trainer, Satellite communication Trainer, Autocompute LCR-Q Meter etc.				
4	Digital Electronics Laboratory	4	70 MHz 2 Channel Digital Storage Oscilloscope, Function Generator (20Hz to 2MHz upto 60db Attenuation, 50 Ohm) Aplab MSG 2M, Digital IC Tester etc.	SE E&TC - DE BE E&TC - MC, RMT	Mr. Krushna Bhalekar	Lab Assistant	Diploma-Electronics
5	Digital Signal Processing Laboratory	1	DSP Processor TMSC6713 Kit, Microwind 3.5 Software (10 User), MATLAB-R2019a Software with 09 Toolbox (25 User), Spartan 6E Board etc.	SE E&TC - ESD TE E&TC - DSP, ITCN BE E&TC - DIVP	Ms. Bhagyshree Gawali	Lab Assistant	Diploma-E&TC
6	Embedded System Laboratory	1	PIC 18F8XX Microcontoller Development Board, LPC 2148 Devlopment Board, ARM 9 Develoment Board etc.	SE Mechanical- EEE TE E&TC - AP, MC	Ms. Bhagyshree Gawali	Lab Assistant	Diploma-E&TC
7	Programming Laboratory-I	1	Lenovo H50 INTEL H81, Core I3 4th Generation 4GB RAM, 500GB HDD, NI Multisim-14.2 Version Software (25 User) etc.	SE E&TC - DSA TE E&TC - SPOS BE E&TC - CN	Mr. Krushna Bhalekar	Lab Assistant	Diploma-Electronics
8	Programming Laboratory-II	1	Nvidia JETSONAGX XAVIER Developer Kit-512 Core Volta GPU with Tensorcores, DELL VOSTRO 3650 INTEL Core I5 6th Generation 8GB RAM, 1TB HDD	SE E&TC – OOP TE E&TC – ESD, ESMP BE E&TC – VLSI	Mrs. Snehal Gholap	Lab Assistant	BE-E&TC

			VLSI Design Software Xilinx ISE (Open sourse), PCB Design Tools (Open sourse) etc.				
9	Mechatronics & Power Electronics Laboratory	4	DC Shunt Motor with Brake Drum Arrangement 2HP/220V/1500RPM, Contact Type Tachometer, Control Panel for DC Shunt Motor, Control Panel for DC Induction Motor 3Phase SQIM etc.	SE E&TC – ECM TE E&TC – PE, MCTR	Mrs. Snehal Gholap	Lab Assistant	BE-E&TC
10	Project Laboratory	3	3D Printer, PCB Lab Equipment with SMD assembly set up, 70 MHz 2 Channel Digital Storage Oscilloscope,Function Generator (20Hz to 2MHz upto 60db Attenuation, 50 Ohm) Aplab MSG 2M, Regulated Linear DC Multi OutPut Power Supply (32V/2A, +/-V/0.5A, 3 Digit Display)Aplab LQ6324T etc.	SE E&TC – PBL TE E&TC – ESMP, PBL BE E&TC – AVE, Project-I, II	Mrs. Snehal Gholap	Lab Assistant	Diploma-Electronics

11	Research and Innovation Laboratory	3	Solar panel, Battery, Charge controller, DC refrigerator, DC air conditioner, DC washing machine, Solar System, Humanoid Robotic Manufacturing Components, Drone Manufacturing Components,GPU processor work station, Microwave Test Bench Kit	Research and Innovation work of students and faculty	Ms. Snehal Gholap	Lab Assistant	BE-E&TC

6.2. Additional facilities created for improving the quality of learning experience in laboratories (25)

Institute Marks: 22

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning	Relevance to POs/PSOs
1.	e-Yantra Lab Setup Initiative (eLSI)– IIT Bombay Sponsored	Advanced Embedded system lab setups	To educate students with robotics technologies by using Embedded system lab setups	Development of Embedded systems application	Courses specified in Curriculum such as Microcontroller and Applications, ESRTOS, Mini project	PO5, PO9, PO11 PO12, PSO1, PSO2
2.	Free and Open-Source Software (FOSS) – IIT Bombay Sponsored	Advanced hardware systems, headphones, electronic web-cameras etc.	To educate students with open access tools to learn more about open source software	Organization of various workshops like C, Python, Java Arduino, LaTeX	Courses specified in Curriculum such as BE project, OOPS, DSA, SPOS, MCA	PO5, PO10, PO12
3.	3D Printer	(Creality 3D CR10V2) 3D PRINTER with enclosure, Bed size 300*300*400 m, Double gear extrusion mechanism, material – PLA,ABS	Manufacturing of Modules	Organization of Workshops, Rapid prototyping of parts	All projects and Product development	PO5,PO7,PO9,PO 10,PO11,PSO1, PSO2
4.	Drone Manufacturing Circle	Modern electronic controllers, motors, propellers etc	To aware and educate students aboutmanufacturing of Drones for various applications	Manufacturing of Drones for applications such as Spray Painting, Payload and Video Shooting	PBL projects	PO5, PO6, PO7, PO9, PO11, PO12, PSO1, PSO2

5.	Humanoid Robot Club	Servomotors, Advanced Controllers, Sensors, Cameras	To develop Humanoid robot with advanced features	Manufacturing of Humanoid robot such as Service Robot, Humanoid Robot "SPARK"	Courses specified in Curriculum such as BE project, Mechatronics, MCA	PO5, PO6, PO7, PO9, PO11, PO12, PSO1, PSO2
6.	Energy Swaraj Foundation	Solar panel, Battery, Charge controller, DC refrigerator, DC air conditioner, DC washing machine, DC cooker, DC cookstove, Solar System	To support and conduct workshop and other activities 2. To provide consultancy for designing the appropriate solar solution so as to run the campus completely on solar energy To provide guidance to create an academic course related to promotion of the concept of Energy Swaraj for the students	UG Project Work, Consultancy, Hands-on workshops	Audit Courses	PO5, PO6, PO7, , PO8, PO11, PO12, PSO1, PSO2
7.	Ecoz Bolt-E-vehicle manufacturer	Hub motor, Battery, bicycle	To arrange the sessions on design and manufacturing of e-bicycle To inspire students to start their startups and become entrepreneur.	Conducted 02 brainstorming sessions for students. Manufactured 05 e-bicycles for institute.	Entrepreneurs, startups etc	PO5, PO6, PO7, PO9, PO10, PO11, PO12, PSO1, PSO2
8.	Computer Center	It consist of more than 80 computers having open source	For Seminars, FDP, Student usage likes web surfing, email etc.	Students can use Email, Web Browsing, File Storage. Various FDP, seminar and sessions conduction	Computing facilities , Programmingrelated practical knowledge , Strengthen their programming skills	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO12

		software for encouragement of higher studies and innovation				
9.	Self explanatory charts & models for experiments	Charts, Models and cut sections	Better understanding of concepts	Demonstration to understand the concept	Courses specified in Curriculum	PO9, PO12
10.	Lab manuals	Lab manuals along with instructions, specifications of equipments	To create an awareness about the experiment. Schematic representation of an experiment	For understanding the experimental procedure and its calculations	Ability to investigate experimentally and analysis different parameters gets improved	PO1, PO6
11.	3-Axis RF field strength meter (Kusammeco KM195)	Frequency range of 50MHz ~ 3.5GHz, Digital, tri-axial measurement, instantaneous measured value, maximum value, average value, or maximum average value	To indicate electro-magnetic pollution generated artificially, & wherever a voltage or a current, electric € and magnetic (H) fields arise.	UG project work and Demonstration to understand the concept	Courses specified in Curriculum such as Electromagnetic Engineering, Mobile communication, Analog Communication, Digital Communication, and Broadband Communication System	PO5, PO6, PO7, PO8, PO11, PO12, PSO1, PSO2
12	Signal strength meter –DTH	Digital Satellite Signal Finder Meter for Signal Strength Dish , Satelite TV, Premium Quality satellite finder, Powered By	To find the signal strength of Dish and Satellite TV	Demonstration to understand the concept	Courses specified in Curriculum	PO5, PO6, PO7, PO8, PO11, PO12, PSO1, PSO2

		Dish Wire self, Freq. 950~2150 MHZ, Power: 13~18V DC				
13	Analog Megger Shanti make ITS5010	Voltage range-1000V, Resistance-200M Ohm, Display-Analog	Measurement of the insulation resistance on electrical equipment and system under test upto 1000V For testing motors, transformers, generators, switch gears For testing house hold appliances Measurement of insulation of cables for on-site maintenance and service	Demonstration to understand the concept, UG project work	Courses specified in Curriculum such as electrical circuits and machines, electronics circuits and devices	PO5, PO6, PO7, PO8, PO11, PO12, PSO1, PSO2
14	Universal Programmer TL866A	All kinds of 26, 27, 28, 29, 37, 39, 49, 50 parallel ROM, EPROM, EEPROM; 24, 25, 35, 85, 93, 95 Series EEPROM, Serial parallel ROM chips; Fully supporting to the 48-PIN chips of 64Mbits capacity;	To enable students to apply their engineering knowledge and improve technical skills	UG final project and Mini-project work	Programming skills	PO5, PO6, PO7, PO8, PO11, PO12, PSO1, PSO2

		MICROCHIP PIC10 PIC12 PIC16 PIC18 MCU				
15	LAN/Cable Tester - Dlink make	Cuurent rating-25mA, Volatge rating-9V, Battery- alkaline Battery	To test and authen-ticate Ethernet twisted pair cables, continuity of a cable with RJ11, RJ45	UG project, Demonstration to understand the concept	Courses specified in Curriculum such as Computer networks and security and project work	PO5, PO6, PO7, PO8, PO11, PO12, PSO1, PSO2
16	Digital Tong Tester 600A-AC/DC	Auto Ranging, 3¾ Digit, 4,000 Counts, Temperature, Capcitance, Data Hold, Hz/Duty, NCV, APO	To utilize for Current Measurement, Voltage Measurements, Resistance, Temperature t, Duty Cycle Measurement, Continuity, Diode Test	UG project, Demonstration and testing of equipment	Courses specified in Curriculum such as Electronics Skills Development	PO5, PO6, PO7, PO8, PO11, PO12, PSO1, PSO2
17	Frequency Counter HTC VC3165	HTC Brand: VC-3165 Frequency Counter, 8 digits green LED display, Selective range, high stability, Two Channels, operation mode memory, Range and gate time adjustable, Power Supply : AC 220V, +10%	To generate different types of electrical waveforms over a wide range of frequencies.	Demonstration to understand the concept, Project work	Courses specified in Curriculum such as digital electronics, VLSI Design and Technology, Microcontrollers and advanace processors	PO5, PO6, PO7, PO8, PO11, PO12, PSO1, PSO2

18	Nvidia JETSON AGX XAVIER Developer Kit,(GPU)	512 Core Volta GPU with Tensorcores, GPU 8 core RV8.2 64 bit CPU, 8MB L2+ 4MB L3, 32 GB, 256 bit LPDDR 4X 137 GB/s memory, 32 GB	To develop the advance machine learning and deep learning algorithms	Project work, Demonstration and understanding of deep learning algorithms	Courses specified in curriculum such as machine learning (BE), project work, special projects, faculty research, etc.	PO5, PO6, PO7, PO9, PO10, PO11, PO12, PSO1, PSO2
19	Departmental Library	Technical books (260), project Reports (100), CD (100)	To provide books, journals and previous years project reports to students.	Study and understanding the concept, Project Work	Courses specified in Curriculum	PO1, PO6, PO10
20	Departmental Lobby	Cut section models of various electronics equipments	Better understanding of concepts and technology	Study, Demonstration and understanding of various electronics and telecommunication technologies	Courses specified in curriculum of SE, TE, BE	PO1, PO6

6.3 Laboratories: Maintenance and overall ambiance (10)

Institute Marks 10

Maintenance:

Preventive maintenance and calibration schedule is followedas per ISO process. Corrective actions are initiated to maintain equipments and laboratory setup in working condition. Repairing of equipments, computer and peripherals are carried in-house by lab technicians. Major equipment maintenance and repair is done through supplier.

Following measures are undertaken for maintenance:

1. Do's, Don'ts and safety measures rules are displayed in each laboratory.
2. Dead stock register and Lab maintenance register is maintained in the laboratories.
3. Separate provision in budget for the maintenance isconsideredin annual departmental budget.
4. The timely maintenance and calibration of equipmentsis done throughout the semester whenever required.
5. Periodic calibration of equipment is carried out as per schedule.
6. Preventive maintenance register is maintained in eachlaboratories.
7. Functional parameters of instruments are checkedmonthly byLab assistant.
8. Based on the instrument functionality;maintenance or calibration request can be made and carried out.
9. Maintenance in warranty period is carried out by respective equipment supplier. After warranty period, in-house maintenance of equipments, computer and peripherals is done with the help of lab technicians and external agencies for major troubleshooting.Table B.6.3.a gives maintenance and repair details by in-house staff.
10. Adequate uninterrupted power supply system (UPS) installed to ensure uninterrupted power supply for all computers and electronic equipments. Batteries of the UPS are replaced regularly after expiry of their useful life.

Table B.6.3a: Maintenance and Repair Details by In-house Staff

CAY (2019-20)					
Sr. No.	**Name of the Laboratory**	**Name of Equipment/ Nature of Problem**	**Repair Done**	**Date**	**Staff Name**
1	Embedded System Laboratory	8051 Kit: On/ OFF switch problem.	Switch replaced	09/01/2020	Mrs. Bhagyashree Gawali
CAYm1 (2018-19)					
2	Basic Electronics Laboratory	Bridge rectifier diode damaged	Diode replaced	11/12/2018	Mr. N S Kathale
3	Digital Electronics Laboratory	5 in 1 Lab Test : Power supply fuse damaged	Fuse replaced	11/12/2018	Mr. K D Bhalekar
4	Mechatronics & Power Electronics Laboratory	DAC Trainer kit : RTD sensor socket issue	Female socket changed	11/12/2018	Mrs. Snehal Gholap
CAYm2 (2017-18)					
5	Basic Electronics Laboratory	Voltage regulator Kit, power supply problem	IC 7805 replaced	14/12/2017	Mr. K D Bhalekar, Mr. N S Kathale
6	Communication Laboratory	AM Generation Kit, pot damaged	frequency pot changed	20/12/2017	Mr. N S Kathale
7	Digital Electronics Laboratory	Digital Trainer Kit	IC replaced	20/12/2017	Mr. K D Bhalekar

Table B.6.3b: Maintenance and Repair Details by External Supplier

CAY (2020-21)					
Sr. No.	**Name of the Lab**	**Name of Equipment**	**Nature of Problem**	**Name of the company/ Vendor Serviced**	**Service Details**
1	Digital Electronics Lab	Automatic Telephone Exchange /EPABX Training System	Reading not showing properly, Technical issues in start	ScientechTechnoloies Pvt. Ltd, Indore	Component changed
2	Basic Electronics	5 in 1 Test Lab.	Calibration	Vijay Electrical	Calibration done

	Lab	(Qty:03), Dual DC Power Supply (Qty: 02)		&Calibration Services, KalewadiPimpri	on dated 7/01/2022
3	Electronics Hardware Lab	70 Mhz Digital Storage Oscilloscope (Qty:05), 2 MHZ Function Generator (Qty:06), G2M Dual DC Power Supply (Qty:03), Digital Multi-Meter 3 3/4 (Qty:04)	Calibration	Vijay Electrical &Calibration Services, KalewadiPimpri	Calibration done on dated 7/01/2021
4	Communication Lab	70 & 100 MhzDSO (Qty: 06) 2 MHZ Function Generator (Qty:06) G2M Dual DC Power Supply (Qty:04) Digital Multi-Meter 3 3/4 (Qty:04) Spectrum Analyzer (9KHz - 1.5GHz)(Qty:01) Autocompute LCR Q Meter(Qty:01)	Calibration	Vijay Electrical &Calibration Services, Kalewadi Pimpri	Calibration done on dated 7/01/2021
5	Digital Electronics Lab	5 in 1 Test Lab (Qty:03), 2 MHZ Function Generator (Qty:05), Dual DC Power Supply (Qty:05), Digital Multi-Meter 3 3/4 (Qty:02), Digital Storage Oscilloscope(Qty:01)	Calibration	Vijay Electrical &Calibration Services, Kalewadi Pimpri	Calibration done on dated 7/01/2021
6	Embedded System Lab	5 in 1 Test Lab. (Qty:02), 2 MHZ Function Generator (Qty:02), Dual Dc Power Supply (Qty:01), Digital Multi-meter 3 3/4 (Qty:01)	Calibration	Vijay Electrical &Calibration Services, Kalewadi Pimpri	Calibration done on dated 7/01/2021
7	Mechatronics & Power Electronics Lab	70MhzDSO (Qty:01), 2 MHZ Function	Calibration	Vijay Electrical &Calibration Services,	Calibration done on dated 7/01/2021

		Generator (Qty:02) Dual Dc Power Supply (Qty:05), Digital Multi-meter 3 3/4 (Qty:01)		KalewadiPimpri	
CAY (2019-20)					
1.	Basic Electronics Lab	5 in 1 test lab (Qty :2)	Calibration	Vijay Electrical & Calibration Services, Kalewadi Pimpri	Calibration done on dated 22/08/2019
2.	Electronics Hardware Lab	70 MHz DSO (Qty : 3), 2 MHz Function generator DSO (Qty : 3), Dual DC Power Supply DSO (Qty : 3), Digital Multi meter (Qty : 4)	Calibration	Vijay Electrical & Calibration Services, Kalewadi Pimpri	Calibration done on dated 22/08/2019
3.	Basic Communication Lab	70 MHz DSO (Qty : 3), 2 MHz Function generator DSO (Qty : 3), Dual DC Power Supply DSO (Qty : 3), Digital Multi meter (Qty : 4)	Calibration	Vijay Electrical & Calibration Services, Kalewadi Pimpri	Calibration done on dated 22/08/2019
4.	Digital Electronics Lab	5 in 1 Test lab (Qty : 3), 2 MHz Function generator DSO (Qty : 2), Dual DC Power Supply DSO (Qty : 2), Digital Multi meter (Qty : 2),	Calibration	Vijay Electrical & Calibration Services, Kalewadi Pimpri	Calibration done on dated 22/08/2019
		Automatic Telephone Exchange / EPABX Kit	Connecting problem at port no 30 of telephone	Scientech Technologies Pvt. Ltd, MP Indor	PCB Board replaced. Repaired on dated 06/07/2020
5.	Embedded System Lab	5 in 1 Test lab (Qty : 2), 2 MHz Function generator DSO (Qty : 1), Dual DC Power Supply DSO (Qty : 1), Digital Multi meter (Qty : 1)	Calibration	Vijay Electrical & Calibration Services, Kalewadi Pimpri	Calibration done on dated 22/08/2019
6.	Mechatronics & Power Electronics Lab	70 MHz DSO (Qty : 1), 2 MHz Function generator DSO (Qty : 1), Dual DC Power Supply DSO (Qty : 2), Digital Multi meter (Qty : 1)	Calibration	Vijay Electrical & Calibration Services, Kalewadi Pimpri	Calibration done on dated 22/08/2019

		Weight & Level measurement kit	Weight not shown properly & Level measurement sensor not working	Raj Enterprises, Pune	Weight display & IC changed, Level measurement sensor replaced. Repaired on dated 04/10/2019
CAY (2018-19)					
7	Electronics Hardware Lab	Digital millimeter, Dual DC Power Supply	Calibration	Vijay Electrical & Calibration Services, Kalewadi Pimpri	Calibration done on dated 25/01/2019
8	Basic Communication Lab	Spectrum Analyzer, LCRQ meter, Digital Multi meter 4 1/2 , Function generator, Digital storage oscilloscope 5 in 1 test lab, 9 in 1 test lab	Calibration	Vijay Electrical & Calibration Services, Kalewadi Pimpri	Calibration done on dated 25/01/2019
CAY (2017-18)					
9	Electronics Hardware Lab	Linear IC Tester	Reading not showing properly	Hi Tech Electronics, Sinhgad road Pune	PCB, IC's relay replaced & repaired On dated, 26/12/2017
10	Basic Communication Lab	Dual DC Power supply	Voltage display not showing	Aplab Limited, Pune	Serving was done on dated 25/07/2017
11	Digital Electronics Lab	Klystron Power Supply	Square wave not generate	Prowiz Systems, Pune.	Serving was done on dated 25/07/2017

Overall Ambiance:

State of art laboratories equipped with various facilities are provided with proper illumination, ventilation and maintained on regular basis. Conducive learning environment is created with focus on Electrical Safety. Sufficient number of required display boards, measuring instruments and lab panels are provided. Overall ambience of laboratories is very good.

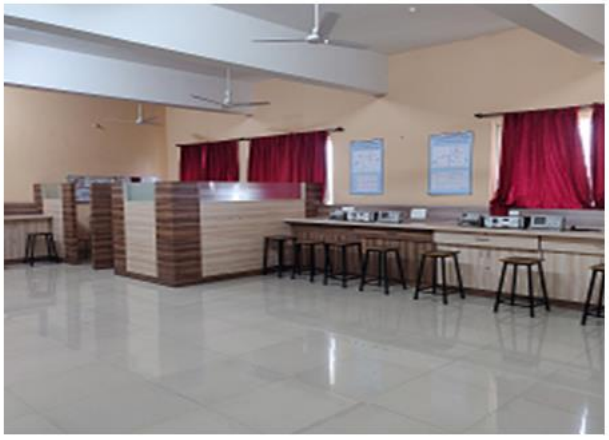
Table B.6.3b:Overall Ambiance in Laboratories

Laboratory Name: Basic Electronics Laboratory (Area: 76sq.mtr.)




Basic Electronics laboratory is a basic laboratory in the field of electronics and communication engineering. This laboratory gives the basic knowledge of identifying electronic devices, active and passive elements in electronics, connections over breadboard, method of using Cathode Ray Oscilloscope, Function generator and so on. This Laboratory gives the students core knowledge of all electronic components and its properties. This improves the students ability to study electronic devices and get the practical knowledge on the various properties of electronics.

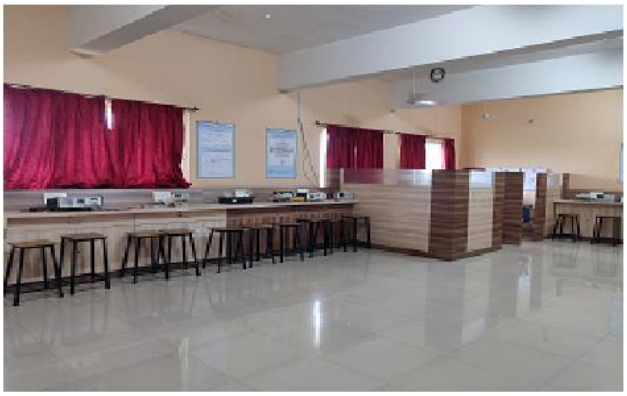
Laboratory Name: Electronics Hardware Laboratory (Area: 76 sq.mtr.)

Electronics Hardware laboratory is a basic laboratory in the field of electronics and communication engineering. This laboratory gives the basic knowledge of analog electronics, practical knowledge of analog circuits. This Laboratory gives the students core knowledge of all Analog Devices and its properties. This improves the student's ability to study analog nature electronic devices and get the practical knowledge on the various properties of electronics.

This Laboratoryis utilized as IC Applications. This laboratory helps the students to Analyze electronic circuits and learn various circuit operations practically. These basic circuits further can be used to build large circuits practically. This Laboratory helps the students to have technical knowledge on various IC"s available in market, their specifications, and their operating range.

Laboratory Name: Communication Laboratory (Area: 76 sq.mtr.)



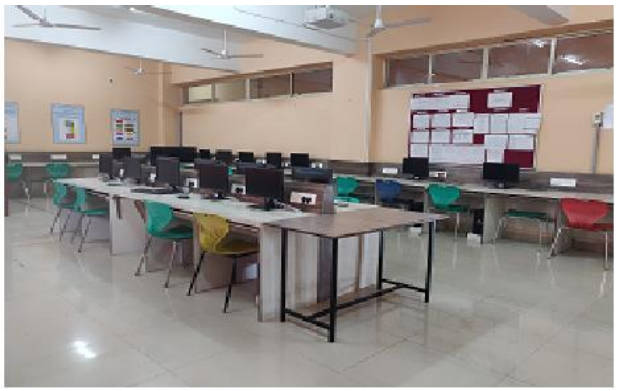

Communication laboratory has the most priority among the various labs in the curriculum of Electronics and communication engineering students for undergraduate courses. The Communication laboratory has also in its possession an array of various different devices like CRO, Various Types of Modulation kits, Spectrum Analyzer, Multimeters etc. Students can learn various concepts on Analog Signals, various frequencies required for the operation of analog Signals.

Laboratory Name: Digital Electronics Laboratory (Area: 76 sq.mtr.)




The Digital Electronics Laboratory caters to the requirement of the students with respect to various laboratory sessions. The laboratory has all the required equipment and consumables to carry out the experiments as per the syllabus as well as a few experiments beyond the syllabus. At a time a batch of 25 students do the experiments. This laboratory has also in its possession on array of various different equipments like Trainer kits, CROs, Multimeters, Digital IC Tester etc.

Laboratory Name: Digital Signal Processing Laboratory (Area: 76 sq.mtr.)

The Digital Signal Processing Laboratory with 25 high end computers has in it a set of expensive design and simulation Softwares like, Win 10, Latex, MATLAB R2019a, Microwind 3.5, Xilinix and so on to cater to the departmental research and development activities. This Laboratory has also in its possession an array of hardware utilities like TMS320C6748 DSP development board, etc. This Laboratorycan be used to design hardware using Hardware Description Language and practically implement the hardware on the FPGA kits available in the Laboratory. This enhances the Practical knowledge of students in the Digital Signal Processing and VLSI Design.

Laboratory Name: Embedded System Laboratory (Area: 76 sq.mtr.)



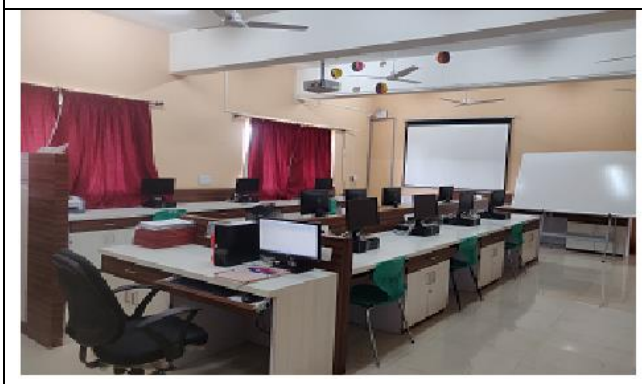

The Embedded System Laboratory with high end computers has in it a set of Softwares like MPLAB IDE, Eclipse, Flashmagic, Arduino IDE, Raspbian OS, Code Composer Studio, Keil, Eagle PCB maker and so on to cater to the development activities. This Laboratory also havehardwares like 8051, PIC18, AVR, ARM development platform with different interfacing cards. This laboratory helps the students develop their particular coding skills as well as enhances their knowledge on architectures of various Standard microprocessors and microcontrollers.

Laboratory Name: Programming Laboratory I (Area: 76 sq.mtr.)




The Programming Laboratory-I with 20 high end computers has in it a set of expensive design and simulation Softwares like Multisim Win 10, Ubuntu and so on to cater to the departmental research, development activities and enhance the programming skills.

Laboratory Name: Programming Laboratory II (Area: 67.33sq.mtr.)




The Programming Laboratory-II with 20 high end computers has in it a set of expensive design and simulation Softwares like VLSI development platform-XILINIX, Eagle PCB maker Keil, Win 10, Ubuntu and so on to cater to the departmental research, development activities and enhance the programming skills. This Laboratorycan be used to design hardware using Hardware Description Language. This enhances the Practical knowledge of students in the VLSI System Design.

This laboratory has PCB Design Tools (Open sourse) to develop the projects.

Laboratory Name: Mechatronics & Power Electronics Laboratory (Area: 67.33 sq.mtr.)




Mechatronics & Power Electronics Laboratoryis used to perform interdisciplinary practicals of Mechatronics, Power Electronics, Electrical Circuits and Machines, Electrical and Electrical Engineering etc. This Laboratory havehardwares like DC Shunt Motor with Brake Drum Arrangement, Contact Type Tachometer, Control Panel for DC Shunt Motor, Control Panel for DC Induction Motor 3Phase SQIM etc.

This Laboratory also havehardwares like Different types of sensors, motors and actuators.

Laboratory Name: Project Laboratory (Area: 80 sq.mtr.)




Project Product & Innovation Laboratory is a heart of Department of Electronics and Telecommunication in which students are developing their PBL, Mini, Major and special projects. This laboratoryis also used for product development activities. This laboratory is equipped with 3D Printer, Laser printer for PCB layout printer, Photo exposing kit, PCB etcher, PCB drilling machine, Hot gun for soldering along with DSO, CRO, Function generator, Power supply, Multimeters, etc.

Laboratory Name: Research & Innovation Laboratory (Area: 76sq.mtr.)




Research and Innovation Laboratoryis used to develop various innovative projects, PBL projects, special projects and product development. This laboratory consist of various advance facilities like Solar panel, Battery, Charge controller, DC refrigerator, DC air conditioner, DC washing machine, Solar System, Humanoid Robotic Manufacturing Components, Drone Manufacturing Components, Microwave Test Bench Kit, etc. It is equipped with high end GPU processor work station for implementation of machine learning and deep learningalgorithms for students and faculty members.

6.4 Project laboratory (05)

Institute Marks 05

The objective of project laboratory is to provide hardware and software facilities for development of PBL, mini-projects, final year major projects, special projects and research projects. Department has separate project laboratory for developing projects under Project Based Learning, Mini Project, Major Project and Special Projects with Product.All existing laboratories are utilized for development of project work.Discussion on innovative ideas and projects are carried out in laboratories. PCB development, testing, debugging & simulation facility is made available in respective laboratories. All these laboratories are open after college hours for the students to carry out their research regarding the project as per the requirements. Students are having access to e-facilities,hardware facilities and software facilities for project work as given in table B.6.4a, B.6.4b and B.6.4c respectively.

Table B.6.4a: e-facilities available for project work

Sr. No	E-library/Digital Library details	URL
1	Science Direct	https://www.sciencedirect.com/
2	PCCOER e-Library Integrated-Knimbus	https://pccoer.new.knimbus.com
3	NPTEL	https://nptel.ac.in/course.html

4	Turnitin- plagiarism detection	https://www.turnitin.com/login_page.asp?lang=en_us
5	J-Gate Science and technology	https://jgateplus.com/ (https://jgateplus.com/)
6	National Digital Library of India	https://ndl.iitkgp.ac.in/ (https://ndl.iitkgp.ac.in/)

Facilities available for Project work:

Table B.6.4b: Hardware facilities available for project work

Sr. No.	Name of Equipment
1.	Laser printer for PCB layout printer Photo exposing kit PCB etcher PCB drilling machine Hot gun for soldering
2.	3D Printer
3.	Solar panel, Battery, Charge controller, DC refrigerator, DC airconditioner, DC washing machine, DC cooker, DC cookstove, Solar System
4.	8051, PIC18, AVR, ARM development platform with different interfacing cards
5.	Arduino, Raspberry Pi3 development platform with different interfacing cards
6.	Spectrum Analyzer
7.	DSO, CRO, Function generator, Power supply, Multimeters, etc.
8.	Microwave Bench
9.	Spartan development boards, VLSI development platform
10.	IC Tester
11.	Multipurpose Lab Station which includes: a) Signal Oscilloscope b) Power Supply c) Digital Multimeter d) Function Generator
12.	TMS320C6748 DSP development board
13.	PIC programmer
14.	Different types of sensors, motors and actuators

Table B.6.4c: Software facilities available for project work

Sr. No.	Name of Software
1.	Microwind 3.5
2.	MATLAB R2019a
3.	Xilinix
4.	Latex
5.	Code Composer Studio
6.	Arduino IDE
7.	Multisim14.2
8.	MPLAB IDE, Eclipse , Flashmagic
9.	Keil, Eagle PCB maker
10.	DevC++, TurboC++, Eagle, Codeblock

11.	PyCharm Python 3.0 Compiler
12.	Blender,

Sample list of the projects done in Laboratory according to project domain is given in table B.6.4d.

Table B.6.4d: Laboratory Utilized for Project Work (A.Y. 2019-20)

Group No.	Name of the Students	Name of Project	Laboratory Utilized
1	Rade Mohit Prafulla Pareek Ashmit Kailash Patil Hrishikesh Hemant	Automatic Detection Of Diabetic Retinopathy using Deep Learning	Programming Laboratory I
2	Mayuri Warade Aishwarya Zodge Sojwal Patil	Smart Classroom with Automatic Attendance System	Project Laboratory
3	Jiyot Babrah Shweta Narkhade Anagha Navale	Waste Segregator	Project Laboratory
4	Keta Patel Shubhangi Sambare Patil Gaurav	Smart Traffic Control Using DIP	Programming Laboratory I
5	SajitChaus Onkar Gore Shivam Tekode	Smart lift system for large scale business organizations	Embedded System Laboratory
6	AkilAdhav Rushikesh Gadhave Shweta Kakade	Design of Multiband antenna for wireless application	Digital Electronics Laboratory
7	Neha Chavan Chinmayee Chitis Sanket Darur	Underwater Siganl Processing and DAS using MW	Digital Electronics Laboratory
8	Roshan Bhoge Rahul Budhe Abhijeet Shelke	IOT based Water Distribution and Management system for Coorporation	Embedded System Laboratory
9	Ajin Abraham Shweta Jagtap Siddhi Sawant	Library Atomization using Computer Vision	Programming Laboratory I
10	Mansi Dusane Nikhil Mahajan Swaraj Samare	Road Quality Assessment	Embedded System Laboratory
11	Meryl Mascarenhas Mrunal Deshmukh Pratiksha Shetiya	E-Documentation using QR code and Key Logging System	Embedded System Laboratory
12	Prajakta Patil Swamini Lohkare Rupali Patil	ATM Survilence using Image Processing	Embedded System Laboratory

13	Onkar Phule Sanket Shetgaonkar Bhawarlal Parmar	2D LASER Engraver	Programming Laboratory II
14	Advait Karandikar Bhushan Shingate Vinay Kadam	CAR Automization	Project Laboratory
15	Rohini Bali Manasi Zope Rutuja Sonawane	Paperless India using cloud for Documentation	Programming Laboratory II
16	Dhanashree Divekar Samruddhi Jangam Kajal Mahajan	Soil Analyzing Tool	Embedded System Laboratory
17	Manisha Kambale Shrusti Kumbhar Sana Patil	Sign Language Communication	Programming Laboratory II
18	Hande Rushabh Jadhav Omkar Jadhav Pratap	Onion Storage Atomization with rotten onion detection and retrieval system	Project Laboratory
19	Gaurav Pagare Shubham Roman Renuka Kharat	ATM Trassaction Using Biometric	Programming Laboratory II
20	Shah Mausmi Shah Divyansh Kawale Khushbu	Malaria Parasite Detection Using ML	Embedded System Laboratory
21	Koshti Sanket Age Kishor Patil Dhiraj	E-bike Charger with Auto battery Indicator using Electromagnetic Coils	Project Laboratory
22	Thigale Vaibhav Shivani Jadhav Patil Pushpa	Smart ring for Women Safety using IOT	Project Laboratory
23	Itkar Dhananjay Deshmukh Kedar Bhatti Rudrapratap singh	Animatronic RADAR with Telescope	Digital Electronics Laboratory
24	Thorat Pratima Pratik Chandgude Wagh Pranjali	Design of UWB antenna for wireless application	Digital Electronics Laboratory
25	Kale Shweta Kingre Shivkanta Saurav Mahajan	Vedic Multiplier	Programming Laboratory II
26	Meherte Laxmi Rahul Bansode Yash Bhaarshitti	IOT based real time system for industrial safety	Project Laboratory

The outcomes of project laboratory and product/special projects developed under project library are given in Table 6.4e and Table 6.4f.

Table B.6.4e: Project Laboratory Outcomes

Sr. No.	Outcomes	Count
1	Projects developed under PBL	50
2	Projects developed under Mini Project	69
3	Projects developed under Major Project	40
4	Special Project Developed	14
5	Patent filed	11
6	Research paper publication	55

Table B.6.4f: Product /Special Projects developed under Project Laboratory

Sr. No.	Product Name	Faculty Incharge	Photos
CAY (2021-22)			
1	Lab Automation	Mrs. Maithili Andhare Dr. R. G. Mapari	
2	Energy Saving Kit	Dr. R. G. Mapari Mr. Kishor B. Bhangale	
CAY (2020-21)			

1	Hand Sanitizer	Ayush Kedari, Mr.K.M.Napte, Mrs.M.S.Andhare, Dr.R.G.Mapari	
2	UV Disinfectant	Dr. R. G. Mapari, Mr. K. M. Napte	
3	Power Supply	Mr.K.M.Napte , Dr.R.G.Mapari	
CAY (2019-20)			
1	Smart Lift	Mr. R. S. Parbat	

2	Fan Automation for Laboratories	Mr. R. S. Parbat	
3	Service Robot “SETU” (Smart Electronic Transport Unit)	Prof. Dr. R. G. Mapari	
4	Electric Vehicle	Mr. R. S. Parbat	
5	Humanoid Robot “SPARK”(in process)	Mr. S. N. Randive	
CAYm1 (2018-19)			

1	Electric Bicycle	Mr. K. M. Napte	
2	Three Application Drones a. Spray Painting b. Payload c. Video Shooting	Mrs. D. N. Dhake	
3	Biometric operated bike	Prof. Dr. R. G. Mapari	
CAYm2 (2017-18)			
1	Smart Cylinder Trolley	Prof. Dr. R. G. Mapari	-
2	Automatic curtain movement for Inaugural function	Prof. Dr. R. G. Mapari	

6.5 Safety measures in laboratories (10)

Institute Marks 10

Table 6.5: Safety Measures in Laboratories

Sr. No.	Name of the Laboratory	Safety measures
1.	Basic Electronics Laboratory	Safety Instructions are provided. Do's and Don't boards are available. Electrical devices are protected by MCB and fuses. Laboratory under CCTV surveillance. Fire extinguisher. Electrical earthling.
2.	Electronics Hardware Laboratory	Safety Instructions are provided. Do's and Don't boards are available. Electrical devices are protected by MCB and fuses. Laboratory under CCTV surveillance. Fire extinguisher. Electrical earthling.
3.	Communication Laboratory	Safety Instructions are provided. Do's and Don't boards are available. Electrical devices are protected by MCB and fuses. Laboratory under CCTV surveillance. Fire extinguisher. Electrical earthling.
4.	Digital Electronics Laboratory	Safety Instructions are provided. Do's and Don't boards are available. Electrical devices are protected by MCB and fuses. Laboratory under CCTV surveillance. Fire extinguisher. Electrical earthling.
5.	Digital Signal Processing Laboratory	Safety Instructions are provided. Do's and Don't boards are available. SOPHOS UTM firewall. Electrical devices are protected by MCB and fuses. Laboratory under CCTV surveillance. Fire extinguisher. Electrical earthling.
6.	Embedded System Laboratory	Safety Instructions are provided. Do's and Don't boards are available. SOPHOS UTM firewall. Electrical devices are protected by MCB and fuses. Laboratory under CCTV surveillance. Fire extinguisher. Electrical earthling.
7.	Programming Laboratory I	Safety Instructions are provided. Do's and Don't boards are available.

		SOPHOS UTM firewall. Electrical devices are protected by MCB and fuses. Laboratory under CCTV surveillance. Fire extinguisher. Electrical earthling.
8.	Programming Laboratory II	Safety Instructions are provided. Do's and Don't boards are available. SOPHOS UTM firewall. Electrical devices are protected by MCB and fuses. Laboratory under CCTV surveillance. Fire extinguisher. Electrical earthling.
9.	Mechatronics & Power Electronics Laboratory	Safety Instructions are provided. Do's and Don't boards are available. Electrical devices are protected by MCB and fuses. Laboratory under CCTV surveillance. Fire extinguisher. Electrical earthling.
10.	Project Laboratory	Safety Instructions are provided. Do's and Don't boards are available. Electrical devices are protected by MCB and fuses. Laboratory under CCTV surveillance. Fire extinguisher. Electrical earthling. Safety glasses and gloves.
11.	Research and Innovation Laboratory	Safety Instructions are provided. Do's and Don't boards are available. Electrical devices are protected by MCB and fuses. Laboratory under CCTV surveillance. Fire extinguisher. Electrical earthling.

CRITERION - 7	CONTINUOUS IMPROVEMENT	50

Total Marks 47

7.1. Actions taken based on the results of evaluation of each of the POs & PSOs (20)

Institute Marks 20

Measures identified and implemented to improve POs & PSOs attainment levels are as per the table below.

Table B 7.1a: POs and PSOs Attainment Levels of 2017-18 Batch and Actions for Improvement in 2018-19 Batch

POs	Target Level	Attainment Level	Observations
PO1:Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.			
PO1	**2.83**	**2.51**	**88.69% Target is achieved** • It was realized that improvement is needed in courses containing linear differential equations, Fourier transform, Z-transform, functionality of PLL, stability of control system, behavior of random process, wave equations, switching techniques and VHDL programming. • In courses of signal processing, general computing and circuit design modules solving of complex engineering problems less than expected target. • Many courses of the programme attained the target but some missed it marginally.
Action 1: Pre-requisites were taken for the topics like linear differential equations, Fourier transform, Z-transform etc. Action 2: Animated videos were shown for the topics like functionality of PLL, stability of control system, behavior of random process, wave equations. Action 3: Innovative pedagogies were used by the faculties to make numerical and analytical based courses interesting. Action 4: Additional efforts were taken for lateral entry students to clear the fundamental of			

<table>
<tr><td colspan="4">mathematics to solve complex engineering problems.</td></tr>
<tr><td colspan="4">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.</td></tr>
<tr><td>PO2</td><td>2.34</td><td>2.13</td><td>91% Target is achieved
Most of the mathematical courses marginally apply the problem solving and analyzing skills in real time applications.
It was observed that more focus needed for analysis of conformal mappings, performance of pass band digital communication, steady state behavior of control system, performance analysis of spread spectrum, analog CMOS circuit analysis and speech processing.
The CO-PO mapping of VLSI design and technology and few other courses needed to be modified.</td></tr>
<tr><td colspan="4">Action 1: New pedagogies like crossword, snake ladder, Emoji puzzles were introduced to enhance the analytical skill of the students.
Action 2: Course faculty of VLSI design and technology and few others modified the CO-PO mapping.
Action 3: Aptitude training of 60 hours was conducted for TE students.
Action 4: PBL scheme implemented where students found real life problems through the literature survey which helped to improve problem analysis skill.</td></tr>
<tr><td colspan="4">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.</td></tr>
<tr><td>PO3</td><td>2.18</td><td>2.19</td><td>Target is achieved
The courses of Employability Skills and Project Management module addressed design and development of the solutions for health, safety, social and environment problems effectively.
Workshop on Product development, robotics and industrial visit to PCB manufacturing improved the design solution skills of students.</td></tr>
</table>

			➢ It was found that design of converter circuits, SMPS, protection circuit in power electronics course and design of digital circuits in VLSI design course needed more attention.
Action 1: Additional projects were developed by the students for the courses like mechatronics. Action 2:Workshop was conducted on "Design issues of SMPS" for TE class. Action 3: Workshop on "Advanced Embedded Linux for industry use" and "Recent Trends In VLSI Design and Verification Technology Using EDA Tools" were conducted for BE class. Action 4: In relevant courses issues on public health and safety, cultural, societal, and environmental were discussed in class and laboratory sessions.			
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.			
PO4	2.13	2.14	**Target is achieved** ➢ Rubrics like design and implementation of experiments, observation, reading and data interpretation were considered for the evaluation of Laboratory Experiments. ➢ Use of research based-knowledge in mini and major projects to reach to valid conclusion by students was evident. ➢ It was observed that more attention is required on designing and synthesizing the information of SMPS, protection circuits and embedded systems
Action 1: Students were introduced effective use of literature survey for PBL, Mini, and Major Projects and were encouraged to participate in institute level conference-UGCON, Project exhibitions and State, National and International level Conferences. Action 2: Laboratory evaluations were done by the faculties based on rubrics to account PO4 attainment. Action 3: To sustain the attainment of PO4 PBL implemented effectively.			
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.			

PO5	2.33	2.34	**Target is achieved** ➢ Students used tools like Arduino, Keil, microwind 3.5, MP lab and open source software's that meet the industry standards. ➢ Employer and alumni survey indicates students awareness about modern tools. ➢ It was found that interfacing of peripherals with SCILAB was difficult.
Action 1:To perform simulation based experiments latest MATLAB license copy was procured. Action 2: Students utilized modern tools like MATLAB, Arduino, Keil, microwind 3.5, MP lab etc. for projects. Action 3: Industrial visit was organized to All India Radio Pune where student handle tools required for live recording and low frequency broadcasting.			
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.			
PO6	2.30	2.30	**Target is achieved** ➢ The courses of communication engineering module addressed the needs of health, safety, legal and social concerns regarding engineering practices in real life. ➢ Good number of final year and PBL projects addressed social, health and cultural issues. ➢ The scope to address safety issues while selecting the antenna for communication system, designing, the automation systems for industrial applications and legal issues while running the business was realized.
Action 1: To address the safety issues new course 'Electronics in Agriculture' has been added in final year curriculum by E and TC BOS, SPPU(suggestion from E and TC PCCOE and R implemented). Action 2: The legal and safety issues considered while developing a new communication system according to IEEE standards were addressed in communication engineering module courses. Action 3: Students participated in social activities like blood donation camp organized by NSS. Action 4: The provision of library slot was effectively used to read the newspapers and			

<table>
<tr><td colspan="4">magazines to know about societal and health related issues and share the information among other students.
Action 5: Students follow laboratory safety instructions while performing the practical's.</td></tr>
<tr><td colspan="4">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.</td></tr>
<tr><td>PO7</td><td>2.22</td><td>2.26</td><td>Target is achieved
➢ Courses like AWP, WN, MC and BCS addressed the issues such as impact of hazardous frequencies on society and impact of electronic waste on environment.
➢ Good numbers of environment sustainability related projects were done by the third and final year students.
➢ It was found that students need to be made aware about societal and environmental aspects while designing the cellular networks and for systematically running the business.</td></tr>
<tr><td colspan="4">Action 1: To address environment and sustainability issues audit course ‘Green Energy’ has been added in final year curriculum by E and TC BOS, SPPU (suggestion from E and TC PCCOE and R implemented).
Action 2: Environment related problems and solution for sustainability were addressed by the courses and lab sessions like Soft skills, Communication Lab, Mini project, Elective-IV, Project Phase I and Lab Practice III and Project Phase II in coming batches.
Action 3: Students selected the projects in which environment issues addressed with respect to consumption of energy and utilization of renewable energy resources.
Action 4: Students participated in social activities like tree plantation and Swacha Bharat Abhiyan organized by NSS.</td></tr>
<tr><td colspan="4">PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.</td></tr>
<tr><td>PO8</td><td>2.09</td><td>2.09</td><td>Target is achieved
➢ It was found that very few courses addressed the professional and ethical principles.
➢ It was observed that students applied IEEE standards</td></tr>
</table>

			for WLAN, Wi-Fi, Bluetooth and satellite communication. ➢ According to employer feedback E&TC graduates follow the professional ethics and responsibilities. ➢ Students need to apply principles of human resource management and marketing strategies in business development ethically and professionally.
Action 1: A session on plagiarism and its effect on technical society were conducted to create awareness among students. Action 2: Pre-placement initiatives, various technical activities such as poster presentations, UGCON, ETeSA activities etc. helped the students to improve the professional ethics and responsibilities. Action 3: Ethical principles to be followed in design and development of Electronic System have been inculcated into the activities like PBL, Mini and Major Projects. Action 4: Students were motivated to undergo industrial training during summer vacation. Action 5: The audit course on 'human values and professional ethics' has been added in final year curriculum.			
PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.			
PO9	2.38	2.21	**92.8% Target is achieved** ➢ Very few courses were mapped to this PO ➢ Employer survey indicates students worked in team as well as individual effectively. ➢ Soft skills, mini project and major project ensure that student function effectively as an individual, and as a member or leader in teams. ➢ Students organized various activities under EandTC student association (ETeSA) as a team.
Action 1: Audit course on 'leadership' has been added in the curriculum. Action 2: Technical events like Technovate were organized to enhance the leadership qualities as well as to make them work in team. Action 3: HR related activities like aptitude training and Group Discussion-Personal interview (GD-PI) related sessions were conducted.			

<table>
<tr><td colspan="4">Action 4: Platform has been provided through ETeSA activities, annual gathering to work in individual as well as a group helped the students to groom the skills like leadership and effective team member.</td></tr>
<tr><td colspan="4">PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.</td></tr>
<tr><td>PO10</td><td>2.46</td><td>2.46</td><td>Target is achieved
Student used Latex tool for BE project report writing.
In project presentation one of the rubrics was communication.
Japanese language course started in the college. Most of E and TC students were members of this course.
According to employer feedback E and TC graduates Communicate effectively.</td></tr>
<tr><td colspan="4">Action 1: The students with good communication skills formed a group with average students and help them to improve their communication skills.
Action 2: Students were motivated and platform provided to give seminars on various topics in different courses.
Action 3: Mock Interview sessions were conducted for students through ETeSA activities.
Action 4: Students drafted their project reports using LaTeX.</td></tr>
<tr><td colspan="4">PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.</td></tr>
<tr><td>PO11</td><td>2.10</td><td>2.13</td><td>Target is achieved
The case studies on financial and project management covered in the industrial management course helped the students to understand the management principles.
Cost estimation of the project was done by the students for their final year project.
The total project work is divided among the team members to complete the project on time.</td></tr>
<tr><td colspan="4">Action 1: The course faculty of industrial management modified the CO-PO mapping.
Action 2: The case studies were taken from the students on financial management and project management through the course Business Management.</td></tr>
</table>

<table>
<tr><td colspan="4">Action 3: Students submitted estimated cost relevant to their project along with synopsis.
Action 4: Students managed the finance during technical and non–technical events.</td></tr>
<tr><td colspan="4">PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.</td></tr>
<tr><td>PO12</td><td>1.94</td><td>1.95</td><td>Target is achieved
➢ Student used online resources and reference books to complete assignments.
➢ Different types of antennas were designed and developed by the students in antenna design and fabrication workshop.
➢ Industrial visit was arranged to GMRT Khodad where students learnt working of Metrewave Radio Telescope and different types of antennas.
➢ As per alumni feedback the knowledge gained during graduation helped them in project development.</td></tr>
<tr><td colspan="4">Action 1: Library hours’ slot has been created in the regular schedule to ensure the effective use of reference books, magazines and Journals to update about latest technological developments and current happenings in the industry.
Action 2: Self learning modules through NPTEL were introduced to the students for inculcating the spirit of continuing education.
Action 3: More assignments introduced based on open ended and complex engineering problems to instill life-long learning.
Action 4: Students undergone industrial training and internships.</td></tr>
<tr><td colspan="4">PSO1: Graduate will be able to identify, design, prototype and test electronics and communication systems using software and hardware tools.</td></tr>
<tr><td>PSO1</td><td>2.24</td><td>2.25</td><td>Target achieved
➢ Product development workshop was conducted for SE students.
➢ In laboratory sessions students design and test electronic systems.
➢ Students were encouraged to develop prototype models of embedded system applications, converter circuits, SMPS, over voltage and current protection circuits etc.</td></tr>
</table>

Action 1: As per the recommendation of program assessment committee SE courses were mapped to PSO1. Action 2: Students developed prototype models in the courses like PBL, Mini project, Mechatronics, Power Electronics. Action 3: PCB lab has been developed to strengthen the PSO1. Action 4: Product development workshop on design of AVR development board was conducted for SE students and Two days hands-on workshop on Arduino was conducted for SE students.			
PSO2: Graduate will be able to develop and support systems based on embedded, automation, microwave, signal and image processing.			
PSO2	2.37	2.39	**Target is achieved** ➢ In the courses like Mini project and major project students developed electronic systems based on embedded, automation, microwave, signal and image processing.
Action 1: As per the recommendation of program assessment committee SE courses were mapped to PSO2. Action 2: Project based learning was introduced for FE, SE and TE students to familiarize with design concepts. Action 3: Hands-on workshop on "design issues of SMPS", "Advanced Embedded Linux for industry use" and "Recent Trends In VLSI Design And Verification Technology Using EDA Tools" conducted for students.			

Table B.7.1b: POs and PSOs Attainment Levels of 2018-19 Batch and Actions for Improvement in 2019-20 Batch

POs	Target Level	Attainment Level	Observations
PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.			
PO1	2.83	2.59	**91.5% Target is achieved** ➢ Additional efforts were taken for lateral entry students to clear the fundamental of mathematics to solve complex engineering problems. ➢ Innovative pedagogies were used by the faculties to

			make numerical and analytical based courses interesting.
Action 1: Animated videos were shown for some topics like functionality of PLL faradays Law, basics of transmission Lines, working of timer, display devices Like OLED, TFT and Digicam. Action 2: Innovative pedagogies were used by the faculties to make numerical and analytical courses interesting. Action3: Additional efforts were taken for lateral entry students to clear the fundamental of mathematics to solve 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.			
PO2	2.34	2.35	**Target is achieved** ➢ New pedagogies like crossword, snake ladder, Emoji puzzles were introduced to enhance the analytical skill of the students. ➢ Aptitude training of 60 hours was conducted for TE students. ➢ PBL scheme implemented where students found real life problems through the literature survey which helped to improve problem analysis skill.
Action 1: New pedagogies were introduced in some subjects. Action 2: Television Fault Finding and Troubleshooting workshop was conducted for BE students. Action 3: Aptitude training of 60 hours was conducted for TE students. Action 4: Projects were assigned to group of 6 students under Project Based Learning (PBL) activity to develop skills on design of solutions.			
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.			
PO3	2.19	2.25	**Target is achieved** ➢ Workshop was conducted on “Design issues of SMPS” for TE class.

			➢ Workshop on "Advanced Embedded Linux for industry use" and "Recent Trends In VLSI Design and Verification Technology Using EDA Tools" were conducted for BE class. ➢ In PBL, Mini, Major projects students designed and developed the solutions for public safety, health, Social and Environmental problems. ➢ Expert lecture were taken for courses like CNS, VLSI, AI etc which helped the students to find the solution for complex engineering problems.
Action 1: Projects were assigned to group of 6 students from SE & TE under Project Based Learning (PBL) activity to develop skills on design of solution. Action 2:Three days workshop on "Industrial Approach to Electronics" was conducted for SE students. Action 3: Industrial Visit to GMRT, Narayangaon, Khodad was organized for TE students. Action 4: Expert lecture on "ASIC Design and Challenges" was conducted for BE students. Action 5: Students were participated in "Technovate" event for better grasp of real time problems so that they will be exposed to many design solutions.			
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.			
PO4	2.14	2.25	**Target is achieved** ➢ Students were introduced effective use of literature survey for PBL, Mini, and Major Projects and were encouraged to participate in institute level conference-UGCON, Project exhibitions and State, National and International level Conferences. ➢ Laboratory evaluations were done by the faculties based on rubrics to account PO4 attainment. ➢ To sustain the attainment of PO4 PBL implemented effectively. ➢ In laboratory sessions students designed the problem, write the observations, interpreted the data

<table>
<tr><td></td><td></td><td></td><td>and write the conclusion.</td></tr>
<tr><td colspan="4">Action 1:Technical events like PBL Poster presentation, CIPCIS, Techno spark etc were organized in order to develop skills on solving real world problems.
Action 2:Faculty members demonstrates simulation and experimental works on core courses (Computer Networks and Security, VLSI Design and Technology, Digital Image and Video Processing, Digital Communications, DSP, Advanced Processors, Microcontrollers, Electronics Devices and Circuits, Digital Electronics etc), to develop the skills of experimentation, analysis and interpretation of data.
Action 3:Case studies implemented through projects in Mechatronics course of TE class.
Action 4:Students were directed to do literature survey for PBL, Mini, Major Projects and encouraged them to participate in institute level conference-UGCON, Project exhibitions and State, National and International level Conferences.</td></tr>
<tr><td colspan="4">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.</td></tr>
<tr><td>PO5</td><td>2.34</td><td>2.34</td><td>Target is achieved
To perform simulation based experiments latest MATLAB license copy was procured.
Students utilized modern tools like MATLAB, Arduino, Keil, microwind 3.5, MP lab etc. for projects.
Industrial visit was organized to All India Radio Pune where student handle tools required for live recording and low frequency broadcasting.
In laborartory sessions, students handled modern tools like like Microwind, MATLAB, Xilinix, Code Composer Studio, Arduino IDE, Multisim, MPLAB IDE, Eclipse, Flashmagic, Keil, Eagle PCB maker, etc.</td></tr>
<tr><td colspan="4">Action 1: New Matlab tools such as communication, DSP system, signal processing, symbolic math were added to perform simulation based experiments.
Action 2: Hands-on workshops were conducted like PCB Design & Simulation, Latex for</td></tr>
</table>

Thesis and Research Paper Writing, Raspberry pi with IOT, Machine learning using Python etc.

Action 3: Project Based Learning activity was aligned to strengthen Modern tool usage.

Action 4: Around 80 students undergone Industrial Trainings and Internships in reputed industries like A. I. Analytics, Aakrutii Technology, PMS Robotics Research Centre, ATC Technologies Inc, Kalptech Solutions Pvt. Ltd., Internshala, L&T Electrical & Automation, SKADA Technologies etc. where students handled modern tools used in industries.

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.

PO6	2.30	2.34	**Target is achieved** ➢ The legal and safety issues considered while developing new communication systems according to IEEE standards were addressed in communication engineering module courses. ➢ Students participated in social activities like blood donation camp organized by NSS. ➢ Students follow laboratory safety instructions while performing the practicals. ➢ final year and PBL projects addresses social, health and cultural issues.

Action 1:Students are encouraged to participate in various societal activities like blood donation camp, tree plantation etc., through NSS and student's association (Electronics & Telecommunication students association) to understand problems in society.

Action 2: Students are encouraged to participate in Group discussion and debates having topics related to societal, health, safety, cultural issues etc.

Action 3: Students are advised to be members in professional bodies like IETE and IEEE to contribute to the need of society through the programs like Interactive Session on Health care, Hygiene and Sanitation, orphanage visit etc.

Action 4: Students were participated in the event TDCS-2019 under IEEE Pune section explaining about technologies for agriculture, food processing, rural development, health care, medical diagnosis etc. with emphasis on applications and benefits to the society.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge

<table>
<tr><td colspan="4">of, and need for sustainable development.</td></tr>
<tr><td>PO7</td><td>2.26</td><td>2.28</td><td>Target is achieved
To address environment and sustainability issues audit course ‘Green Energy’ and ‘Environmental issues and disaster management’ has been offered to final year.
Environment related problems and solution for sustainability were addressed by the courses like Soft skills, Mini project, Project Phase I and Project Phase II.
Students participated in social activities like tree plantation and Swachh Bharat Abhiyan organized by NSS.</td></tr>
<tr><td colspan="4">Action 1: Students were motivated to select their projects in which global and environmental issues are improved with respect to consumption of energy and utilization of renewable energy sources.
Action 2: Expert lecture on Awareness session on Radiation and Hazards was conducted for all the students.
Action 3: An audit course on Environmental issues and Disaster Management was selected to create environmental awareness
Action 4:Workshop on Antenna Design & Fabrication process was conducted for BE students.</td></tr>
<tr><td colspan="4">PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.</td></tr>
<tr><td>PO8</td><td>2.09</td><td>2.20</td><td>Target is achieved
A session on plagiarism and its effect on technical society were conducted to create awareness among students.
Pre-placement initiatives, various technical activities such as poster presentations, UGCON, ETeSA activities etc. helped the students to improve the professional ethics and responsibilities.
Ethical principles to be followed in design and development of Electronic System have been</td></tr>
</table>

			inculcated into the activities like PBL, Mini and Major Projects. ➢ Students were motivated to undergo industrial training during summer vacation.
Action 1: Technical Society like IEEE was started to ensure Ethical practices in Engineering are discussed in detail. Action 2: Created awareness of plagiarism among the students and its effectiveness was carried out by providing Plagiarism checking software (Turnitin) facility for Major project. Action 3: Ethical principles to be followed in design and development of Electronic System have been inculcated into the activities like PBL, Mini and Major Projects. Action 4: Lecture on Humanity Ethics and Values was conducted for all the students under the audit course human behavior.			
PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.			
PO9	2.38	2.40	**Target is achieved** ➢ HR related activities like aptitude training and Group Discussion-Personal interview (GD-PI) related sessions were conducted. ➢ Platform has been provided through ETeSA activities, annual gathering to work in individual as well as a group helped the students to groom the skills like leadership and effective team member. ➢ Curricular and extracurricular activities such as Drone workshop, Robocon, ETeSA activities etc. helped the students to inculcate the leadership skills by coordinating and volunteering the events. ➢ Technical events like Technovate were organized to enhance the leadership qualities as well as to make them work in team.
Action 1: Students are encouraged to carry out their projects as a team through activities like Project Based Learning, Mini project and Major Project. Action 2: Students are motivated to volunteer the events like Conferences, Technical Events, Professional body (IEEE) activities, Students association activities, NSS, Cultural and Sports			

<table>
<tr><td colspan="4">activities.
Action 3: To improve communication skills Group discussion sessions were conducted.
Action 4: Innovative Teaching Learning Methodology like flipped class was implemented to nurture the teamwork of students in respective courses.</td></tr>
<tr><td colspan="4">PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.</td></tr>
<tr><td>PO10</td><td>2.46</td><td>2.55</td><td>Target is achieved
Mock Interview sessions were conducted for students through ETeSA activities.
Students drafted their project reports using LaTeX.
Aptitude training sessions were conducted for enhancing verbal and nonverbal skills of the students.
Through Employability skill development communication improved.</td></tr>
<tr><td colspan="4">Action1: Courses like Employability Skill Development, Employability Skills and Mini Project are part of the curriculum to foster the students on effective communication.
Action 2:Personal Interview sessions were conducted through student club ETeSA.
Action 3: Quantitative, Reasoning Skills and verbal / written etiquettes, GD/PI sessions were conducted periodically by the T&P Cell.
Action 4: To improve presentation skills students were encouraged to participate in national & international conferences.
Action 5: One day Seminar on Communication Skills was conducted for TE students.</td></tr>
<tr><td colspan="4">PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.</td></tr>
<tr><td>PO11</td><td>2.13</td><td>2.59</td><td>Target is achieved
The case studies were taken from the students on financial management and project management through the course Business Management and Electronic Product Design .
Students submitted estimated cost relevant to their project along with synopsis.</td></tr>
</table>

			➢ Students managed the finance during technical and non–technical events.
Action 1: Students were skilled in Project Management through the courses like Project Based Learning, Mini project and Major Project. Action 2: Students were directed to exhibit their projects with detailed cost analysis report during final project presentation. Action 3: Students were encouraged to do the cost analysis report for various events conducted by professional bodies and students association. Action 4: A case study on Bill of material was carried out in the final year course Electronic Product Design.			
PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.			
PO12	1.95	2.20	**Target is achieved** ➢ Self learning modules through NPTEL were introduced to the students for inculcating the spirit of continuing education. ➢ Students undergone industrial training and internships. ➢ Co-curricular activities and industrial visits were conducted to impart the life-long learning. ➢ Various hands on workshops and industry expert lectures were arranged to do hands on and live experiences were shared by industry experts.
Action 1: Self learning modules through NPTEL, FOSS and Coursera were introduced to the students for inculcating the spirit of Continuing education. Action 2: Around 80 students undergone Industrial Trainings and Internships in reputed industries like A. I. Analytics, Aakrutii Technology, PMS Robotics Research Centre, ATC Technologies Inc, Kalptech Solutions Pvt. Ltd., Internshala, L&T Electrical & Automation, SKADA Technologies etc. Action 3: Industrial visits were organized at All India Radio, Shivajinagar, TIFR, Mumbai, GMRT, Junnar, Doordarshan, Varali-Mumbai etc. for all the classes. Action 4: Awareness on latest technologies will be created through expert lectures such as VLSI: Challenges & Opportunities, Upcoming features in Artificial intelligence.			

<table>
<tr><td colspan="4">PSO1: Graduate will be able to identify, design, prototype and test electronics and communication systems using software and hardware tools.</td></tr>
<tr><td>PSO1</td><td>2.25</td><td>2.30</td><td>Target is achieved
Students developed prototype models in the courses like PBL, Mini project, Mechatronics, Power Electronics.
PCB lab has been developed to strengthen the PSO1.
Product development workshop on design of AVR development board , Two days hands-on workshop on Arduino was conducted for SE students.</td></tr>
<tr><td colspan="4">Action 1: Project based learning is introduced for SE and TE classes to under which students identify design, manufacture prototype model and test it.
Action 2:Hands-on workshops like PCB design, antenna design and fabrication, industrial approach to electronics, raspberry pi with IOT, machine learning using python, latex for research paper writing were conducted for the students to build the projects.
Action 3: Industrial visit and industry expert lectures were organized to guide the students to identify the recent trends and gaps in the electronics and communication systems.</td></tr>
<tr><td colspan="4">PSO2: Graduate will be able to develop and support systems based on embedded, automation, microwave, signal and image processing.</td></tr>
<tr><td>PSO2</td><td>2.39</td><td>2.40</td><td>Target is achieved
Project based learning was introduced for FE, SE and TE students to familiarize with design concepts.
Hands-on workshop on “design issues of SMPS”, “Advanced Embedded Linux for industry use” and “Recent Trends in VLSI design and verification technology using EDA tools” conducted for students.
In the courses like PBL, Mini project, BE project students have developed systems based on embedded, signal and image processing.</td></tr>
<tr><td colspan="4">Action 1: Project based learning was introduced for SE, TE students to familiarize with design concepts.
Action 2: Students were motivated to select industry sponsored projects in embedded, automation, microwave and signal processing based industries.</td></tr>
</table>

Action 3: Students were motivated to do special projects other than curriculum like smart lift, electric bicycle, biometric operated bike, smart cylinder trolley, automatic curtain movement for inaugural function etc. Action 4: Final year projects were allotted as Embedded system-18 students, automation-18 students, microwave-06 students, signal and image processing-36 students.

Table B 7.1c: POs and PSOs Attainment Levels of 2019-20 Batch and Actions for Improvement in 2020-21 Batch

POs	Target Level	Attainment Level	Observations
PO1:Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.			
PO1	2.83	2.64	**93.2% target Achieved** ➢ Animated videos were shown for the topics like basics of transmission Lines, working of timer, display devices Like OLED, TFT and digcam. ➢ Innovative pedagogies were used by the faculties to make numerical and analytical courses interesting. ➢ Additional efforts were taken for lateral entry students to clear the fundamental of mathematics to solve complex engineering problems.
Action 1: Animated videos were shown for different topics. Action 2: Innovative pedagogies were used by the faculties to make numerical and analytical based courses interesting. Action 3: Additional efforts were taken for lateral entry students to clear the fundamental of mathematics to solve complex engineering problems. Action 4: Webinar on The interplay between Science, Technology, Engineering & Mathematics was conducted for all students.			
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.			
PO2	2.35	2.36	**Target is achieved** ➢ Television Fault Finding and Troubleshooting

			workshop was conducted for BE students. ➢ Aptitude training of 60 hours was conducted for TE students. ➢ Projects were assigned to group of 6 students under Project Based Learning (PBL) activity to develop skills on design of solutions.
Action 1: One Week Workshop On Machine Learning using Python **was** conducted for TE students. Action 2: Allowing students to visit industries to get practical exposure. Action 3: Encouraged to develop their attitude in problem solving ability through tutorial classes.			
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.			
PO3	2.25	2.27	**Target is achieved** ➢ Projects were assigned to group of 6 students from SE & TE under Project Based Learning (PBL) activity to develop skills on design of solution. ➢ Three days workshop on "Industrial Approach to Electronics" was conducted for SE students. ➢ Industrial Visit to GMRT, Narayangaon, Khodad was organized for TE students. ➢ Expert lecture on "ASIC Design and Challenges" was conducted for BE students. ➢ Students were participated in "Technovate" event for better grasp of real time problems so that they will be exposed to many design solutions.
Action 1: To enhance the programming skills students completed various certification courses by FOSS and Coursera . Action 2: Students were participated in "Technospark" event for better grasp of real time problems so that they will be exposed to many design solutions. Action 3: Webinar on Intellectual Property Rights (IPR) was Conducted for all students.			

<table>
<tr><td colspan="4">Action 4:Students are motivated to include all standard parameters and constraints according to National and International safety norms and to address environmental concerns.</td></tr>
<tr><td colspan="4">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.</td></tr>
<tr><td>PO4</td><td>2.25</td><td>2.27</td><td>Target is achieved
Technical events like PBL Poster presentation, CIPCIS, Techno spark etc were organized in order to develop skills on solving real world problems.
Case studies implemented through projects in Mechatronics course of TE class.
Students were directed to do literature survey for PBL, Mini, Major Projects and encouraged them to participate in institute level conference-UGCON, Project exhibitions and State, National and International level Conferences.</td></tr>
<tr><td colspan="4">Action 1: One week Drone Workshop was conducted to SE students.
Action 2: Workshop on “Circuit making using Eagle software” was conducted for TE students.
Action 3:Case studies implemented through projects in Mechatronics course of TE class.
Action 4: Industrial Visit to GMRT, Narayangaon, Khodad was organized for SE students.</td></tr>
<tr><td colspan="4">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.</td></tr>
<tr><td>PO5</td><td>2.34</td><td>2.34</td><td>Target is achieved
New matlab tools such as control system, signal processing, were added to perform simulation based experiments.
Hands-on workshops were conducted like PCB Design & Simulation, Latex for Thesis and Research Paper Writing, Raspberry pi with IOT, Machine learning using Python etc.
Project Based Learning activity was aligned to strengthen Modern tool usage like Scilab, Proteus,</td></tr>
</table>

			Express PCB. ➢ Around 80 students undergone Industrial Trainings and Internships in reputed industries like A. I. Analytics, Aakrutii Technology, PMS Robotics Research Centre, ATC Technologies Inc, Kalptech Solutions Pvt. Ltd., Internshala, L&T Electrical & Automation, SKADA Technologies etc. where students handled modern tools used in industries.
Action 1: New tools such as image processing toolbox, symbolic math tool box were added to perform simulation based experiments. Action 2: Industry Expert Lecture on Application of Deep Learning in Medical Image Processing was conducted for BE students. Action 3: Project Based Learning activity was aligned to strengthen Modern tool usage. Action 4: Around 30 students undergone virtual Internships in reputed industries like Anand Techno-Creations, Satara (Design of Sellable Electronics Products), PARC Robotic Systems Pvt. Ltd., CodeJin Software Solutions where students handled modern tools used in industries.			
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.			
PO6	2.34	2.39	**Target is achieved** ➢ Students are encouraged to participate in various societal activities like blood donation camp, tree plantation etc., through NSS and student's association (Electronics & Telecommunication students association) to understand problems in society. ➢ Students are advised to be members in professional bodies like IETE and IEEE to contribute to the need of society through the programs like Interactive Session on Health care, Hygiene and Sanitation, orphanage visit etc. ➢ Students were participated in the event TDCS-2019 under IEEE Pune section explaining about

			technologies for agriculture, food processing, rural development, health care, medical diagnosis etc. with emphasis on applications and benefits to the society.
Action 1:Students are encouraged to participate in various societal activities like blood donation camp, tree plantation etc., through NSS and student's association (Electronics & Telecommunication students association) to understand problems in society. Action 2: Industry expert lecture was conducted on High frequency circuit measurements for BE students. Action 3: Industry expert lecture was conducted on Design considerations of Electronic Products, Prototyping and testing, Preparation of bill of material for BE students. Action 4: Face shield to Fight against Covid 19 were prepared and distributed by students.			
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.			
PO7	2.28	2.33	**Target is achieved** ➢ Students were motivated to select their projects in which global and environmental issues are improved with respect to consumption of energy and utilization of renewable energy sources. (40% projects were based on environmental context in final year) ➢ Expert lecture on Awareness session on Radiation and Hazards was conducted for all the students. ➢ An audit course on Environmental issues and Disaster Management was selected to create environmental awareness ➢ Workshop on Antenna Design & Fabrication process was conducted fro BE students.
Action 1: Students were motivated to select their projects in which global and environmental issues are improved with respect to consumption of energy and utilization of renewable energy sources. Action 2: Sustainable Engineering is sensitized among students through group discussion and			

<table>
<tr><td colspan="4">debates.
Action 3: Guest Lecture on Practical Approaches in Transmission line at radio frequency was conducted for TE students.</td></tr>
<tr><td colspan="4">PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.</td></tr>
<tr><td>PO8</td><td>2.20</td><td>2.30</td><td>Target is achieved
Technical Society like IEEE was started to ensure Ethical practices in Engineering are discussed in detail.
Created awareness of plagiarism among the students and its effectiveness was carried out by providing Plagiarism checking software (Turnitin) facility for Major project.
Ethical principles to be followed in design and development of Electronic System have been inculcated into the activities like PBL, Mini and Major Projects.
Lecture on Humanity Ethics and Values was conducted for all the students under the audit course human behavior.</td></tr>
<tr><td colspan="4">Action 1: Webinar on “LATEX Technical Writing Software" was conducted for BE students.
Action 2: Guest Lecture on “Positive Attitude and Time Management” was conducted for BE students.
Action 3: An audit course on Human Behavior was selected to create environmental awareness.
Action 4: Industry expert lecture was conducted on Design considerations of Electronic Products, Prototyping and testing, Preparation of bill of material for BE students.</td></tr>
<tr><td colspan="4">PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.</td></tr>
<tr><td>PO9</td><td>2.40</td><td>2.15</td><td>89.5% Target achieved
Students are encouraged to carry out their projects as a team through activities like Project Based Learning, Mini project and Major Project.</td></tr>
</table>

			➢ Students are motivated to volunteer the events like Conferences, Technical Events, Professional body (IEEE) activities, Students association activities, NSS, Cultural and Sports activities. ➢ Innovative Teaching Learning Methodology like flipped class was implemented to nurture the teamwork of students in respective courses.
Action 1: An audit course on Team Building, Leadership and Fitness for Engineers was selected to create awareness about individual and team work. Action 2: Extempore, GD Sessions were conducted for TE Students to enhance individual and team performance skills. Action 4: Innovative Teaching Learning Methodology like flipped class was implemented to nurture the teamwork of students in respective courses. Action 5: Post-COVID19 Rehabilitation - Leveraging opportunities through technology intervention to improve society. IEEE students organized the 3 Days Virtual Hackathon.			
PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.			
PO10	2.55	2.56	**Target is achieved** ➢ Courses like Employability Skill Development, Employability Skills and Mini Project are part of the curriculum to foster the students on effective communication. ➢ Personal Interview sessions were conducted through student club ETeSA. ➢ The T&P Cell conducted Quantitative, Reasoning Skills and verbal / written etiquettes, GD/PI sessions periodically. ➢ To improve presentation skills students were encouraged to participate in national & international conferences. ➢ One day Seminar on Communication Skills was

<table>
<tr><td></td><td></td><td></td><td>conducted for TE students.</td></tr>
<tr><td colspan="4">Action1: Mock Interviews were conducted for TE students To develop confidence, technical knowledge and communication skills.
Action 2: Extempore, GD Sessions were conducted for TE Students to develop idea presentation skills and on the spot thinking skills.
Action 3: Session on Why and how to write good technical papers for BE students to develop paper-writing skills.
Action 4: Resume Making Webinar was conducted for BE students.
Action 5: Students are also trained on effective report writing, design documentation and Presentation through Project Based Learning, Mini project and Major Project.</td></tr>
<tr><td colspan="4">PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.</td></tr>
<tr><td>PO11</td><td>2.59</td><td>2.63</td><td>Target is achieved
Students were skilled in Project Management through the courses like Project Based Learning, Mini project and Major Project.
Students were directed to exhibit their projects with detailed cost analysis report during final project presentation.
Students were encouraged to do the cost analysis report for various events conducted by professional bodies and students association.
A case study on Bill of material was carried out in the final year course Electronic Product Design.</td></tr>
<tr><td colspan="4">Action 1: Industry expert lecture was conducted on Design considerations of Electronic Products, Prototyping and testing, Preparation of bill of material for BE students.
Action 2: Guest Lecture on “Positive Attitude and Time Management” was conducted for BE students.
Action 3: Expert session on Applying the principles of Financial Management and project Management for real life problems was conducted for TE students.
Action 4: Students were encouraged to do the cost analysis report for various events conducted by professional bodies and students association.</td></tr>
</table>

<table>
<tr><td colspan="4">PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.</td></tr>
<tr><td>PO12</td><td>2.20</td><td>2.20</td><td>Target is achieved
Self learning modules through NPTEL, FOSS, Coursera were introduced to the students for inculcating the spirit of Continuing education.
Around 80 students undergone Industrial Trainings and Internships in reputed industries like A.I. Analytics, Aakrutii Technology, PMS Robotics Research Centre, ATC Technologies Inc, Kalptech Solutions Pvt. Ltd., Internshala, L&T Electrical & Automation, SKADA Technologies etc.
Industrial visits were organized at All India Radio, Shivajinagar, TIFR, Mumbai, GMRT, Junnar, Doordarshan, Varali-Mumbai etc. for all the classes.
Awareness on latest technologies will be created through expert lectures such as VLSI: Challenges & Opportunities, Upcoming features in Artificial intelligence, ASIC Design & challenges etc.</td></tr>
<tr><td colspan="4">Action 1: Expert lectures on Industrial application of microcontrollers, Financial Management and project Management, Leading technology of Artificial Intelligence in industry, Implementation of Networks Security Protocol, Microelectronics : Advances and exciting career opportunities were conducted for BE students.
Action 2: Webinar on Entrepreneurship and its importance in decades ahead was conducted for all students.
Action 3:Webinar on BE+MBA – A winning Profile was conducted for all students.
Action 4:Webinar on Future of Higher Education was conducted for all students .</td></tr>
<tr><td colspan="4">PSO1: Graduate will be able to identify, design, prototype and test electronics and communication systems using software and hardware tools.</td></tr>
<tr><td>PSO1</td><td>2.30</td><td>2.32</td><td>Target is achieved
Project based learning is introduced for SE and TE classes to under which students identify design, manufacture prototype model and test it.
Hands-on workshops like PCB design, antenna</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td>design and fabrication, industrial approach to electronics, raspberry pi with IOT, machine learning using python, latex for research paper writing were conducted for the students to build the projects.
➢ Industrial visit and industry expert lectures were organized to guide the students to identify the recent trends and gaps in the electronics and communication systems.</td></tr>
<tr><td colspan="4">Action 1: Four days PCB Design & Simulation workshop was conducted for TE students.
Action 2:Two day’s 3D Printer workshop was conducted for all students.</td></tr>
<tr><td colspan="4">PSO2: Graduate will be able to develop and support systems based on embedded, automation, microwave, signal and image processing.</td></tr>
<tr><td>PSO2</td><td>2.40</td><td>2.41</td><td>Target is achieved
➢ Project based learning was introduced for SE, TE students to familiarize with design concepts.
➢ Students were motivated to select industry sponsored projects in embedded, automation, microwave and signal processing based industries.
➢ Students were motivated to do special projects other than curriculum like smart lift, automatic hand sanitizer with water dispenser, electric bicycle, biometric operated bike, smart cylinder trolley, automatic curtain movement for inaugural function etc.
➢ Final year projects were allotted as Embedded system-18 students, automation-18 students, microwave-06 students, signal and image processing-36 students.</td></tr>
<tr><td colspan="4">Action 1: Workshop on “Circuit making using Eagle software” was conducted for TE students.
Action 2.Two day’s 3D Printer workshop was conducted for all students.</td></tr>
</table>

7.2 Academic Audit and actions taken thereof during the period of Assessment (10)

Institute Marks 10

Academic audit is an essential scientific and systematic method of reviewing the quality of academics in the Institution. To conclude it efficaciously, the Institute has following audit system.

A). Academic Review and Audit:

We at Pimpri Chinchwad College of Engineering and Research Pune, strive for quality education through quality-oriented academics. For monitoring and evaluation of the institutional academic processes and its effective implementation, a structured system of academic review is constituted at the institute ensuring continual progress of academics.

The objectives of academic review system are:

1) To understand the strength and weakness of academic processes for improvement.
2) To identify the opportunities for academic reforms (Teaching Learning process)
3) To ensure effective implementation of
    - Teaching-Learning Processes (Excellent Quality Result)
    - Activity Based Learning.
    - Outcome Based Education (OBE)

Academic reviews are taken at different levels as shown in figure B.7.2a

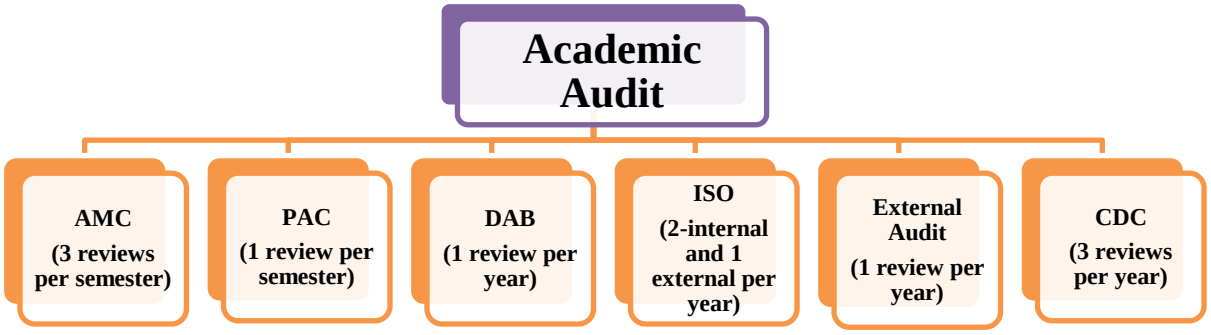


Figure B.7.2a Academic audit at different levels

AMC Committee:

To monitor the academic review and audit process a committee (AMC) is in place under principal and Institute Academic coordinator. Members of AMC are as shown in Table B.7.2a.

Table B.7.2a Members of Academic Monitoring and Control

Sr. No.	Designation	Position Held
1)	Principal	Chairman
2)	Academic Coordinator	AMC In-Charge
3)	HOD Comp	Member
4)	HOD E&Tc	Member
5)	HOD Mech	Member
6)	HOD Civil	Member
7)	HOD Applied Sciences (FE)	Member
8)	*DAC Comp	Member
9)	*DAC E&Tc	Member
10)	*DAC Mech	Member
11)	*DAC Civil	Member
12)	*DAC Applied Sciences (FE)	Member

**DAC – Departmental Academic Coordinators*

Academic Review:

1) **Internal Review:**

- **Periodicity:**

AMC conducts an Academic Reviews in presence of Institute Head (Principal). AMC conducts three academic reviews in a semester (i.e. six Academic review meetings in a year) to ensure smooth conduction of Teaching Learning process. Academic Reviews are conducted as per the schedule mentioned in the academic calendar.

- **Process of Academic Review:** Table B.7.2.b shows details of the process of academic review.

Table B.7.2b : Process of Academic Review

Institute Level		
Sr. No.	**Activity**	**Authorities**
01	Plan department wise Academic Review Meeting as per academic calendar.	Academic Coordinator
02	Discuss and Finalize the agenda of the Academic Review meeting with the Principal.	Academic Coordinator
03	Share the agenda and schedule of Academic Review meeting to Department and other sections	Academic Coordinator
04	Arrange and conduct Academic Review meetings as per schedule and inform to higher authorities	Academic Coordinator, HOD
05	Present department academic progress as per agenda to principal. In case of Non-conformities discuss action plan and period for closing.	HOD
06	Prepare MOM of Meeting and share to department faculties, academic coordinator and other sections.	HOD
Academic Review meetings of Department academic activities as per academic calendar:		
Sr.	**Activity**	**Authorities**

No.		
01	**Plan:** To review preparation of academic planning and implementation Strategies.	Academic Coordinator
02	**Do & Check:** ARM-I to review Academic Progress as per academic calendar in presence of all department faculty members.	DAC, Academic Coordinator
03	**Do & Check:** ARM-II to review Academic Progress (Attendance, Internal Test Performance, SPPU Exam result & Action plans etc), observations in Teaching Learning Process and Feedback -I as per academic calendar in presence of all department Faculties.	DAC, Academic Coordinator
04	**Check & Act:** ARM-III to review Academic Progress status, remedial action, Feedback -II in presence of all department faculty members.	DAC, Academic Coordinator
05	To review overall performance of department during semester & Academic Progress, and preparation of action plan for coming semester.	Academic Coordinator

2) External Review:

Periodicity: Once in year

External Academic audit is conducted by academicians from other institutes to assess Teaching Learning process/activities and its implementation and the findings of internal academic review committee (ARC).

B) Program Assessment Committee (PAC):

Periodicity: Twice in year

PAC includes head of the departments, DAC, module coordinators and senior faculties from department. PAC supports for implementation of OBE into the department inline to vision mission of department.

Following point are discussed in PAC:

1) Prerequisite of subjects
2) Correctness of Course Outcome statements and mapping with POs/PSOs.
3) Gap analysis
4) Content Beyond syllabus
5) CO attainment

6) Target setting for course
7) Result analysis
8) Response/suggestions from stakeholder
9) Action plans and implementation strategy.

C) Departmental Advisory Board (DAB):

Periodicity: Once in a year.
DAB includes representatives from industry, academics, alumni, student's representative, Head of department and faculty representative under chairmanship of Principal. DAB reviews a report submitted by PAC further gives suggestion to sustain and improve the quality of academics.

D) CDC (College Development Committee):

Periodicity: Twice in year
As per the Maharashtra Public Universities Act 2016, Section 97, the College Development Committee is formed at the Institute. Chairman and members of Trusty Board chair the CDC. CDC reviews the progress thus far and guide to prepare an overall comprehensive development plan of the Institute regarding academic, administrative and infrastructural growth CDC facilitates the Institute to foster excellence in curricular, co-curricular and extracurricular activities.
CDC reviews the academic performance of the students in every semester. The results of internal and external examinations are reviewed. CDC makes specific recommendations to the management to encourage and strengthen research culture, consultancy and add-on activities in the Institute. Training and Placement activities of the students are reviewed in CDC. Measures are suggested to improve the placements. To enhance the teaching learning process, CDC take care of faculty development in all regards.

In addition to above academic Review and audit process, we have implemented ISO audit 9001:2015 to monitor and control the academic processes.

E) ISO:

Periodicity: Once in year
An academic audit is conducted as per ISO 9001:2015 standards in order to monitor and evaluate the teaching learning process. It consists of internal audits and external audit. Audits are conducted for teaching processes, laboratory maintenance and departmental activities. All academic and administrative processes are executed strictly according to rules and regulations of ISO 9001:2015.
The audit is carried out by the ISO committee appointed by the institute. All the documents

related to conduction of lectures, practical and tutorials are verified. The laboratory related files are also checked. All other important files like project coordinator file, class Teacher file and result analysis file are prepared by respective coordinators and checked during audit. The suggestions from the academic audit committee are noted and implemented. Final compliance report of academic audit is also prepared which is again verified by ISO coordinator. Thus, during audit, the performance of academic practices and procedures are verified and confirmed.

Progressive Outcomes: Table B.7.2c shows details of the progressive outcomes of the department.

Table B.7.2c: Progressive outcomes of the department

Sr. No.	Outcomes	2020-21	2019-20	2018-19	2017-18
01	Quantitative results of university examination.	**100%**	**82.09%**	**87.17%**	**73.31%**
02	Qualitative results of university examination.	**100%**	**95.81%**	**85.02%**	**86.18%**
03	Number of students in university rank list	-	-	1	-
04	% eligible number of students for campus placements (Cumulative 60% and above)	**82.89%**	**68.18%**	**66.10%**	**56.81%**
05	Feedback and suggestions received related to academic (Students satisfaction)	**88.33 %**	**86.26%**	**83.56%**	**81.3%**

7.3 Improvement in Placement, Higher Studies and Entrepreneurship (10)

Institute Marks 7

Details of the students Placement:

Details of the students placement are given in table B.7.3a and graph for the students placement and average salary is shown in figure B.7.3a and figure B.7.3b respectively for three assessment years.

Table B.7.3a: Students placement details for three assessment years

Academic Year	Placement				
	Total no. of students	Number of Students Placed	% of students placed	% of Quality Placement	Average Salary(LPA)
2017-18	44	36	81.81	33.33	2.25
2018-19	59	47	79.66	36.36	3.10

2019-20	65	52	80	37.12	3.78

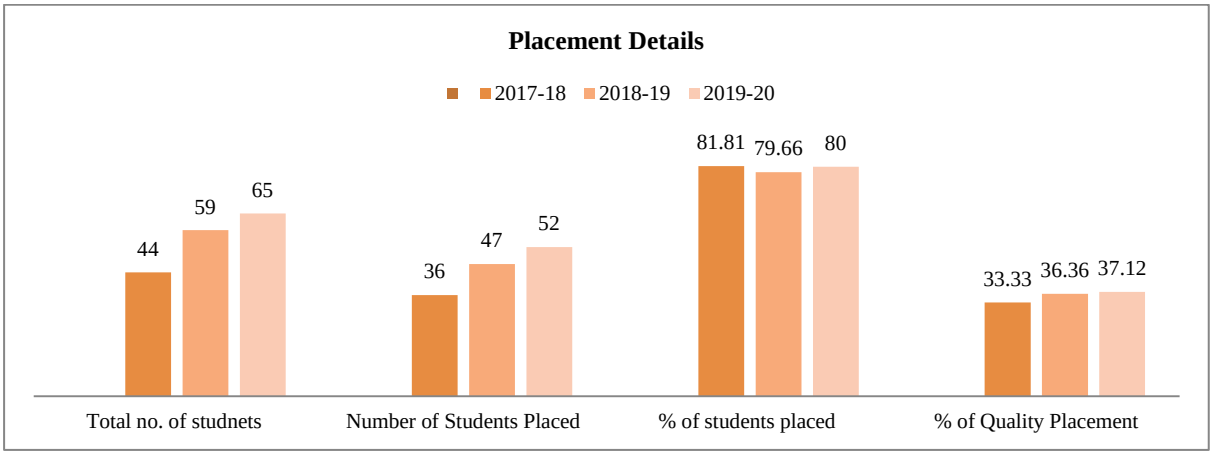


Figure B 7.3a: Graph of student placement details

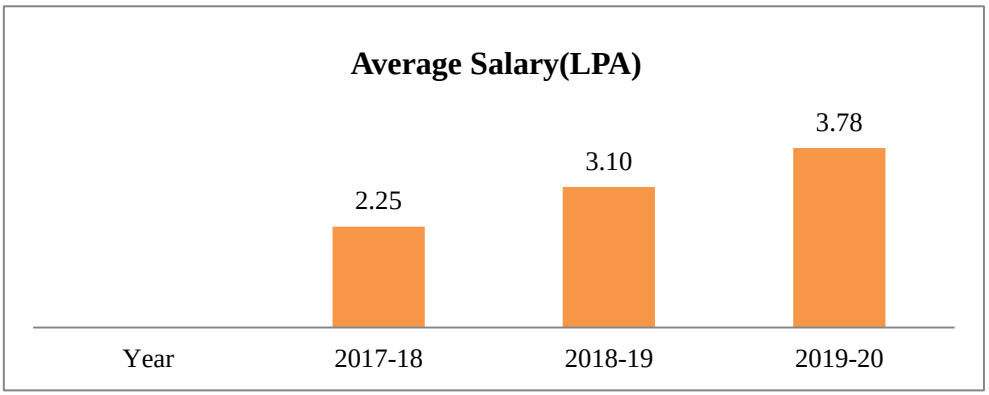


Figure B 7.3b: Graph of average salary in Lakhs per Annum

The below mentioned table represents the list of industries visited the campus during the assessment year.

Table B.7.3b: Industries visited the campus for Placement

Sr. No.	Recruiters	No. of student placed
Batch (2014-2018)		
1	L&T Infotech	1
2	UL Control System Pvt. Ltd.	1
3	Tata Motors Limited	1
4	Wipro Limited	2
5	Schindler India Pvt. Ltd	1
6	Nextstep Technologies Pvt. Ltd.	1
7	Nexsel Tech Pvt. Ltd.	1
8	Tata communications Ltd.	3

9	Standard Capacitors	2
10	Tech mahindra	1
11	Amazon	2
12	Accenture	2
13	Masstrans Technologiies Pvt.Ltd.	3
14	Shini plastics Pvt.Ltd	1
15	Capgemini	2
16	Amphenol Interconnect India	1
17	Mindtree	1
18	Fujitsu	1
19	Silicus Technologies	1
20	Reliance Resq Industries Ltd.	1
21	Jabil Circuits India Pvt Ltd.	1
22	Rudder Analytics	1
23	HCL	1
24	Flextronics Technologies Pvt. Ltd	1
25	JBM	1
26	Parametric Instruments	1
27	Renu Electronics	1
Batch (2015-2019)		
1	Esston Technology Pvt. Ltd.	3
2	Fiserv	1
3	Tata Consultancy Services	4
4	Capgemini	10
5	L&T InfoTech	3
6	Allstate solutions Pvt. Ltd	1
7	Flextronics Technologies Pvt. Ltd	1
8	Birla soft	1
9	Tech Mahindra	1
10	Tata Communications ltd.	2
11	Amazon development center	2
12	Amdocs development center india	1
13	Vanderlande	1
14	Minilec India Pvt.Ltd.	1
15	Bombardier	1
16	Precient Automation	1
17	Q Conneqt Business Solutions Ltd.	3
18	RCV Innovation	1
19	Safalya Technologies	1
20	ATOS Global IT solutions and services pvt ltd.	1
21	Hexaware	1
22	IBM	1
23	Ladera Technology Private Limited	1
24	Amol Electricals	1
25	Wipro	1

26	Cybage	1
27	ATOS	1
	Batch(2016-2020)	
1	Quantiphi	3
2	Jampot Technologies Pvt. Ltd.	1
3	TCS	8
4	Infosys	2
5	EXFO Electro optical engg india pvt ltd	2
6	Byjus	2
7	CAPGEMINI	8
8	Schlumberger	1
9	Tudip Technologies	1
10	Knorr Bremse	1
11	Quality kiosk	1
12	IBM	1
13	Birla soft	3
14	Tetra Pak India	1
15	Accenture	1
16	EVINCERE SOFTWARE SOLUTIONS Pvt.Ltd	1
17	Wipro	1
18	Expleo Group	1
19	Amazon	2
20	DXC Technology	2
21	Maharashtra state electricity distribution co. Ltd	1
22	Tata Communications Ltd.	1
23	New Vision Software	1
24	NVIDIA	2
25	TUV NORD India Pvt. Ltd.	1
26	HYT Engineering company Pvt.Ltd.	1
27	Eaton Technologies Pvt.Ltd.	1
28	Dassult systems solution lab pvt.ltd.	1

Details of the student's higher studies:

Higher studies enrollment details are given in table B.7.3c, graph for number of students admitted to higher studies is shown in figure B 7.3c and details of higher studies admission in premier institutions are given in table B.7.3d.

Table B.7.3c: Higher studies enrollment details

Sr. No.	Academic Year	Strength of the students	No. of students admitted to higher studies
1	2017-18	44	2

2	2018-19	59	2
3	2019-20	65	5

Details of Higher Studies Admission in Premier Institutions:

Table B.7.3d: Details of Higher Studies Admission in Premier Institutions

Sr. No.	Name of Student	Post-Graduation Degree	Name of Institution	Year
1	Ashwini Mahadeo Auti	MBA	Dr. D. Y. Patil Institute of Management & Studies, Pune	2017-18
2	Manasi Ganesh Dandker	ME (E&TC)	PCET's Pimpri Chinchwad College of Engineering , Akurdi	
1	Kalbhor Yuga Dnyaneshwar	MSc (Entrepreneurship)	University of Reading,Whiteknights, UK	2018-19
2	Pagar Shubham Bandu	MBA	D.Y. Patil Institute of Master of Computer Applications and Management, Nigdi	
1	Deshmukh Mrunal Anand	MBA	Pimpri Chinchwad Education Trust's S.B. Patil Institute of Management, Nigdi, Pune	2019-20
2	Neha Chavan	MBA	Symbiosis International Univeristy	
3	Patil Hrishikesh Hemant	MBA	D Y Patil college of management & studies, Pimpri	
4	Tekode Shivam Shankar	M. Tech	Nagpur University	
5	Anagha Nawale	MS (Embedded Systems)	Albert Ludwings university, Freiburg	

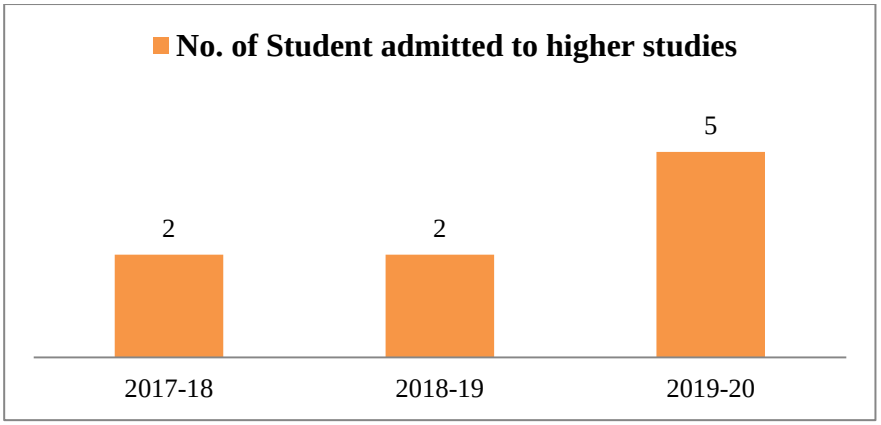


Figure B 7.3c: Graph of number of students admitted to higher studies

Details of the Entrepreneur:

Number of entrepreneurs for three assessment years are given in table B.7.3e, graph of number of students turned entrepreneurs is shown in figure B 7.3d and entrepreneurs details for three assessment years are given in table B.7.3f.

Table B.7.3e: Number of entrepreneurs for three assessment years

Sr. No.	Academic Year	Strength of the students	No. of students turned Entrepreneurs
1	2017-18	44	0
2	2018-19	59	3
3	2019-20	65	2

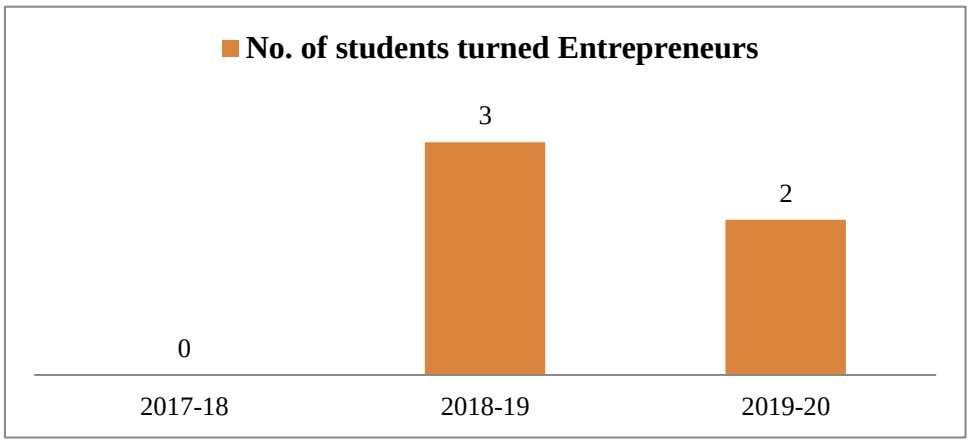


Figure B 7.3d: Graph of number of students turned entrepreneurs

Table B.7.3f Entrepreneurs details for three assessment years

Sr. No.	Year	Registration No	Name of Student	Name of Firm	Nature of Work
1	2018-19	105023801903	Kukkar Priyanshu Ramgopal	ECOZ BOLT	Manufacturing of electric-bicycle
2		105023801903	Pawar Mahesh Ananda		
3		107972251903	Patil Sanket Manoj	NEOTERIC MEDIAWORKS	Photography and other related work
1	2019-20	104313542103	Rudrapratapsingh Bhatti	Vrudra Electronics	LED bulb manufacturing
2		104313542103	Tushar Hande		

7.4. Improvement in the quality of students admitted to the program (10)

Institute Marks 10

Assessment was based on improvement in terms of ranks/score in qualifying state level/national level entrances tests, percentage marks in Physics, Chemistry and Mathematics in 12th Standard and percentage marks of the lateral entry students. The opening and Closing rank, the number of students admitted as shown in Table 7.4.a.

Table B 7.4a: Details of the students admitted maximum and minimum marks.

Item		CAY (2020-21)	CAYm1 (2019-20)	CAYm2 (2018-19)	CAYm3 (2017-18)
National Level Entrance Examination (JEE)	No. of Students admitted	8	7	9	6
	Opening Score/Rank	88.29/5839	92.21/5645	73/7657	71/10253
	Closing Score/Rank	85.01/8146	87.21/9712	53/15009	56/16410
State/University/Level Entrance Examination/Others (MH-CET)	No. of Students admitted	57	63	49	47
	Opening Score/Rank	93.02/10053	94.09 / 12525	116 / 10097	105 / 15739
	Closing Score/Rank	54.62/55659	25.04/68689	59 / 71142	56 /89017
Name of the Entrance Examination for Lateral Entry or lateral entry details(DSE)	No. of Students admitted	10	12	20	23
	Opening Score/Rank	90.76 / 4668	85.53 / 4048	87.59/2078	86.41 /2932
	Closing Score/Rank	80.24/25489	76.41 /15019	68.35 /33296	60.00 /62082
Average CBSE/Any other Board Result of admitted students (Physics, Chemistry &Mathematics)		68.11%	63%	69%	64%

Table B 7.4a: Details of the students admitted maximum and minimum marks (Considering open category only).

Item		CAY (2020-21)	CAY (2019-20)	CAYm1 (2018-19)	CAYm2 (2017-18)
National Level Entrance Examination (JEE)	No. of Students admitted	8	7	9	6
	Opening Score/Rank	88.29/5839	92.21/5645	73/7657	71/10253
	Closing Score/Rank	85.01/8146	87.21/9712	53/15009	56/16410
State/University/Level Entrance Examination/Others (MH-CET)	No. of Students admitted	57	63	49	47
	Opening Score/Rank	93.02/10053	94.09 / 12525	116 / 10097	105 / 15739
	Closing Score/Rank	87.51/18160	87.81/ 23384	97/ 19434	97/20650
Name of the Entrance Examination for Lateral Entry or lateral entry details(DSE)	No. of Students admitted	10	12	20	23
	Opening Score/Rank	90.29 / 5287	85.53 / 4048	87.59/2078	86.41 /2932
	Closing Score/Rank	88.47/8065	81.24/8471	80.06 /10208	81.35 /8905
Average CBSE/Any other Board Result of admitted students (Physics, Chemistry &Mathematics)		68.11%	63%	69%	64%

CRITERION - 8	FIRST YEAR ACADEMICS	50

Total Marks 43

Institute Marks 5

8.1 First Year Student-Faculty Ratio (FYSFR) (05)

Sr. No	Name of faculty member	PAN No.	Qualification	Date of Receiving Highest Degree	Area of Specialization	Design	Date of Joining	A.Y.2020-21	CAY 2019-20	CAYm1 2018-19	CAYm2 2017-18	Currently Associated (Yes/No)	Nature of Association (Regular / Contract)	Date of Leaving (In Case Currently Associated is 'NO')
1	Sonali Kedar Kanase	AAWPY4952H	M.E.	24/12/2008	Electrical Power Systems	ASST. PROF	07/08/2014	0	55	100	100	Yes	Regular	On leave
2	Shital Anant Patil	AQLPP0378H	M.Sc., N.E.T.	19/08/2003	Mathematics	ASST. PROF	21/07/2014	100	100	94	87	Yes	Regular	
3	Manisha Hemant Deshpande	AOCPD6852M	M.Sc., N.E.T.	12/07/2004	Mathematics	ASST. PROF	01/08/2014	100	100	100	100	Yes	Regular	
4	Mahesh Madhukar Sarada	CDZPS9775E	M.TECH	15/06/2010	Industrial Mathematics with computer applications	ASST. PROF	15/06/2015	53	50	54	40	Yes	Regular	
5	Sachin Laxman Varpe	AGUPV9728L	M.Sc.	20/07/2011	Mathematics	ASST. PROF	01/08/2016	0	3	6	10	Yes	Regular	

6	Priya Balkrishna Oghe	AAMPO3978P	M.Sc.	10/08/2006	Physics	ASST. PROF	21/07/2014	100	100	100	100	Yes	Regular	
7	Sandeep Shripad Borgoankar	AWEPB8699J	M.Sc., N.E.T.	28/01/2008	Physics	ASST. PROF	21/07/2014	100	100	100	100	Yes	Regular	
8	Dr.Rupesh-kumar Nilkanth Patil	AQIPP1031E	M.Sc., Ph.D.	28/01/2006	Chemistry	ASST. PROF	01/08/2014	100	100	100	100	Yes	Regular	
9	Tushar Balkrishna Gaikwad	AQLPG8889L	M.Sc.	23/07/2004	Organic Chemistry	ASST. PROF	21/07/2014	100	100	100	100	Yes	Regular	
10	Anant Sidhappa Kurhade	BCTPK6657B	M.E.	02/07/2015	Mechanical, Heat Power	ASST. PROF	15/07/2016	0	56	67	58	Yes	Regular	
11	Vijay Pandurang Desai	AWHPD6332M	M.E.	12/08/2013	Mechanical, Heat Power	ASST. PROF	01/08/2014	0	27	33	41	Yes	Regular	
12	Tejal Swapnil Patil	ADEPW5101B	M.TECH	01/08/2013	Heat and Power Engineering	ASST. PROF	20/07/2017	0	70	50	95	Yes	Regular	
13	Jayesh Vijay Bute	AXNPB1325K	M.TECH	13/05/2016	Mechanical, Heat Power Engineering	ASST. PROF	12/06/2017	0	0	23	24	No	Regular	31/07/2021
14	Priyanka ramdas Chavan	ATIPC0748A	M.E.	26/11/2015	Mechanical, Heat Power	ASST. PROF	15/06/2016	100	76	40	13	Yes	Regular	
15	Deepak Devidas Biradar	ANSPB0495M	M.E.	29/10/2014	Heat Power	ASST. PROF	16/01/2015	0	0	20	6	Yes	Regular	

16	Jayashri Vitthal Chopade	AXTPC1633K	M.TECH	08/06/2014	CAD/CAM	ASST. PROF	15/06/2015	80	27	18	12	Yes	Regular	
17	Kiran Shridhar Joshi	AEDPJ7089K	M.E.	22/3/2007	Machine Design	ASST. PROF	13/06/2016	0	0	0	50	No	Regular	28/02/2018
18	Aniket Gajanan Bhor	BFRPB6738R	M.E.	01/08/2015	Renewable Energy	ASST. PROF	11/12/2017	0	0	29	100	No	Regular	31/05/2019
19	Achyut Digambar Khare	ABPPK2724F	M.E.	24/2/2015	CAD/CAM/CAE	ASST. PROF	13/06/2016	21	0	0	6	Yes	Regular	
20	Aniket Shirish Deshmukh	AYPPD8671B	M.TECH	04/08/2016	CAD/CAM	ASST. PROF	12/06/2017	0	0	15	6	NO	Regular	30-04-21
21	Rahul Krishnaji Bawane	AQIPB4862B	M.E.	22/09/2014	Mechanical Heat Power	ASST. PROF	23/12/2014	0	0	58		Yes	Regular	
22	Ganesh Mahadev Fodase	ABGPF3451M	M.E.	17/10/2014	Mechanical Design Engineering	ASST. PROF	22/6/2016	0	0	19		Yes	Regular	
23	Rupali Manoj Patil	CBVPP0963R	M.E.	17/10/2014	Mechanical Heat Power	ASST. PROF	12/06/2017	0	24	20		Yes	Regular	
24	Pradeep Ravindra Gaikwad	AVGPG1187P	M.E.	31/07/2012	Mechanical Engineering	ASST. PROF	05/08/2014	100	14	13		Yes	Regular	
25	Deepshikha Shrivastava	DMNPS1615J	M.TECH	07/12/2013	Electrical Control Systems	ASST. PROF	26/07/2014	100	100	76	73	Yes	Regular	

26	Amita Anandarao Mane	CQNPM9781M	M.E.	26/11/2015	Electrical Power Systems	ASST. PROF	14/01/2020	100	100	0		Yes	Contractual	
27	Snehal Rushikesh Pawar	AUUPB1399K	M.E.	17/12/2012	Electronics & Telecommuni-cation VLSI and embedded system	ASST. PROF	17/07/2017	0	0	0	100	No	Regular	31/05/2018
28	Vijayalaxmi Sandeep Kumbhar	BDXPK5629L	M.E.	08/01/2015	Electronics & Telecommunication VLSI and embedded system	ASST. PROF	12/06/2015	0	0	0	47	Yes	Regular	
29	Dipali Nilesh Dhake	AZYPP3639B	M.E.	18/7/2014	Electronics & Telecommunication Signal Processing	ASST. PROF	15/12/2017	0	6	33	20	Yes	Regular	
30	Rupali Ramdas Kawade	BJWPK5508F	M.E.	06/05/2013	Electronics-Digital Systems	ASST. PROF	20/06/2016	16	0	20		Yes	Regular	
31	Maithili Shailesh Andhare	AQCPA7127N	M.E.	20/07/2010	Electronics-Digital systems	ASST. PROF	01/07/2015	0	24	46		Yes	Regular	
32	Triveni Deepak Dhamale	ATJPD9415G	M.E.	17/12/2012	Electronics & Telecommunication VLSI & Embedded Systems	ASST. PROF	13/06/2016	0	0	18		Yes	Regular	
33	Rahul sopan Parbat	CUPPP0339C	M.E.	26/11/2015	Electronics & Telecommunication Microwave Engineering	ASST. PROF	17/12/2018	0	56	25		Yes	Regular	On Study leave

34	Santosh Nagnath Randive	AUCPR5536N	M.TECH	30/7/2012	Electronics Engineering	ASST. PROF	16/6/2015	24	0	12		Yes	Regular	
35	Kiran Malhari Napte	AFIPN6353C	M.E.	20/11/2014	Electronics & Telecommunication VLSI & Embedded Systems	ASST. PROF	13/06/2016	0	50	0	6	Yes	Regular	
36	Kishor Wane	ABAPW4679G	M.E.	28/11/2014	Electronics & Telecommunication VLSI & Embedded Systems	ASST. PROF	21/06/2016	21	0	0		Yes	Regular	
37	Kishor Bhangale	AYFPB5691K	M.E.	30/10/2014	Electronics & Telecommunication VLSI & Embedded Systems	ASST. PROF	11/01/2021	65	0	0		Yes	Regular	
38	Arti Avinash. Tekade	AHQPT3244A	M.E.	20/5/2015	Electronics-Digital systems	ASST. PROF	15/06/2016	0	18	0	17	Yes	Regular	
39	Aniket Diliprao Patil	CGGPP0119K	M.E.	20/10/2016	Civil - Structural Engineering	ASST. PROF	26/07/2017	0	0	0	100	No	Regular	03-05-18
40	Gajanan Namdeo Supe	EBBPS1529C	M.E.	26/11/2015	Civil Environmental Engineering	ASST. PROF	27/6/2017	0	0	0	83	No	Regular	31/5/2018
41	Gajanan Namdeo. Supe	EBBPS1529C	M.E.	26/11/2015	Civil Environmental Engineering	ASST. PROF	01/08/2019	17	22	0		Yes	Regular	
42	Pranjali Arun Chiwhane	AUFPC0859C	M.E.	10/10/2014	Civil Environmental Engineering	ASST. PROF	01/07/2015	0	0	0	21	No	Regular	31/05/2018

43	Vijay kallappa Wandre	ABQPW3131K	M.TECH	30/07/2014	Civil Structural Engineering	ASST. PROF	25/08/2014	0	11	49	17	No	Regular	30/5/2020
44	Priyanka Ravindra Dhumal	BEXPD7992A	M.E.	14/8/2014	Water Resources and Environmental Engineering	ASST. PROF	15/06/2015	0	0	0	24	No	Regular	31/05/2018
45	Amar Devendra Shitole	CHZPS8170B	M.E.	09/12/2014	Civil Structural Engineering	ASST. PROF	15/06/2016	0	28	68	19	Yes	Regular	
46	Sandeep Vinayakrao Wani	ACHPW8434H	M.E.	02/06/2014	Civil structural Engineering	ASST. PROF	12/06/2017	0	44	53	53	No	Regular	30/09/2019
47	Akash Gangadhar Gunjal	BQRPG7185A	M.E.	10/10/2017	Civil Structural Engineering	ASST. PROF	18/12/2017	100	100	11	40	Yes	Regular	
48	Nidhi Khare	BUNPK3460Q	M.E.	21/01/2014	Civil Water Resources Engineering	ASST. PROF	13/06/2017	0	0	0	11	Yes	Regular	
49	Satish Avaba Pitake	BEHPP8590Q	M.TECH	25/06/2013	Civil Construction Management	ASST. PROF	01/01/2018	29	46	67		Yes	Regular	
50	Rahul Shahaji Patil	ALMPP7229F	M.E.	24/02/2010	Civil Construction & Management	ASST. PROF	23/07/2018	0	14	32		Yes	Regular	
51	Dr. Sameer Subhash Sawarkar	AEEPS5776F	ME/ M.Tech., Ph.D.	12/08/2017	Civil Structural Engineering	ASSO. PROF	25/07/2018	21	24	22		Yes	Regular	
52	Sahil Salvi	DNRPS4088B	M.Tech.	20/07/2017	Environmental and Water Resources Engineering	ASST. PROF	04/03/2021	29	0	0		Yes	Regular	

53	Mayura Milind Yeole	ABTPY4841K	M.E.	02/12/2011	Civil Construction & Management	ASST. PROF	01/08/2014	19	6	11		Yes	Regular	
54	Amol Narayan Dumbare	ARVPD3809Q	M.TECH	28/11/2015	Computer science and Engineering	ASST. PROF	18/07/2016	100	89	100	100	Yes	Regular	
55	Vaishali Prasad Latke	AFLPL9293E	M.E.	24/11/2014	COMPUTER ENGG	ASST. PROF	20/07/2017	33	55	100	100	Yes	Regular	
56	Dr Jyothi Ramesh Pai	BBRPP3658Q	M.A and Ph.D.	30/12/2016	English-Language and Literature	ASST. PROF	01/08/2018	31	100	100	0	Yes	Contractual	
57	Nandakumar vele	AJUPV2452L	M.E.	24/10/2013	PRODUCTION Engineering	ASST. PROF	15/06/2015	48	100	100	100	Yes	Regular	

Table: B.8.1 First Year Student-Faculty Ratio

Year	Number of students (approved intake strength)	Number of faculty members (Considering fractional workload)	FYSFR	*Assessment = $\frac{5*20}{\text{FYSFR}}$ (Limited to Max.5)
CAY 2020-21	300	16.28	18.43	5.43
CAYm1 2019-20	300	17.95	16.71	5.98
CAY m2 2018-19	300	19.01	15.78	6.34
Average				**5.92**

Year	Number of students (approved intake strength)	Number of faculty members (Considering fractional workload)	FYSFR	*Assessment = $\frac{5*20}{\text{FYSFR}}$ (Limited to Max.5)
CAY 2019-20	300	17.95	16.71	5.98
CAYm1 2018-19	300	19.01	15.78	6.34
CAY m2 2017-18	300	19.79	15.16	6.60
Average				**6.31**

8.2 Qualification of Faculty Teaching First Year Common Courses (5)

Institute Marks 3.80

Assessment of qualification = (5x +3y)/RF, x = Number of Regular Faculty with Ph.D., y = Number of Regular Faculty with Post-graduate qualification, RF = Number of faculty members required as per SFR of 20:1, Faculty definition as defined in 5.1

Table: B.8.2. Qualification of Faculty Teaching First Year Common Courses

Year	X	Y	RF	Assessment of faculty qualification $= \frac{5x + 3y}{RF}$
CAY 2020-21	2	14	15	3.47
CAYm1 2019-20	2	16	15	3.87
CAY m2 2018-19	2	17	15	4.07
Average Assessment				**3.80**

Year	X	Y	RF	Assessment of faculty qualification $= \frac{5x + 3y}{RF}$
CAY 2019-20	2	16	15	3.87
CAYm1 2018-19	2	17	15	4.07
CAY m2 2017-18	1	19	15	4.13
Average Assessment				**4.02**

Institute Marks 8.20

8.3 First year academic performance (10)

Academic Performance = ((Mean of 1stYear Grade Point Average of all successful Students on a 10-point scale) or (Mean of the Percentage of marks in First Year of all successful students/10)) x (number of successful students/number of students appeared in the examination). Successful students are those who are permitted to proceed to the second year.

Table 8.3.a Academic Performance Index

Academic Performance	AY 2020-21	AY 2019-20	AY 2018-19
Mean CGPA or Mean Percentage of all successful students (X)	9.08	7.86	8.22
Total Number of Successful Students (Y)	64	69	56
Total Number of Students appeared in the examination (Z)	65	69	59
API =X* (Y/Z)	8.94	7.86	7.8
Average Academic Performance Index	**8.20**		

Academic Performance	AY 2019-20	AY 2018-19	AY 2017-18
Mean CGPA or Mean Percentage of all successful students (X)	7.86	8.22	8.21
Total Number of Successful Students (Y)	69	56	47
Total Number of Students appeared in the examination (Z)	69	59	53
API =X* (Y/Z)	7.86	7.8	7.28
Average Academic Performance Index	**7.65**		

8.4 Attainment of course outcome of first year courses (10) **Institute Marks 9**

8.4.1. Describe the assessment processes used to gather the data upon which the evaluation of Course Outcome is based (5)

Institute Marks 5

(Examples of data collection processes may include, but are not limited to, specific exam questions, laboratory tests, internally developed assessment exams, oral exams, etc assignments, presentations, tutorial sheets etc.)

Assessment process used to gather the data upon which the evaluation of course outcome is based is done in three parts:

- Internal Assessment
- External Assessment
- Course End Survey

Internal Assessment

It includes the assessment of each CO contributing towards attainment of PO. Twenty percentage (20%) weightage is given to internal assessment in Internal and External assessment. Assessment tools such as unit tests, preliminary examination, mock orals, assignments and term work are used for internal assessment.

1. Unit Tests and Preliminary Examination:

- Two unit tests with maximum 30 marks are conducted for each course during the semester. After conclusion of the course preliminary examination with maximum 70 marks is conducted for each course.
- Course teacher prepares class test question papers with the Bloom's Taxonomy Level for respective course taking the reference of previous university question papers and question bank.
- Class tests are conducted as per departmental academic calendar.

- The course teacher evaluates the answer sheets as per model answer sheet and declares the result.
- The course teacher does the result analysis and calculates CO attainment.

2. Mock Oral Examinations:

- Mock oral examinations are conducted for all the courses
- Course teacher notes down the marks of each student in assessment sheet.
- These marks are used to calculate CO attainment.

3. Assignment:

- Course teacher prepares assignments considering all COs for respective course.
- Course coordinator verifies the question bank and suggests corrections if any.
- The course teacher conveys rubrics for assignments to students.
- The course teacher evaluates the assignments as per rubrics.
- The course teacher prepares the assignment analysis and calculates CO attainment.

4. Term Work:

- Course teacher regularly assesses the laboratory manuals/tutorial assignments of students based on predefined rubrics.
- Based on the rubrics, marks are assigned to each experiment/tutorial.
- Course teacher notes down the marks of each student in continuous assessment sheet.
- These marks are used to calculate university term work and in turn for CO attainment

.

External Assessment

It includes the assessment of each CO contributing towards attainment of PO. Eighty percentage (80%) weightage is given to external assessment in Internal and External Assessment. Assessment tools such as In-sem/Online examination and end semester examination are used for external assessment.

External Assessment tools used in 2012 and 2015 courses are

1. Online Examination:

Savitribai Phule Pune University used to conduct MCQ based online examinations for F.E. students during the semester as per university time table in 2012 and 2015 courses. Online phase-I examination was based on unit 1 and 2 and online phase-II examination was based on unit 3 and 4 from syllabus of corresponding subjects. Each examination was conducted for 25 marks.

2. End Semester Examination:

After conclusion of the course, end semester examination, based on units 1 to 6 used to be conducted for F.E. students for 50 marks by Savitribai Phule Pune University.

External Assessment tools used in 2019 course are

1. In-sem Examination:

Savitribai Phule Pune University conducts In-sem examination for F.E. students during the semester as per university time table in 2019 course. In-sem exam is based on Unit 1and 2 of the syllabus for the corresponding subjects. It is conducted for 30 marks.

2. End Semester Examination:

After conclusion of the course, Savitribai Phule Pune University conducts end semester examination for F.E. students for 70 marks. It is based on units 3 to 6.

Course End Survey

Course end surveys are useful tools which provide good understanding modification and planning of a course. The Course End Survey is considered as an assessment tool from A.Y. 2018-19 onwards. 80% weightage is given to internal plus external assessment done using above mentioned tools and 20% weightage is given to course end survey.

Assessment process is given as illustrated in figure B 8.4.1

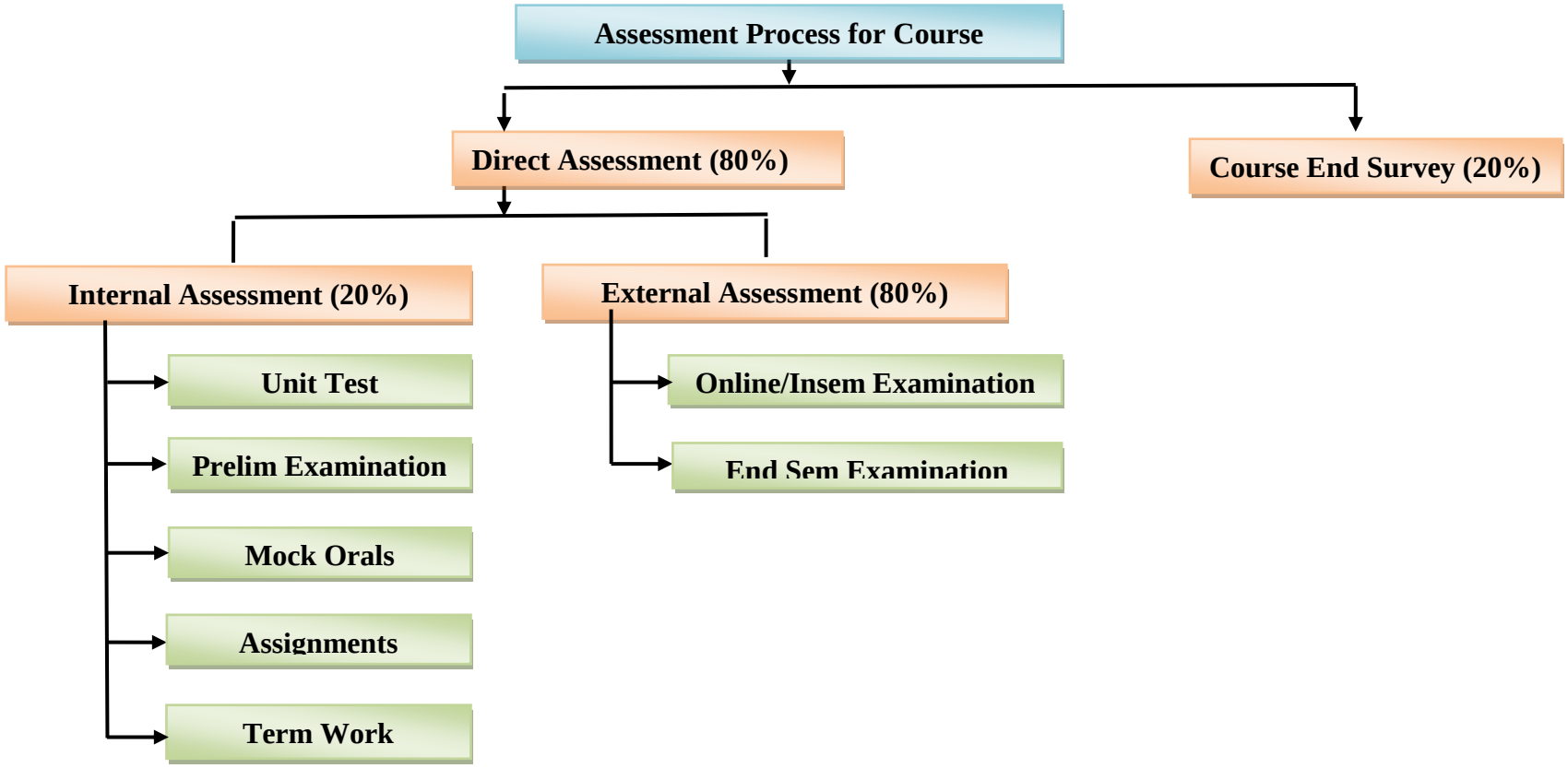


Figure B 8.4.1 Assessment Process for Course Outcome

8.4.2. Record the attainment of Course Outcomes of all first Year courses (5)

Institute Marks 4

Program shall have set attainment levels for all first year courses.

(The attainment levels shall be set considering average performance levels in the university examination or any higher value set as target for the assessment years. Attainment level is to be measured in terms of student performance in internal assessments with respect to the Course Outcomes of a subject plus the performance in the University examination)

Attainment level of each assessment tool has been determined by considering following levels of attainment:

Criteria for different levels are

- **Level 1:** If the number of students scoring more than threshold percentage of marks is equal to or more than 40% and less than 50%.
- **Level 2:** If the number of students scoring more than threshold percentage of marks is equal to or more than 50% and less than 60%.
- **Level 3:** If the number of students scoring more than threshold percentage of marks is equal to or more than 60%.

Formulae for CO_i attainment are :

- $CO_i\, Internal$ attainment level = $$\frac{\text{Sum of Attainment levels of all Internal assessment tools of } CO_i}{\text{No. of internal assessment tools used for } CO_i}$$

- CO_i External attainment level = $$\frac{\text{Sum of Attainment levels of all External assessment tools of } CO_i}{\text{No. of External assessment tools used for } CO_i}$$

attainment (From 2018-19 onward) =0.8∗[0.2*Internal Attainment of CO_i +0.8* External Attainment of CO_i] + 0.2* Course End Surveys

Note: attainment (Till 2017-18) = 0.2∗ Internal Attainment level of CO_i + 0.8∗ External Attainment level of CO_i

Formula for Course Attainment is

- Course attainment = $\frac{\text{Sum of } CO_i \text{ attainment of all Course Outcomes}}{\text{No. of Course Outcomes}}$

This Course attainment value is compared with set target for course attainment. If the target is achieved then the threshold is increased in the subsequent year as a part of continuous improvement process. This increased value of threshold for a particular year is calculated by taking mean of Threshold of previous Year and average SPPU marks of all students for previous year. If the target of Course attainment is not achieved then the threshold is kept same as for the previous year

- **Internal Assessment Tools :**

Various Internal assessment tools used for assessing the students and the corresponding COs is as shown in Table 8.4.2a

Table B 8.4.2a Internal Assessment tools

Sr. No.	Assessing Tool	Process	Frequency	COs
1	Unit Test Examination	1) Data is gathered as described in 8.4.1 2) CO attainment is calculated as described in 8.4.2 3) CO attainment contribution to PO attainment is calculated for every course	Twice in a Semester	Specific COs as applicable
2	Preliminary Examination		Once at the end of semester	All COs
3	Mock Orals		Once in semester	All COs
4	Assignments		After completion of each unit	Specific COs as applicable

5	Term Work		Once per semester	All COs

- **External Assessment Tools**

Various External assessment tools used for assessing the students and the corresponding COs are as shown in Table 8.4.2b

Table B 8.4.2b External Assessment Tools for COs

Sr. No.	Assessing Tool	Process	Frequency	COs
1	In- Semester / Online Examination	1) Data is gathered as described in 8.4.1 2) CO attainment is calculated as described in 8.4.2 3) CO attainment contribution to PO attainment is calculated for every course	Once /Twice per Semester for specific course	Specific COs as applicable
2	End- Semester Examination		Once in the Semester	Specific COs as applicable

Table B 8.4.2c Course End Survey tool for COs

Sr. No.	Assessing Tool	Process	Frequency	COs
1	Course End Survey	1) Data is gathered as described in 8.4.1 2) CO attainment is calculated as described in 8.4.2 3) CO attainment contribution to PO attainment is calculated for every course	At the end of Semester	All CO's

Course Outcomes (COs):

Table 8.4.2.c: C101-Engineering Mathematics-I A.Y. 2019-20

C101.1	The students will be able to apply Mean value theorems and its generalizations leading to Taylors and Maclaurin's series useful in the analysis of engineering problems.
C101.2	The students will be able to obtain Fourier series representation and harmonic analysis for design and analysis of periodic continuous and discrete systems.
C101.3	Students will be able to apply derivative of functions of several variables that are essential in various branches of Engineering.
C101.4	The students will be able to apply the concept of Jacobian to find partial derivative of implicit function and functional dependence and use partial derivatives in estimating error and approximation and finding extreme values of the function.
C101.5	The students will be able to apply essential tool of matrices and linear algebra in a comprehensive manner for analysis of system of linear equations, finding linear and orthogonal transformations, Eigen values and Eigen vectors applicable to engineering problems.

Table 8.4.2.d: C102-Engineering Physics A.Y. 2019-20

C102.1	Develop an understanding of interference, diffraction and polarization; relate it to a few engineering applications.
C102.2	Develop the basics of lasers and optical fibers; list some of their applications.
C102.3	Develop the concepts and principles of quantum mechanics; relate them to some applications.

C102.4	Construct the theory of semiconductors; survey their applications in some semiconductor devices.
C102.5	Identify the basic principles of magnetism and superconductivity; explore few of their technological applications.
C102.6	Comprehend use of concepts of physics for Non Destructive Testing; list some properties of nano materials and survey some of their applications.

Table 8.4.2.e: C103-Systems in Mechanical Engineering A.Y. 2019-20

C103.1	Describe and compare the conversion of energy from renewable and non-renewable energy sources
C103.2	Explain basic laws of thermodynamics, heat transfer and their applications
C103.3	List down the types of road vehicles and their specifications
C103.4	Illustrate various basic parts and transmission system of a road vehicle
C103.5	Discuss several manufacturing processes and identify the suitable process
C103.6	Explain various types of mechanism and its application.

Table 8.4.2.f: C104-Basic Electrical Engineering A.Y. 2019-20

C104.1	Differentiate between electrical and magnetic circuits and derive mathematical relation for self and mutual inductance along with coupling effect.
C104.2	Calculate series, parallel and composite capacitor as well as characteristics parameters of alternating quantity and phasor arithmetic
C104.3	Derive expression for impedance, current, power in series and parallel RLC circuit with AC supply along with phasor diagram
C104.4	Relate phase and line electrical quantities in polyphase networks, demonstrate the operation of single phase transformer and calculate efficiency and regulation at different loading conditions
C104.5	Apply and analyze the resistive circuits using star-delta conversion KVL, KCL and different network theorems under DC supply.
C104.6	Evaluate work, power, energy relations and suggest various batteries for different applications, concept of charging and discharging and depth of charge.

Table 8.4.2.g: C105-Basic Electrical Engineering A.Y. 2019-20

C105.1	Apply various skills in problem solving.
C105.2	Choose most appropriate programming constructs and features to solve the problems in diversified domains.
C105.3	Apply the programming skills for the problems those require the writing of well-documented programs including use of the logical constructs of language, Python.

C105.4	Apply significant experience with the Python program development environment.

Table 8.4.2.h: C106- Programming and Problem Solving A.Y. 2019-20

C106.1	Familiar with safety norms to prevent any mishap in Workshop
C106.2	Able to handle appropriate hand tool, cutting tool and machine tools to manufacture a job
C106.3	Able to understand the construction, working and functions of machine tools and their parts.
C106.4	Able to know simple operations (Turning and Facing on Centre Lathe machine)

Table 8.4.2.i: C107- Environmental Studies-I A.Y. 2019-20

C107.1	Demonstrate an integrative approach to environmental issues with a focus on sustainability.
C107.2	Explain and identify the role of the organism in energy transfers in different ecosystems.
C107.3	Distinguish between and provide examples of renewable and non renewable resources & analyze personal consumption of resources.

C107.4	Identify key threats to biodiversity and develop appropriate policy options for conserving biodiversity in different settings.

Table 8.4.2.j: C108- Engineering Mathematics-II: A.Y. 2019-20

C108.1	Students will be able to apply the effective mathematical tools for Solving first order differential equations that model physical processes such as Newton's law of cooling, electrical circuit, rectilinear motion, mass spring systems, heat transfer etc.
C108.2	Students will be able to apply advanced integration techniques such as Reduction formulae, Beta functions, Gamma functions, Differentiation under integral sign and Error functions needed in Evaluating multiple integrals and their applications.
C108.3	Students will be able to analyze & trace the curve for a given equation and measure arc length of various curves.
C108.4	Students will be able to apply the concepts of solid geometry to find equations of sphere, cone and cylinder in a comprehensive manner.
C108.5	Students will be able to evaluate multiple integrals and find area bounded by curves, volume bounded by surfaces, Centre of gravity and Moment of inertia.

Table 8.4.2.k: C109- Engineering Chemistry A.Y. 2019-20

C109.1	Apply the different methodologies for analysis of water and techniques involved in softening of water as commodity
C109.2	Select appropriate electro-technique and method of material analysis

C109.3	Demonstrate the knowledge of advanced engineering materials for various engineering applications
C109.4	Analyze fuel and suggest use of alternative fuels.
C109.5	Identify chemical compounds based on their structure
C109.6	Explain causes of corrosion and methods for minimizing corrosion.

Table 8.4.2.l: C110- Basic Electronics Engineering A.Y. 2019-20

C110.1	Explain the working of P-N junction diode and its circuits.
C110.2	Identify types of diodes and plot their characteristics and also can compare BJT with MOSFET.
C110.3	Build and test analog circuits using OPAMP and digital circuits using universal/basic gates and flip flops.
C110.4	Use different electronics measuring instruments to measure various electrical parameters.
C110.5	Select sensors for specific applications.

C110.6	Describe basics of communication system

Table 8.4.2.m: C111- Engineering Mechanics A.Y. 2019-20

C111.1	Determine resultant of coplanar concurrent, parallel and general force systems
C111.2	Determine centroid, second moment of area and solve problems on dry friction
C111.3	Analyze simple equilibrium systems, determine reactions of beams and calculate forces in cables using principles of equilibrium
C111.4	Analyze trusses for member forces, frames for joint reactions and apply principles of resultant and equilibrium to forces in space
C111.5	Calculate position, velocity and acceleration of particle in rectilinear, curvilinear and projectile motion using principles of kinematics
C111.6	Calculate position, velocity, acceleration, work done, energy, power, impulse, momentum of particle using principles of kinetics

Table 8.4.2.n: C112- Engineering Graphics A.Y. 2019-20

C112.1	Draw the fundamental engineering objects using basic rules and able to construct the simple geometries.

C112.2	Draw fully-dimensioned 2D, 3D drawings using computer aided drafting tools..
C112.3	Construct the various engineering curves using the drawing instruments
C112.4	Apply the concept of orthographic projection of an object to draw several 2D views and its sectional views for visualizing the physical state of the object.
C112.5	Apply the visualization skill to draw a simple isometric projection from given orthographic views precisely using drawing equipment.
C112.6	Draw the development of lateral surfaces for cut section of geometrical solids.

Table 8.4.2.o: C113- Project Based Learning A.Y. 2019-20

C113.1	Students will be able to define, analyze and solve societal, health and safety problem
C113.2	Students will be able to Identify and apply appropriate tools.
C113.3	Students will be able to apply ethical practices, project management techniques and work in team
C113.4	Students will be able to communicate effectively in verbal and written form.

Table 8.4.2.p: C114- Environmental Studies-II A.Y. 2019-20

C114.1	Have an understanding of environmental pollution and the science behind those problems and potential solutions.
C114.2	Have knowledge of various acts and laws and will be able to identify the industries that are violating these rules.
C114.3	Assess the impact of ever increasing human population on the biosphere: social, economic issues and role of humans in conservation of natural resources.
C114.4	Learn skills required to research and analyze environmental issues scientifically and learn how to use those skills in applied situations such as careers that may involve environmental problems and/or issues.

Table 8.4.2.q: C115- Language and Communication skills A.Y. 2019-20

C115.1	To develop a proficiency in the Receptive skills, Listening and Reading in English language
C115.2	To develop a Proficiency in the Productive skills, Speaking and writing in English language
C115.3	To develop a better Vocabulary, construct sentences effectively in English language
C115.4	To acquaint students with leadership skills
C115.5	To acquaint students with the essential qualities of Communication Skills

Table 8.4.2.r: Course-PO matrix of all courses for FE A.Y. 2019-20

Sr. No	Course	Course code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	M-1	C101	2.80	2	-	-	-	-	-	-	-	1	-	1.6
2	PHY	C102	3	2	-	2	2	-	-	-	-	1	-	1
3	SME	C103	2.17	2	-	-	2	-	-	-	-	-	-	1
4	BEE	C104	2.5	2	-	1.25	-	-	-	-	1.5	-	-	1.5
5	PPS	C105	3	2	2	-	3	-	-	-	-	-	-	2
6	WS	C106	3	-	-	-	-	1	-	1	2	1.67	-	1
7	EVS-1	C107	2	-	-	-	-	2	3	-	2.5	2	-	2
8	M-2	C108	2.4	2	-	-	-	-	-	-	-	2	-	1.4
9	CHEM	C109	3	2	-	-	-	2	2	-	-	-	-	-
10	BXE	C110	1.83	1.83	2	-	-	-	-	-	-	-	-	-
11	EM	C111	3	3	-	-	2	-	-	-	1	-	-	1
12	EG	C112	2.5	2.6	-	-	3	-	-	3	-	2	-	1.83
13	PBL	C113	2.5	2.5	2.5	2	2	2	2	2	3	3	2	2
14	EVS-II	C114	3	-	-	-	-	2	3	2	3	2.67	-	3
15	Language and Communication skills	C115	-	-	-	-	-	2.6	2.8	2.4	2.6	2.8	-	2.8
Average			**2.62**	**2.18**	**2.17**	**1.75**	**2.33**	**1.93**	**2.56**	**2.08**	**2.23**	**2.02**	**2.00**	**1.70**

Table B 8.4.2.s Attainment of COs for Academic Year 17-18

Course	Course Code	Threshold %	CO1	CO2	CO3	CO4	CO5	CO6	Course Attainment (Average)	Course Attainment %	Course Attainment Target %	Remark (Target Attainment achieved or not)
M-1	C101	53	2.87	2.73	2.67	2.6	2.9	2.8	2.76	92.06	78	Achieved
PHY	C102	54	2.07	2.13	1.2	1.1			1.63	54.17	78	Not Achieved
FPL-1	C103	46	3	3	3	3			3.00	100.00	90	Achieved
BEE	C104	50.1	2.2	2.27	1.1	1.2			1.69	56.42	73.83	Not Achieved
BCEE	C105	53	2.87	2.73	2.8	2.6	2.8	3	2.80	93.33	80	Achieved
EG-1	C106	62.26	2.33	2.33	2.53	2.53	2.33	2.33	2.40	79.89	77.83	Achieved
WS	C107	68.69	3	3	3				3.00	100.00	80	Achieved
M-2	C108	52	2.3	2.4	2.3	2	2.2	1.6	2.13	71.00	70	Achieved
CHEM	C109	44	2.8	2.73	2.87	2.8	3	2.9	2.85	95.00	79	Achieved
FPL-2	C110	48	3	3	3	3			3.00	100.00	90	Achieved
EM	C111	44	2.8	2.67	2.67	2.67	2.8	2.8	2.74	91.17	60	Achieved
BXE	C112	53	2.47	2.4	2.4	2.4	2.9	2.9	2.58	85.94	77.6	Achieved
BME	C113	50.33	2.2	2.2	2.2	2.2	2.4	2.4	2.27	75.56	79.67	Not Achieved
EG-2	C114	71.75	3	3	3				3.00	100.00	80	Achieved
Project Activity	C115	50	3	3					3.00	100.00	80	Achieved

Table B 8.4.2.t Attainment of COs for Academic Year 18-19

Course	Course Code	Threshold %	CO 1	CO 2	CO 3	CO 4	CO 5	CO 6	Course Attainment (Average)	Course Attainment %	Course Attainment Target %	Remark (Target attainment achieved or not)
M-1	C101	59	2.25	2.09	2.09	2.15	1.72	1.51	1.97	65.67	78	Not Achieved
PHY	C102	54	2.88	2.73	2.09	2.12			2.46	81.83	78	Achieved
FPL-1	C103	51	3	3	3	3			3.00	100.00	95	Achieved
BEE	C104	50.1	2.84	2.79	2.04	2.09			2.44	81.33	73.83	Achieved
BCEE	C105	58	2.84	2.84	2.84	2.84	2.89	2.89	2.86	95.22	80	Achieved
EG-1	C106	65.63	2.2	1.88	1.88	1.88	1.72	1.24	1.80	60.00	77.83	Not Achieved
WS	C107	75.1	3	3	3				3.00	100.00	80	Achieved
M-2	C108	56	2.44	2.52	2.28	2.28	2.12	2.04	2.28	76.00	70	Achieved
CHEM	C109	48	2.89	2.79	2.95	3	3	2.95	2.93	97.67	79	Achieved
FPL-2	C110	55	3	3	3	3			3.00	100.00	95	Achieved
EM	C111	47	2.36	2.36	2.52	2.52	2.04	2.04	2.31	76.89	60	Achieved
BXE	C112	54	2.65	2.63	2.66	2.66	2.95	2.95	2.75	91.67	57	Achieved
BME	C113	50.32	3	3	3	3	2.92	2.92	2.97	99.11	79.67	Achieved
EG-2	C114	77.6	3	3	3				3.00	100.00	80	Achieved
Project Activity	C115	52	3	3					3.00	100.00	80	Achieved
Language and Communication skills	C116	60	3	3	3	3	3		3	100	80	Achieved
PBL	C117	52	3	3	3				3.00	100.00	80	Achieved

Table B 8.4.2.u Attainment of COs for Academic Year 19-20

Course	Course Code	Threshold %	CO 1	CO 2	CO 3	CO 4	CO 5	CO 6	Course Attainment (Average)	Course Attainment %	Course Attainment Target %	Remark (Target Attainment achieved or not)
M-1	C101	59	3	2.76	3	2.92	2.84		2.9	96.67	78	Achieved
PHY	C102	54	2.92	2.76	3.00	3.00	3.00	2.92	2.93	97.78	78	Achieved
SME	C103	40	3	3	3	3	3	3	3.00	100.00	70	Achieved
BEE	C104	54.43	2.89	2.2	3	2.97	2.96	2.88	2.82	94.00	73.83	Achieved
PPS	C105	40	3	3	3	3			3.00	100.00	75	Achieved
WS	C106	60	3	3	3	3			3.00	100.00	80	Achieved
EVS-1	C107	40	3	3	3	3			3.00	100.00	60	Achieved
M-2	C108	58	2.92	3	3	3	3		2.98	99.33	70	Achieved
CHEM	C109	51	2.89	2.84	3	3	2.92	3	2.94	98.00	79	Achieved
BXE	C110	48	3	2.84	3	3	3	3	2.97	99.11	77.6	Achieved
EM	C111	40	3	2.92	3	3	3	3	2.99	99.56	60	Achieved
EG	C112	50	3	1	3	3	3	3	2.67	88.89	70	Achieved
PBL	C113	60	3	3	3	3			3.00	100.00	80	Achieved
EVS-II	C114	40	3	3	3	3			3.00	100.00	60	Achieved
Language and Communication skills	C115	40	3	3	3	3	3	-	3	100	80	Achieved
Language and Communication skills	C115	40	3	3	3	3	3	-	3	100	80	Achieved

8.5. Attainment of Program Outcomes from First Year Courses (20) **Institute Marks 17**

8.5.1. Indicate Results of Evaluation of each Relevant PO and/or PSO, if applicable (15) **Institute Marks 13**

Assessment process of POs is divided into two parts namely Internal Assessment and External Assessment. Twenty percentage (20%) weightage is given to Internal Assessment. Internal Assessment tools such as Unit Tests, TW, Preliminary Examination etc. is done at the Department level as per departmental event calendar. Eighty percentage (80) weightage is given to External Assessment. It includes online exam and End semester exam. It is done at university level.

Formula for Attainment of Po is

$$PO_j\ Attainment = \frac{\sum_i \text{Attainment of COi} * \text{Mapping of COi to POj}}{3 * \text{No. of CO Mapped to POj}}$$

Where, i varies from 1 to number of Cos and j varies from 1 to 12

Target for PO attainment of a particular PO is taken as a fixed percentage of average CO-PO mappings for that PO. It is increased by 5% each year as a part of continuous improvement process.

Table 8.5.1.a Record of PO Attainment for Direct Assessment for Academic Year 2017-18

Course	Course code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
M-1	C101	2.46	1.84	-	-	-	-	-	-	-	-	-	-
PHY	C102	1.63	1.08	-	-	-	-	-	-	-	-	-	-
FPL-1	C103	3	2	2	-	2	-	-	-	-	-	-	-
BEE	C104	1.69	1	-	-	-	-	-	-	-	-	-	-
BCEE	C105	2.8	1.87	1.87	-	1.87	1.87	1.87	-	-	-	-	1.49
EG-1	C106	1.86	1.56	1.56	-	-	-	-	2.4	-	1.46	-	1.6
WS	C107	3	-	-	-	-	-	-	-	2	-	-	-
M-2	C108	1.9	1.42	-	-	-	-	-	-	-	-	-	-
CHEM	C109	2.52	2.16	-	-	-	-	-	-	-	-	-	-
FPL-2	C110	3	2	2	-	2	-	-	-	-	-	-	-

EM	C111	2.73	1.82	-	-	1.84	-	-	-	0.91	-	-	0.93
BXE	C112	1.59	1.59	1.78	-	-	-	-	-	-	-	-	-
BME	C113	2.02	1.78	1.47	-	-	-	1.6	-	-	-	-	0.76
EG-2	C114	3	2	1	-	2	-	-	-	1	-	-	1
Project Activity	C115	2	2	2	2	-	-	-	-	3	2	2	-
PO Attainment Level:													
Course		**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
Direct CO Attainment		2.35	1.72	1.71	2.00	1.94	1.87	1.74	2.40	1.73	1.73	2.00	1.16

Table 8.5.1.b Record of PO Attainment for Direct Assessment for Academic Year 2018-19

Course	Course code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
M-1	C101	1.74	1.31	-	-	-	-	-	-	-	0.66		0.87
PHY	C102	2.46	1.64	-	-	-	-	-	-	-	-	-	-
FPL-1	C103	3	2	2		2	-	-	-	-	-	-	-
BEE	C104	2.44	1.55	-	-	-	-	-	-	-	-	-	-
BCEE	C105	2.86	1.91	1.93	-	1.89	1.92	1.92	-	-	-	-	1.53
EG-1	C106	1.36	0.99	0.99	-	-	-	-	1.8		1.03	-	1.14
WS	C107	3	-	-	-	-	1	-	1	2	1	-	-
M-2	C108	2.04	1.52	-	-	-	-	-	-	-	-	-	1.28
CHEM	C109	2.58	2.23	-	-	-	-	-	-	-	-	-	-
FPL-2	C110	3	2	2	-	2	-	-	-	-	-	-	-
EM	C111	2.31	1.54	-	-	1.54	-	-	-	0.77	-	-	0.72
BXE	C112	1.54	1.55	1.77	-	-	-	-	-	-	-	-	-
BME	C113	2.64	2.31	2	-	-	-	1.95	-	-	-	-	0.99
EG-2	C114	3	2	1	-	2	-	-	-	1	-	-	1
Project Activity	C115	2	2	2	2	-	-	-	-	3	2	2	-
Language and Communication skills	C116	-	-	-	-	-	2.6	2.8	2.4	2.6	2.8	-	2.8
PBL	C117	2	2	2	2	-	2	2	2	3	2	2	2

PO Attainment Level:												
Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Direct CO Attainment	2.37	1.77	1.74	2.00	1.89	1.88	2.17	1.80	2.06	1.79	2.00	1.37

Table 8.5.1.c Record of PO Attainment for Direct Assessment for Academic Year 2019-20

Course	Course code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
M-1	C101	2.70	1.94	-	-	-	-	-	-	-	0.97	-	1.54
PHY	C102	2.93	1.96	-	2	1.97	-	-	-	-	0.98	-	0.98
SME	C103	2.17	2	-	-	2	-	-	-	-	-	-	1
BEE	C104	2.37	1.95	-	1.23	-	-	-	-	1.43	-	-	1.43
PPS	C105	3	2	2	-	3	-	-	-	-	-	-	2
WS	C106	3	-	-	-	-	1	-	1	2	1.67	-	1
EVS-1	C107	2	-	-	-	-	2	3	-	2.5	2	-	2
M-2	C108	2.38	1.99	-	-	-	-	-	-	-	1.99	-	1.39
CHEM	C109	2.94	1.94	-	-	-	2	1.93	-	-	-	-	-
BXE	C110	1.82	1.82	2	-	-	-	-	-	-	-	-	-
EM	C111	2.99	1.99	-	-	2	-	-	-	1	-	-	1
EG	C112	2.28	2.33	-	-	1	-	-	2.67	-	1.73	-	1.61
PBL	C113	2.5	2.5	2.5	2	2	2	2	2	3	3	2	2
EVS-II	C114	3	-	-	-	-	2	3	2	3	2.67	-	3
Language and Communication skills	C115	-	-	-	-	-	2.6	2.8	2.4	2.6	2.8	-	2.8
PO Attainment Level:													
Course		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Direct CO Attainment		2.58	2.04	2.17	1.74	2.00	1.93	2.55	2.01	2.22	1.98	2.00	1.65

8.5.2. Actions taken based on the results of evaluation of relevant POs (5)

Institute Marks 4

Table 8.5.2.a. POs Attainment Levels and Actions for Improvement-(2018-19)

PO	Target	Attainment	Observations
PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialisation for the solution of complex engineering problems.			
PO1	2.31	2.35	PO1 was mapped to all courses of First Year Engineering. All courses addressed the knowledge of basic engineering and science concepts and their applications. Target was achieved and following observations were recorded: 1. Due to thresholds for certain courses were high, the achieved attainments were only marginally higher than the proposed targets. However for few courses attainment could be improved. 2. Based on the difficulty level of the course, one or two extra lectures were introduced in the time table for concept clearing and problem solving. This has helped in target attainments. 3. For a comprehensive review of the courses, a crash course was conducted before preliminary examination. This assisted in CO attainment. 4. Remedial lectures conducted for weak learners.
Action 1. To strengthen the attainments, slow learners were identified and remedial lectures for such learners conducted for relevant courses. Action 2. Crash course before preliminary examination made a regular part of the academic calendar. Action 3. Advanced learners were identified, and asked to guide weak learners.			
PO2. Problem analysis: Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			
PO2	1.73	1.72	PO2 was mapped to all courses of First Year Engineering. Most of the courses addressed the formulation of the engineering problem using the basic concepts of science, mathematics and engineering.

			In a few courses, target not achieved and following observations were recorded: 1. It is observed that, the thresholds of certain courses were high, and hence the achieved attainments were marginally lower than the target. 2. Based on the difficulty level of the course, teaching plan needed improvement. 3. Multiple Choice Question based practice test conducted for all courses. 4. Guest lecture conducted for basic mechanical engineering 5. For revising basic concepts of the courses, lectures on prerequisites of respective courses conducted before the start of the course.
Action 1. As part of continuous improvement process, thresholds for attainments increased for those courses which attained the targets, and kept same for those courses not attaining the target. Action 2. Slow learners were identified and remedial lectures were conducted, which further helped to improve attainment. Action 3. Scope of few courses widened and mapping level increased.			
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 public health and safety, and cultural, societal, and environmental considerations.			
PO3	1.59	1.71	PO3 was mapped to some basic engineering courses. This PO addressed the design processes of various electronic circuits and mechanical components. Target was achieved and following observations were recorded: 1. Through electronics engineering course, students designed various electronic circuits for electronic applications. 2. Through basic mechanical engineering course, students designed components of various machines and communicated the same via engineering drawing procedure. 3. Through fundamental programming language courses, students developed codes for required engineering applications.
Action 1. To improve the ability of students to design engineering devices, a workshop on PC assembly was conducted by senior students of computer department.			

<table>
<tr><td colspan="4">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.</td></tr>
<tr><td>PO4</td><td>1.70</td><td>2.00</td><td>PO4 was mapped with Project Exhibition Activity.
Target was achieved and following observations were recorded:
1. Students identified engineering problem solving opportunities by surveying available literature and presented current problem solving methods through project exhibition of basic mechanical engineering
2. It was observed, that the activity of project exhibition strengthened the attainment of the mapped PO and hence was suggested to implement the activity of Project Based Learning.</td></tr>
<tr><td colspan="4">Action 1. Project Based Learning Activity conducted in the next academic year.
Action 2. Model making activity conducted as part of basic mechanical engineering course.
Action 3. Model making activity conducted for the course of engineering graphics I.</td></tr>
<tr><td colspan="4">PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.</td></tr>
<tr><td>PO5</td><td>1.70</td><td>1.94</td><td>PO5 was mapped to some basic civil, mechanical and computer engineering courses.
Target was achieved and following observations were recorded:
1. Through basic computer engineering course, students used open source compilers like GCC for programming.
2. Through basic civil engineering course, students applied tools like GIS, GPS and remote sensors for surveying purposes.
3. Through engineering mechanics, students performed reaction calculation on beam apparatus, space force apparatus and MI (moment of inertia) calculator.
4. Students used Auto CAD software tool to generate engineering drawings.</td></tr>
<tr><td colspan="4">Action 1. To improve the ability of analysing a given engineering problem using newly developed tools, Project Based Learning Activity conducted in the next academic year.
Action 2. To sustain the attainment, above practices were continued in the curriculum.</td></tr>
</table>

<table>
<tr><td colspan="4">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.</td></tr>
<tr><td>PO6</td><td>1.70</td><td>1.87</td><td>PO6 was mapped to basic civil and environmental engineering course (BCEE).
Target was achieved and following observations were recorded:
1. Industrial visits conducted for all students under BCEE course.
2. Students were sensitised about environmental awareness, through poster presentation. For better attainment, additional activities need to be conducted.
3. Students regularly participate in blood donation camps, as part of National Service Scheme (NSS).</td></tr>
<tr><td colspan="4">Action 1. The First Year engineering Students' Association was established for developing the bond between engineer and society, and various activities were conducted accordingly.
Action 2. To inculcate social awareness among first year students, visits arranged to old age homes, orphanages, etc.</td></tr>
<tr><td colspan="4">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.</td></tr>
<tr><td>PO7</td><td>1.70</td><td>1.74</td><td>PO7 was mapped to basic civil and environmental engineering (BCEE) and basic mechanical engineering course.
Target was achieved and following observations were recorded:
1. Poster presentation conducted under BCEE course for awareness of environmental issues.
2. Seminars conducted by students on various topics of civil engineering explaining environmental significance.
3. It was observed that attainment of basic mechanical engineering is below target.
4. The course of engineering chemistry could contribute to strengthen this PO.</td></tr>
<tr><td colspan="4">Action 1. Appropriate questions were formulated for the course of engineering chemistry and mapped with this PO through assignments.
Action 2. Attainment of basic mechanical engineering strengthened through the activity of project exhibition.
Action 3. Project Based Learning Activity conducted in the next academic year.</td></tr>
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<table>
<tr><td colspan="4">PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.</td></tr>
<tr><td>PO8</td><td>2.55</td><td>2.40</td><td>PO 8 was mapped to engineering graphics-I (EG-I).
Target not achieved and following observations were recorded:
1. Students drew mechanical components using the Bureau of Indian Standards code.
2. It was observed that there was a requirement for introduction of professional ethics to students.
3. Students trained about ethical and moral values during Art-of-living courses at the beginning of the Year.
4. Students and staff recite the National Anthem at the beginning of lectures in the morning for inculcation of national integration.
5. Students and staff conduct a 10 minute yoga session at the beginning of lectures.
6. It was observed that less number of courses were mapped to this PO with high level.</td></tr>
<tr><td colspan="4">Action 1. Few sessions of Universal Human Values in the beginning of the academic year were conducted as part of a one week induction programme.
Action 2. A course of Soft Skills introduced to the students to inculcate professional ethics.
Action 3. PO 8 mapped to Project Based Learning Activity.</td></tr>
<tr><td colspan="4">PO9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.</td></tr>
<tr><td>PO9</td><td>1.49</td><td>1.73</td><td>PO 9 was mapped to workshop practices (WS), engineering graphics - II (EG-II), engineering mechanics (EM) and FE project activity.
Target was achieved and following observations were recorded:
1. Students manufactured a given job as part of a team.
2. Students participated in Sports and Cultural activities.
3. Students trained about social awareness and group thinking by Art-of-living courses in the beginning of the Year.</td></tr>
</table>

			4. Students performed as an individual and as a team for project assignments given as part of basic mechanical engineering (BME) and engineering physics course. 5. Mapping of this PO was observed to be low.
Action 1. A one week induction programme conducted for students to inculcate various qualities of individual and team. Action 2. Project Based Learning Activity conducted in the next academic year to inculcate team work in students to improve mapping to this PO. Action 3. To strengthen this PO further, activities conducted as part of First Year engineering Students' Association.			
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.			
PO10	1.63	1.73	PO 10 was mapped to engineering graphics I (EG-I) course and Project Exhibition Activity. Target was achieved and following observations were recorded: 1. Students were able to communicate effectively about engineering components by method of project exhibition for basic mechanical engineering 2. Students participated in college level activities to showcase their communication skills. 3. Students were encouraged to summarize the topics taught in the lecture.
Action 1. To improve communication and presentation skills, advanced learners were identified and seminars were presented by such learners. Action 2. A course on Soft Skills introduced for the students of first year engineering for effective communication. Action 3. Students were encouraged to participate in various events at University level.			
PO11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.			
PO11	1.70	2.00	PO11 was mapped with Project Exhibition Activity. Target was achieved and following observations were recorded: 1. Project Exhibition organised, with the aim of developing an ability to plan

<table>
<tr><td></td><td></td><td></td><td>and execute a given project, and manage the required resources.
2. Activity related to project was added.</td></tr>
<tr><td colspan="4">Action 1. The activity of Project Based Learning conducted with one of its objective as good project management skills.
Action 2. Model making activity conducted as part of basic mechanical engineering and engineering graphics course.
Action 3. Events conducted under First Year engineering Students' Association.</td></tr>
<tr><td colspan="4">PO12. Life-long learning: Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.</td></tr>
<tr><td>PO12</td><td>1.12</td><td>1.16</td><td>PO12 was mapped to some courses of civil and mechanical engineering
Target was achieved and following observations were recorded:
1. Students were encouraged to think independently and develop a habit of providing solutions to existing everyday engineering problems. Self learning attitude was observed in our students also they created innovative solutions and filed patents.
2. Students acquired the basics of engineering mechanics and engineering graphics, which are required to effectively communicate and analyse any engineering problem.
3. Students were trained about self learning, self thinking by 5 days Art-of-living programme in the beginning of the Year.
4. Though the target was achieved it was observed that CO PO mapping was low and could be improved.</td></tr>
<tr><td colspan="4">Action 1. Sessions of senior students arranged to guide students for higher studies and encourage students to attend additional courses through NPTEL, UDEMY, Coursera.
Action 2. Project based learning activity was conducted for development of the quality for independent thinking and self learning.
Action 3.Library orientation session conducted for students to inculcate the habit of effective referring of literature.
Action 4. CO PO mapping was improved through project based learning and soft skills add on course.
Action 5. In courses like Engineering Graphics and basic mechanical engineering, students created models on their own.</td></tr>
</table>

Table 8.5.2.d POs Attainment Levels and Actions for Improvement-(2019-20)

PO	Target	Attainment	Observations
PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialisation for the solution of complex engineering problems.			
PO1	2.28	**2.37**	PO1 was mapped to all courses of First Year Engineering. All courses addressed the knowledge of basic engineering and science concepts and their applications. Target was achieved, and the following observations were made. 1. Slow learners were identified, based on a prerequisite test and performance in unit test - I. These learners were then addressed through remedial/ extra lectures. This helped in improving the CO attainment. 2. Slow learners were guided by interactions with advanced learners. 3. For a comprehensive review of the courses, a crash course for each subject conducted before preliminary examination as part of regular academic activity.
Actions: 1. Assignments were given to students for testing their knowledge and application skills.			
PO2. Problem analysis: Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			
PO2	1.73	**1.77**	PO2 was mapped to all courses of First Year Engineering. The courses addressed the formulation of the engineering problem using the basic concepts of science, mathematics and engineering. Target was achieved, and the following observations were made. 1. Advanced learners were identified through prerequisite test and unit test performance. For such learners, activity of seminars/ presentations in classrooms, was conducted. 2. To increase the scope of a few subjects, project assignments were given as a group activity. This stremgthened the mapping for this PO.
Actions: 1. Mock orals were conducted for students, for testing their knowledge and application skills.			
PO3. Design/Development of Solutions: Design solutions for complex engineering problems and design system components or			

<table>
<tr><td colspan="4">processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.</td></tr>
<tr><td>PO3</td><td>1.61</td><td>1.74</td><td>PO3 was mapped to some basic engineering courses. This PO addressed the design processes of various electronic circuits and mechanical components.
Target was achieved, and the following observations were made.
1. Students gained the ability to design engineering devices through a workshop conducted on PC assembly.
2.Through fundamental programming language courses, students developed codes for required engineering applications.
3.Through engineering graphics course, students designed components of various machines and communicated the same via engineering drawing procedure using Auto-CAD software.
4.Through electronics engineering course, students designed various electronic circuits for electronic applications.</td></tr>
<tr><td colspan="4">Actions:
1. To orient students to designing of various engineering systems a visit to PCMC Science Park was conducted.
2. A workshop on electric vehicle was conducted where students were trained about various compents and technologies used for design of electric vehicle.</td></tr>
<tr><td colspan="4">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.</td></tr>
<tr><td>PO4</td><td>1.72</td><td>2.00</td><td>PO4 was mapped with Project Exhibition Activity and Project Based Learning.
Target was achieved, and the following observations were made.
1. Students identified various engineering systems and surveyed available literature and presented prototypes of these systems through project exhibition of basic mechanical engineering.
2. Project based activity was conducted where students demonstrated the ability to apply engineering concepts to complex engineering problems.
This assisted in strengthing this PO.</td></tr>
<tr><td colspan="4">Actions:</td></tr>
</table>

<table>
<tr><td colspan="4">1. Taking cue from the Project Based Learning Activity conducted, Project Based learnibg coure was introduced by SPPU in the FE syllabus from academic year 2019-20.(letter from RMAPARI sir)</td></tr>
<tr><td colspan="4">PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.</td></tr>
<tr><td>PO5</td><td>1.70</td><td>1.89</td><td>PO5 was mapped to some basic civil, mechanical , computer engineering courses and Project based learning acitivty.
Target was achieved, and the following observations were made.
1. Students selected and analyzed given engineering problem through the activity of Project Based Learning.
2.Through basic computer engineering course, students used open source compilers like GCC for programming.
3. Through basic civil engineering course, students applied tools like GIS, GPS and remote sensors for surveying purposes.
4. Through engineering mechanics, students performed reaction calculation on beam apparatus, space force apparatus and MI (moment of inertia) calculator.
5. Students used Auto CAD software tool to generate engineering drawings.</td></tr>
<tr><td colspan="4">Actions:
1. Project Based Learning course introduced by Savitribai Phule Pune University in the next academic year.</td></tr>
<tr><td colspan="4">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.</td></tr>
<tr><td>PO6</td><td>1.62</td><td>1.88</td><td>PO6 was mapped to Basic civil Project Based Learning and environmental engineering course(BCEE).
Target was achieved, and the following observations were made.
1. To strenghten this PO, and to increase the interaction of students with the society at large, the First Year engineering Students' Association(FESA) was formed.
2. Students interacted on the topic of water conservation through an expert lecture by Mr. Makrand Tillu.
3. Through the visits conducted to old age home and orphanage, students were introduced to the</td></tr>
</table>

			problems faced by various sections of the society. 4. Industrial visit conducted for all students under BCEE course.
Actions: 1. A workshop on electrical vehicle was conducted to introduce the pollution free technology. 2. To inculcate social awareness amoung first year students, visits were conducted to old age homes, orphanages, etc.			
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.			
PO7	1.87	**2.17**	PO7 is mapped to basic civil and environmental engineering (BCEE) Project Based learning and basic mechanical engineering course (BME). Target was achieved, and the following observations were made. 1. Students were introduced to current pollution norms by conducting guest lecture as part of BME course. 2. Poster presentation conducted under BCEE course for awareness of environmental issues. 2. Seminars conducted by students on various topics of civil engineering explaining environmental significance.
Actions: 1. Project Based Learning Course introduced by SPPU in the next academic year.			
PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			
PO8	1.79	**1.80**	PO 8 is mapped to engineering graphics-I (EG-I), Project Based Learning, Soft Skills Course. Target was achieved, and the following observations were made. 1. Students design mechanical components using the Bureau of Indian Standards code for engineers. 2. Students and staff recite the National Anthem at the beginning of lectures in the morning for inculcation of national integration, students and staff conduct a 10 minute yoga session at the beginning of lectures. 3. Students were introduced to ethics through the course of Soft skills. 4. Students were introduced to personal values through a session on Universal Human Values.
Actions:			

<table>
<tr><td colspan="4">1. Sessions on Universal Human Values were conducted, introducing students to a set of personal values, as part of a one week induction programme.
2. Session on organisational ethics was conducted as part of FESA activities by Mr. B. N. Mukul.</td></tr>
<tr><td colspan="4">PO9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.</td></tr>
<tr><td>PO9</td><td>1.79</td><td>2.06</td><td>PO 9 is mapped to workshop practices (WS), engineering graphics - II (EG-II) and engineering mechanics (EM), Project Based Learning, Soft Skills course.
Target was achieved, and the following observations were made.
1. As part of workshop skill, students manufactured a given job as part of a team.
2. Students participated in Sports and Cultural activities. This helped in strengthening group working skills.
3. Students performed individually and as part of a group, to work on a project, create a project statement, and communicate the project to the outside world.</td></tr>
<tr><td colspan="4">Actions:
1. A course of Project Based Learning introduced by SPPU in the next academic year.
2. The course on Soft Skills further strengthened by increasing the content and the contact hours from 5 to 7.
3. Various sessions about communication were conducted like Words Maya, Human Values and groups values as part of induction programme.
4. Students participation in student bodies for FE - FESA ensured working in group.</td></tr>
<tr><td colspan="4">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.</td></tr>
<tr><td>PO10</td><td>1.51</td><td>1.58</td><td>PO 10 is mapped to engineering graphics I (EG-I) course and Project Based Learning and Soft Skills.
Target was achieved, and the following observations were made.
1. Through the course of EG-I, students communicated engineering problems through professional engineering drawings.
2. Students communicated their project work as part of the Project Based Learning.</td></tr>
</table>

			3. Through the course on Soft Skills, students were able to communicate their thoughts and decisions in a properly formatted manner. 4. Students were introduced to intellectual communication through Library session.
Actions: 1. In order to communicate effectively about engineering problems, a course on Project Based Learning was introduced by SPPU and effectively implemented for First Year Students. 2. As part of the induction programme, communication in organisational structure was introduced as a lecture session for students. 3. A session on vocabulary enrichment was conducted as part of the induction programme.			
PO11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.			
PO11	1.70	**2.00**	PO11 is mapped with Project Based Learning Activity. Target was achieved, and the following observations were made. 1. Students planned and executed a project, worked in a team and managed the required resources for the project as part of Project Based Learning.
Actions: 1. Project Based Learning Course introduced by SPPU in the next academic year. 2. More number of students activities conducted as part of First Year ENgg. Students association.			
PO12. Life-long learning: Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.			
PO12	1.36	**1.37**	PO12 is mapped to some courses of civil and mechanical engineering, Project Based Learning and Soft Skills course. Target was achieved, and the following observations were made. 1. Senior year students interacted with first year students as part of the induction programme and introduced and motivated them about various internship programmes available to them. 2. Students were introduced to the college library, the various constituents of a library like books and journal, in the Library Orientation Programme.
Actions:			

1. To strengthen the quality of learning by self and for the self, sessions by eminent personalities were conducted on research, as well as industrial learning, as part of FESA activities. 2. Students worked on self selected topics, by themselves as part of Project Based Learning course.

Table 8.5.2.e POs Attainment Levels and Actions for Improvement-(2020-21)

PO	Target	Attainment	Observations
PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialisation for the solution of complex engineering problems.			
PO1	**2.23**	**2.58**	PO1 was mapped to many courses of First Year Engineering. These courses addressed the knowledge of basic engineering and science concepts and their applications. Target was achieved and following observations were recorded: 1. To strengthen this PO, the avtivity of addressing slow learners was done. Such learners were identified based on their performance in prerequisite test and Unit Test - I. They were then addressed through remedial/ extra lectures. 2. For a comprehensive review of the courses, a crash course for each subject conducted before preliminary examination as part of regular academic activity. 3. For improvement in thinking ability, assignments for were given to students.
Actions: 1. To strengthen the mapping of this PO, it is planned that students should give seminars on selected topics of the syllabus of respective subjects. 2. As the PO mapping was strengthened using assignment tool, it is planned that assignments be made a regular part of the curriculum.			
PO2. Problem analysis: Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			
PO2	**1.85**	**2.04**	PO2 was mapped to many courses of First Year Engineering. The courses addressed the formulation of a given engineering problem using the basic concepts of science, mathematics and engineering. Target was achieved, and the following observations were made. 1. To improve the mapping of this PO, advanced learners were identified using prerequisite test and Unit

			Test I performance. These learners presented seminars to other students in the class on selected topics of respective subjects. 2. To increase the mapping of PO, extra sessions were arranged and conducted for some subjects of Basic Engineering. 3. To improve the ability of applications, mock orals were conducted for all subjects.
Actions: 1. The acivity of taking mock orals is to be continued and made a regular assessment tool. 2. The activity of flipped class room to be conducted. This will further strengthen this PO.			
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 public health and safety, and cultural, societal, and environmental considerations.			
PO3	**1.84**	**2.17**	PO3 was mapped to Programming and Problem Solving course. This PO addressed the processes of logic and tools required to solve an engineering problem. Target was achieved, and the following observations were made. 1. To orient students to designing of various engineering systems a visit to PCMC Science Park was conducted. 2. A workshop on electric vehicle was conducted where students were trained about various components and technologies used for design of electric vehicle. 2.Through Programming and Problem Solving course, students developed logic and codes for required engineering applications.
Actions: 1. To improve the ability of students to design solutions, a workshop by senior students of E&TC department is planned for FE students.			
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.			
PO4	**1.49**	**1.74**	PO4 was mapped with the course of Project Based Learning. Target was achieved, and the following observations were made.

			1. Students identified various engineering systems and surveyed available literature and presented prototypes of these systems through project exhibition of basic mechanical engineering. 2. Project based activity was conducted where students demonstrated the ability to apply engineering concepts to complex engineering problems. This assisted in strengthing this PO.
Actions: 1. To improve the ability of students to search relevent literature required for problem solving, it is planned to introduce a library hour in time table.			
PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.			
PO5	**1.98**	**2.00**	PO5 was mapped to some basic mechanical and computer engineering courses and Project based learning course. Target was achieved, and the following observations were made. 1. Through the course of Programming and Problem Solving, students developed the ability to select and use tools required for problem solving. 2. Through Project Based Learning Course, students selected and analyzed a given engineering problem and provided solution for the identified problem. 3. Through the course of Systems of Mechanical Engineering, students identified various systems required to provide solutions to a given engineering problem.
Actions: 1. To improve exposure to modern tools and technology, an MOUs have been signed with engineering firms to facilitate student visits and provide hands on experience to FE students. 2. To strengthen the learning of modern tools, as part of Engineering Mathematics I, a workshop on Latex is planned for FE students.			
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.			
PO6	**1.64**	**1.93**	PO6 was mapped to few courses as Environmental studies Workshop practices and Project based learning.

			Target was achieved, and the following observations were made. 1. Through the course on Environmental studies, students developed and awareness about various environmental friendly solutions for the society 2. To strenghten this PO, and to increase the interaction of students with the society at large, orphange visit was conducted as part of students' association activities. 3. A workshop on electrical vehicle was conducted to introduce the pollution free technology. 4. Through the course of Project Based Learning, students developed solutions to problems through various selected projects.
Actions: 1. To sensitise students to problems of society, it was planned to conduct visits to old age homes and orphanages nearby.			
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.			
PO7	**2.18**	**2.55**	PO7 was mapped to few courses as Environmental studies, Project based learning and Engg. Graphics. Target was achieved, and the following observations were made. 1. Students were sensitised to environmental ethics required as an engineer, through the course of Environmental Studies. 2. Students worked on providing solutions, as part of the Project Based Learning Course.
Actions: 1. To build the ability to connect engineering problems to sustainable development, MOUs were signed with renewable energy firms for exposure to solar power.			
PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			
PO8	**1.77**	**2.01**	PO 8 was mapped to engineering graphics-I (EG-I), Project Based Learning, Soft Skills Course, Environmental studies -II and workshop practices. Target was achieved, and the following observations were made. 1. Students design mechanical components using the Bureau of Indian Standards code for engineers. 2. Students were sensitised to environmental ethics required as an engineer, through the course of Environmental Studies.

			3. Students were introduced to ethics through the course of Soft skills. 4. Students and staff recite the National Anthem at the beginning of lectures in the morning for inculcation of national integration, students and staff conduct a 10 minute yoga session at the beginning of lectures. 5. Students developed the idea of a set of Universal Human Values, for an individual and as a society, through sessions as part of FE induction programme. 6. Students were introduced to organisational ethics, through a session as part of students' association.
Actions: 1. To inculcate a sense of ethics among students, a session on Universal Human Values is planned as part of FE induction programme. 2. Through the Project Based Learning Course, students are motivated to learn about ethical practices in problem solving.			
PO9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.			
PO9	**1.89**	**2.22**	PO 9 was mapped to few courses as Environmental studies Workshop practices Project based learning and Soft Skills course. Target was achieved, and the following observations were made. 1. To further strengthen this PO, the course on Soft Skills was further strengthened by increasing the content and the contact hours from 5 to 7. 2. Students participated in Sports and Cultural activities. This helped in strengthening group working skills. 3. As part of the course of Project Based Learning, students performed individually and as part of a group on a selected project.
Actions: 1. To develop students to work as a part of a team, students will be planning various activities as part of students' association. 2. Students will be participating in various sports activities to develop a team spirit among students.			
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.			

PO10	**1.71**	**1.98**	PO 10 was mapped to engineering graphics-I (EG-I), Project Based Learning, Soft Skills Course, Environmental studies and workshop practices. Target was achieved, and the following observations were made. 1. Students demostrated an ability to communicate effectively about engineering problems, through the course of Project Based Learning. 2. Students developed the ability of communication in an organisational structure, as part of a lecture session. 3. To strengthen this PO, a session on vocabulary enrichment was conducted as part of the induction programme. 4. To strengthen the mapping of this PO, students presented their project work, through group presentation, as part of the Project Based Learning course.
Actions: 1. To strengthen this PO, it is planned to conduct sessions on communications and softs skills required as a professional and as part of the society.			
PO11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.			
PO11	**1.70**	**2.00**	PO11 was mapped with Project Based Learning Course. Target was achieved, and the following observations were made. 1. Students planned and executed a project, worked in a team and managed the required resources for the project as part of Project Based Learning Course introduced by the SPPU from current academic year. 2. Students planned and conducted various activities as part of the students' association.
Actions: 1. To develop an ability of working in as an individual and part of a team, it is planned that students plan and execute various activities by themselves..			
PO12. Life-long learning: Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.			
PO12	**1.45**	**1.67**	PO12 was mapped to some courses such as Environmental Studies,Engg.Graphics,SME, Project Based

			Learning and Soft Skills course. Target was achieved, and the following observations were made. 1. To strengthen the quality of learning by self and for the self, sessions by eminent personalities were conducted on research, as well as industrial learning, as part of FESA activities. 2. Students worked on self selected topics, by themselves as part of Project Based Learning course.
Actions: 1. To develop the learning ability of students, a library orientation session is planned for FE students. 2. To create a healthy mind required for learning, sessions are planned through MOUs with Counselling Firm.			

CRITERION - 09	STUDENT SUPPORT SYSTEM	50

Total Marks 45

Institute Marks 5

9.1. Mentoring system to help at individual level (5)

During the four years journey through the undergraduate engineering programme, students often need mentoring, guidance and counseling in academic, professional and even personal matters, from a loving elderly person. To resolve day to day problems faced by students, Mentoring system has been introduced by the Institute to establish a better and effective student-teacher relationship. This is the continuous and consistent process till the end of the UG programme of the student. Overall student mentoring system is summarized in Table B.9.1.a.

Table B.9.1.a: Summary of student mentoring system

Type of Mentoring	Course work specific
	Lab specific
	Professional Guidance
	Career advancement
	Personal development and counseling
	Others
Number of faculty mentors	58+ 1 Counselor
Number of students per mentor	25 (around)
Frequency of mentor meeting	Once in a Month and whenever required

I. Student-mentoring has the following objectives:

- To make the student feel at-home with and acclimatize smoothly to the new surroundings.
- To Counsel the student for resolving their academic and personal problems.
- To inculcate moral values and professional ethics in student through interaction and activities

- To assess the aptitude of students and accordingly guide them regarding their profession.
- To impart personal and professional grooming to the student regarding their career.
- To monitor the student's regularity and discipline.
- To enable the parents to know about the performance of their ward.
- To enhance academic performance and attendance of students.
- To render equitable service to the student.
- To motivate the student to consciously improve their quality of life.

II. Process of Mentoring System:

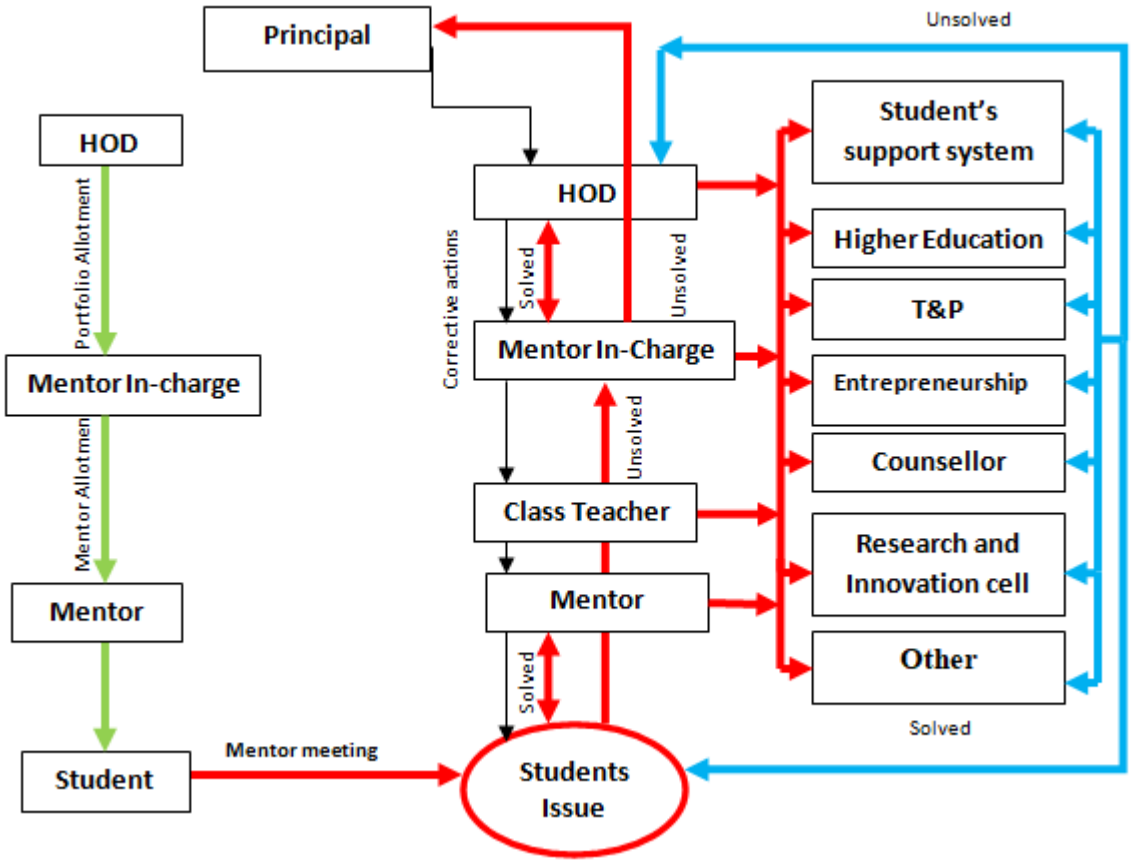


Figure B.9.1.a: Process of student mentoring

Appointment of mentor in charge and mentor:

Head of each programme appoints a mentor in-charge and mentor for students who take care of around 25 students for that academic year.

Conduction of mentor meeting:

Mentors conduct meetings with students to resolve their problems related to academics, personal and professional matters. Mentor meetings are conducted once every month and records are maintained. Issues raised, if any, are discussed with HoD through mentor coordinator.

Resolution of student issues:

Mentor coordinator informs collected issues, as per the kind of issue to the HoD, specific faculty, principal, in-charge of Student development cell, Higher Studies cell, T&P, EDC cell, research and innovation cell for effective solutions.

Personal Counseling:

Along with faculty mentors, a Professional counselor is also available to all the students. Students are counseled individually and supported in their aspirations related to academics, career plans, to identify their grievances and cope with issues which may impede their progress in the above areas.

Communication with parents:

Parent meetings are conducted for awareness about the mentoring system, college activities and students overall involvement and performance. Follow up sessions other than regular meetings are arranged with the parents/faculty/counselors and mentors with the students who have poor performance and attendance to enable them to improve their attendance and performance.

Documentation of student mentoring:

As a student enters their First Year, a proctor form is generated and is carried forward to their mentors as the student progresses through the semesters. All the information of students throughout the eight semesters is entered in proctor form. Proctor form is a well-structured document with personal information, academic progress, behavioral aspects, student issues, record of interaction with students, details of participation in overall development activity and proctor assessment record. The format of proctor is as below:

Proctor form:

	Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering & Research, Ravet, Pune	Record No.: ACAD/R/24
Academic Year: 2018-19	Proctor Form	Term: I/II

Date:

Color Passport size Photo

Personal Information:

Name of student.....

Branch.....**Date of Admission**.....

Date of Birth.....**Gender**.....**Blood Group**..... **Height**.....**cm**

Aadhar Card No.....

Identification Mark.....

Contact No.....**Email id**..... ..

Carries option/ Goal: Employment / Higher Studies/ Entrepreneur

Local Address of student:

C/O.....

Address.....

.....

.....

Pin code: .....

Local Guardian Contact No:.....

Permanent Address of student:

.....

.....

.....

.....

Pin code:.....

Parents Information:

Name of Father.....

Edu. Qualification.....

Place of work.....

Designation.....

Blood Group.....

Contact No.....

E-mail ID.....

Name of Mother .....

Edu. Qualification.....

Place of work.....

Designation.....

Blood Group.....

Contact No.....

E-mail ID.....

Other Information of Student:

1. Passions .....
2. Strength.....
3. Weakness.....
4. Area of interest .....

Academic Performance:

1) Attendance:

Class	FE AY:……..		SE AY:……..		TE AY:……..		BE AY:……..	
Roll No.								
Semester	1	2	3	4	5	6	7	8
1st month (% age Attd.)								
2nd month (% age Attd.)								
3rd month (% age Attd.)								
4th month (% age Attd.)								
Remark								

2) Examination Performance:

a) SPPU Examination:

Class	FE / Diploma AY:……..		SE AY:……..		TE AY:……..		BE AY:……..	
Roll No.								
Semester	I	II	III	IV	V	VI	VII	VIII
Year of Passing								
Exam Seat No.								
Marks / Out of								
% age Marks or SGPA								
Total No of Backlog Subject (if any)								
Result (Distn/ First class/ SC/ HSC/ Pass)								
Remark								

b) Internal Examination:

Class	FE AY:……..						SE AY:……..						TE AY:……..						BE AY:……..					
Roll No.																								
Semester	1			2			3			4			5			6			7			8		
Total No. of Sub for exam																								
Internal Exam	App	Passed	% age Mark	App	Passed	% age Mark	App	Passed	% age Mark	App	Passed	% age Mark	App	Passed	% age Mark	App	Passed	% age Mark	App	Passed	% age Mark	App	Passed	% age Mark
Unit Test -I																								
ReUnit Test – I																								
Unit Test – II																								
ReUnit Test - II																								
Prelim																								
RePrelim																								
Remark																								

3) **Co-Curricular [Paper Presentation/Publication, Project Competition, participation in Seminar/Workshop/conferences, other technical activities/events etc]**

Sr. No.	Academic Year	Title paper published/ presented	Organized by/publication	State/National/ International level	Date/ year of publication	Award/ Winner	Remark

Sr. No.	Academic Year	Details of Activities/Events	Organized by	State/National/ International level	Date and Duration of event	Total Participant	Award/ Winner

4) **Extra - curricular Activities [Participation in Sports, NSS, Annual Social Gathering etc]**

Sr. No.	Academic Year	Details of Activities/Events	Organized by	State/National/ International level	Date and Duration of event	Total Participant	Certificates/ Award/ Winner

5) **Details of Competitive Exams:**

Sr. No.	Details of Competitive Exams	Year of Examination	Organized by	State/National/ International level	Date/ Duration	Certificates/ Award/ Winner

6) **Add-on Certificate/Professional Courses:**

Sr. No.	Details of Courses	Academic Year	Organized/Certification by	Date/ Duration	Certificates/ Award/ Winner

7) **Placement Information:**

Sr. No.	Name of Company	Result (Cleared/ Not Cleared) C or NC				Job Offered	
		Aptitude	GD	TI	PI	Job Profile	Salary (per Annum)

Remarks:

Mentor Faculty **Mentor In-charge** **DAC** **Head of Department**

III. Description of mentoring system:

Overall mentoring system is described in details in Figure B. 9.1.b and Table B 9.1.b

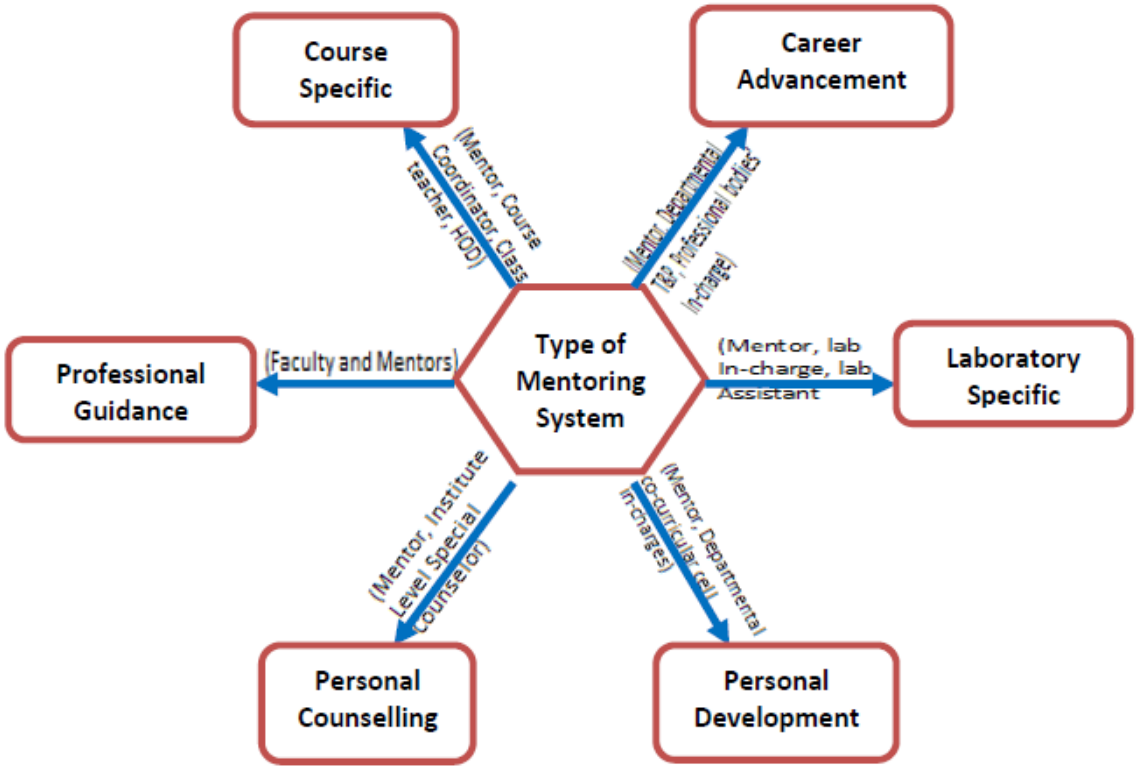


Figure B. 9.1.b: Types of mentoring system

Table B.9.1.b: Description of mentoring system

S.N.	Type of mentoring system	Functions	Activities Guided
1	**Professional guidance**	• Guide students related to skill enhancement for	• Guided students to attend aptitude classes

	(Faculty and mentors)	better employability as per requirement	and Japanese classes.
		• Encourage students to develop and discuss their research ideas if needed.	• Guided students for industrial training through faculty contacts
		• **Publication in journals/Patents/ Copyright**: Encouraged them to publish review, research articles and filing Patents.	• Guided students to file patents, copyright and write technical paper.
2	**Academic Guidance (Course Work Specific)** (Mentor, Course Coordinator, Class teacher, HOD)	• **Information sharing:** Share information of academic Calendars, academic schedules and e-learning resources to enhance their knowledge database.	• PPTs, Video Lectures, Notes and other Resources are shared with students
		• **Academic Counseling**: Identify students with less attendance and ensure that they improve their attendance by getting counseled in the presence of mentor, counselor and HOD	• Guide students with less attendance to improve their performance and encourage them to attend lectures.

		• **Support for the poor performers:** Focus on weak students in academics.	• Discussed the problems behind academic weakness and solve it by providing additional study material
3	**Career Advancement** (Mentor, Departmental T&P, Professional bodies In charge)	• **Professional bodies registration**: To create awareness and to enhance the knowledge about the various activities and state of art research in the Engineering domain.	• The students are encouraged and guided to take membership in the professional bodies i.e., SAE, ISHRAE, ACM , IEEE,IETE
		• **Value added training programmes**: Students undergone various training programmes to enhance their placement opportunities.	• Encourage students to attend Add-on courses like NX, CATIA, ANSYS, and ITP, PYTHON, Android app development etc.
		• **Training & Placement Cell guidance**: Provide Career Guidance and other Training apart from arranging campus recruitment drives by the Training & Placement Cell. Support their research into Industry, companies, job and	• Encourage students to study for Aptitude, GD and PI sessions and to make a strong profile by conducting various sessions.

		candidate profiles	
4	**Laboratory Specific** (Mentor, lab in-charge, lab assistant)	• **Student Counseling**: Counsel irregular students to attend laboratory classes regularly and complete backlog experiments during specified extra hours • To create the awareness about the facility of labs for different projects and add on courses.	• Utility of labs for SAE-BAJA, GO-KART, SAE-TIFAN, Yantraholic, ROBOCON, Hackathon, Humanoid events • Availability of labs for specific projects • Add-on sessions are conducted in the laboratory to enhance the technical skills of students.
5	**Personal Development** (Mentor, Departmental co-curricular cell in charges)	Encourage and support students towards all round development through participation in literary, cultural and sports activities which helps to develop leadership qualities, decision making abilities, team spirit, socio-psychological awareness, and shapes the student into an intellectually integrated person.	Students participated in Annual Gathering, FirodiyaKarandak, Technical events, sports etc.

6	**Others (Personal counseling)** (Mentor, Institute level special counselor)	Empower and enable inner adjustments by individual students to counter and cope with physical, emotional, mental, social and environmental challenges through student-counselor interaction	Counselors are appointed to provide special counseling sessions to cope with physical, emotional, mental, social and environmental challenges.

IV. Roles and Responsibilities of mentor:

- To provide personal and professional guidance for development of students.
- To motivate students to take part in different competitions to improve leadership quality.
- To identify the root cause behind academic weakness of students.
- To encourage students to attend Add-on courses.
- To help students to improve their study habits and health habits.
- To create awareness and to enhance the knowledge about the various activities and research.
- Encourage and support students towards all round development through participation in literary, cultural, social and sports activities.
- To provide guidance about choice of subject, courses and higher studies.

V. Appointment of Counselor:

The students during the course of their studies in the institute may face some difficulties and are unable to make the right decisions. To overcome psychological issues, personal counseling is provided by the institute. Separate faculty is deputed for said purpose. Institute has appointed Counselor Dr. Savita Kulkarni from academic year 2019-20, prior to her Mrs. ShilpaSandhane was appointed for academic year 2018-19 This Free Counseling facility for all students of institute is availed by students as per schedule given in Table B 9.1.c;

Table B 9.1.c: Summary of counseling facility

Sr. No	Day	Time	Venue
1	Wednesday	2:00 pm to 4:00 pm	Room No. 323

a. Roles and Responsibilities of Personal Counselor:-

- To assist students in learning to cope up with the social, emotional problem such as anxiety, depression, grief, loss, relationship issues, homesickness and abuse.
- To assist in personal and physical development.
- To help in utilization of leisure time.
- To Support in academic success and solve issues that may be barriers to success.
- To guide in understanding policy and adjust with the curriculum.
- To assist in the choice of subject, courses and studies, college.
- To help students to improve their study habits.
- To help in future jobs and education.
- To help to change his/her illogical thinking and unhappiness.

b. Outcomes of Personal Counseling

- Under Personal Counselor activity there are a total 67 students are counseled till August 2021.
- Students are counseled on different issues like Emotional issues, Adjustment issues, Academic issues and Clinical cases.
- After counseling, positive changes were observed in students. Students were more confident, they could achieve many of their goals, and they built their relations with friends and families. Positive changes observed in their results too.

VI. Efficacy of the mentoring/counseling system:

Efficacy of the mentoring/counseling system is observed through improvement in following parameters;

- The system has brought harmony among the teachers, students and parents.

- The students have been given personal and psychological support in difficult times.
- The attendance of the students has improved because of the mentoring system.
- The mentoring system has helped enhance and sustain the learning competency of students. Due to mentoring, academic results of college have improved.
- The system has provided scope for a healthy, positive and stress free state of mind.
- The mentoring has brought the personal and professional development of students.
- The mentoring has also equipped the students with various skills sets to make them employable professionals or entrepreneurs.
- The involvement of the students in the academics, co-curricular and extra-curricular activities has improved.
- In mentoring sessions the individual student's talents/skills have been identified and nurtured towards excellence.
- Resolution of student's problem has been achieved.
- Success in the career of many students is evident.

The effectiveness of mentoring system at PCCOER is vividly reflected in the following case studies;

- One of the civil engineering students Mr. Hemant Patil, presently in TE, had decided to leave the course, since he was facing acute financial problems and was not able to perform. He was given extensive counseling, by his mentor, HoD and Principal. He was also offered financial aid and moral support. The student is presently one of the first class achiever students and doing well in academics.
- Mr. Saurabh Shaha, student of Mechanical engineering who was excellent in communication and art skills was unable to maintain required attendance and had decided to leave the programme, as he was doing a part time job because of financial problems. During this period, mentor, class teacher, faculty, HOD and Principal encouraged him and his family to complete the programme, as a result of this he completed his programme and got placed in BYJU's company with a package of 10 lakhs, based on his technical knowledge and communication skill.

9.2. Feedback analysis and reward / corrective measures taken, if any (10) **Institute Marks 9**

Process for course feedback of faculties mainly consists of two phases;

I. Feedback collection and Analysis,
II. System of reward/corrective measures.

I. Feedback collection and Analysis process:

A. Feedback collection:

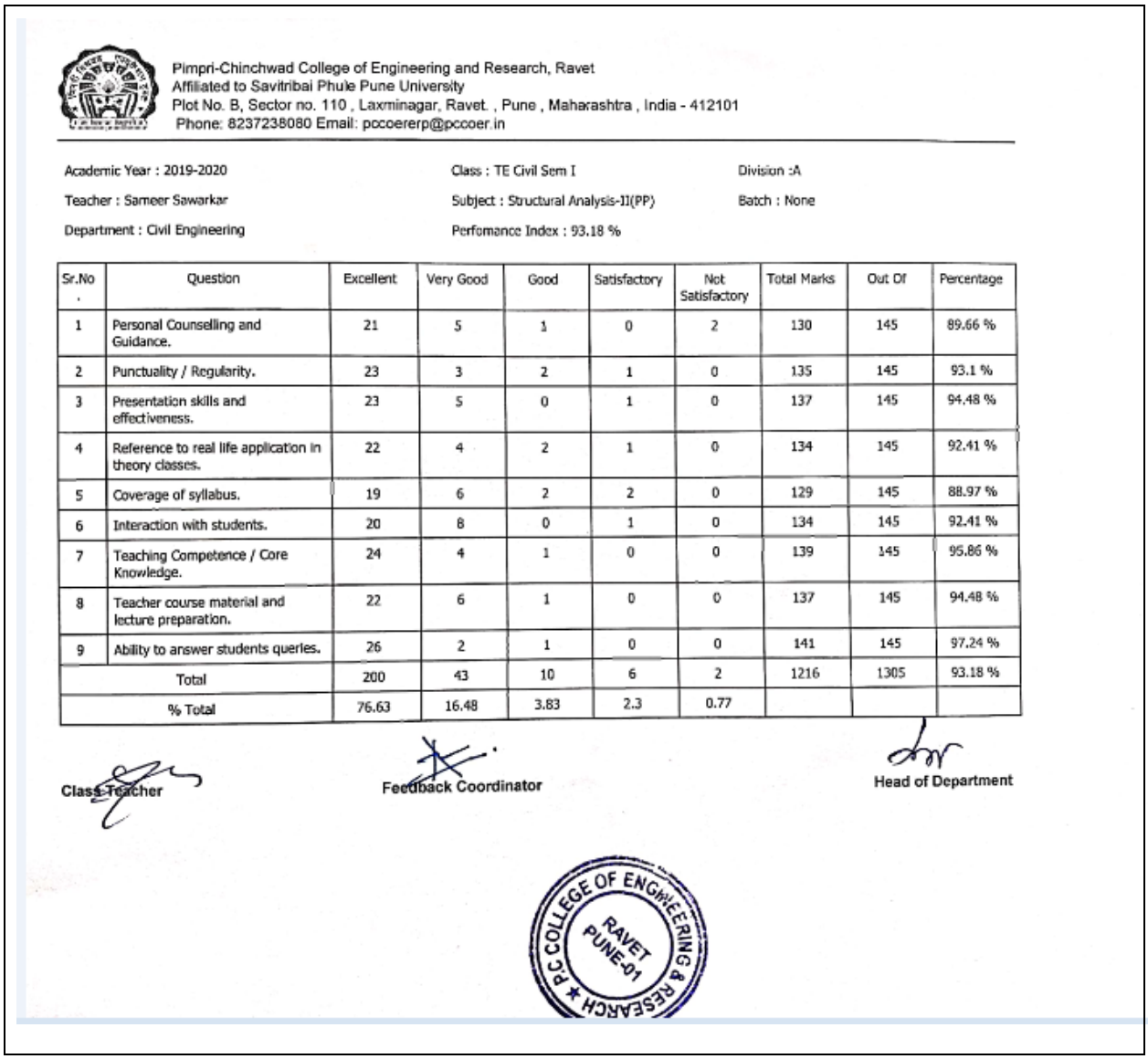
Feedback mechanism is a well organized, confidential and anonymous system in the Institute for all courses. Computerized feedback is collected from students for all the courses through ERP software. Students rate the performance of course faculty based on the scale of 1 to 5 for parameters defined in feedback form. Overall feedback collection process is summarized in Table B 9.2.a;

Table B 9.2.a: Feedback collection process

Parameters	Description
Feedback Collection Process	Conducted for all courses in all programmes
Process	Computerized, anonymous through ERP software
Feedback Receiver	HoD of each programme
Feedback Executer	Feedback coordinator of other department
Frequency of feedback collection	Twice every semester
Metrics used for Calculation	5-Excellent 4-Very good 3-Good 2-Satisfactory 1-Not Satisfactory
Purpose of feedback	Effective tool to achieve better teaching-learning

	process
Average Percentage of students who participate	Students having more than 60% attendance can participate

Feedback parameters used for course-specific feedback are scientific well defined. Feedback parameters for theory and practical courses are different. Sample feedback reports of theory and practical courses are listed below in Figure B 9.2.a and B 9.2.b respectively. In Academic year 2020-21 by considering COVID-19 Pandemic and online classes feedback parameters are revised. Sample feedback record and report for A.Y.2020-21 is listed below in fig B.9.2.c and fig B.9.2.d.a and fig B.9.2.d.b



Pimpri-Chinchwad College of Engineering and Research, Ravet
Affiliated to Savitribai Phule Pune University
Plot No. B, Sector no. 110 , Laxminagar, Ravet. , Pune , Maharashtra , India - 412101
Phone: 8237238080 Email: pccoererp@pccoer.in

Academic Year : 2019-2020 Class : TE Civil Sem I Division :A

Teacher : Sameer Sawarkar Subject : Structural Analysis-II(PP) Batch : None

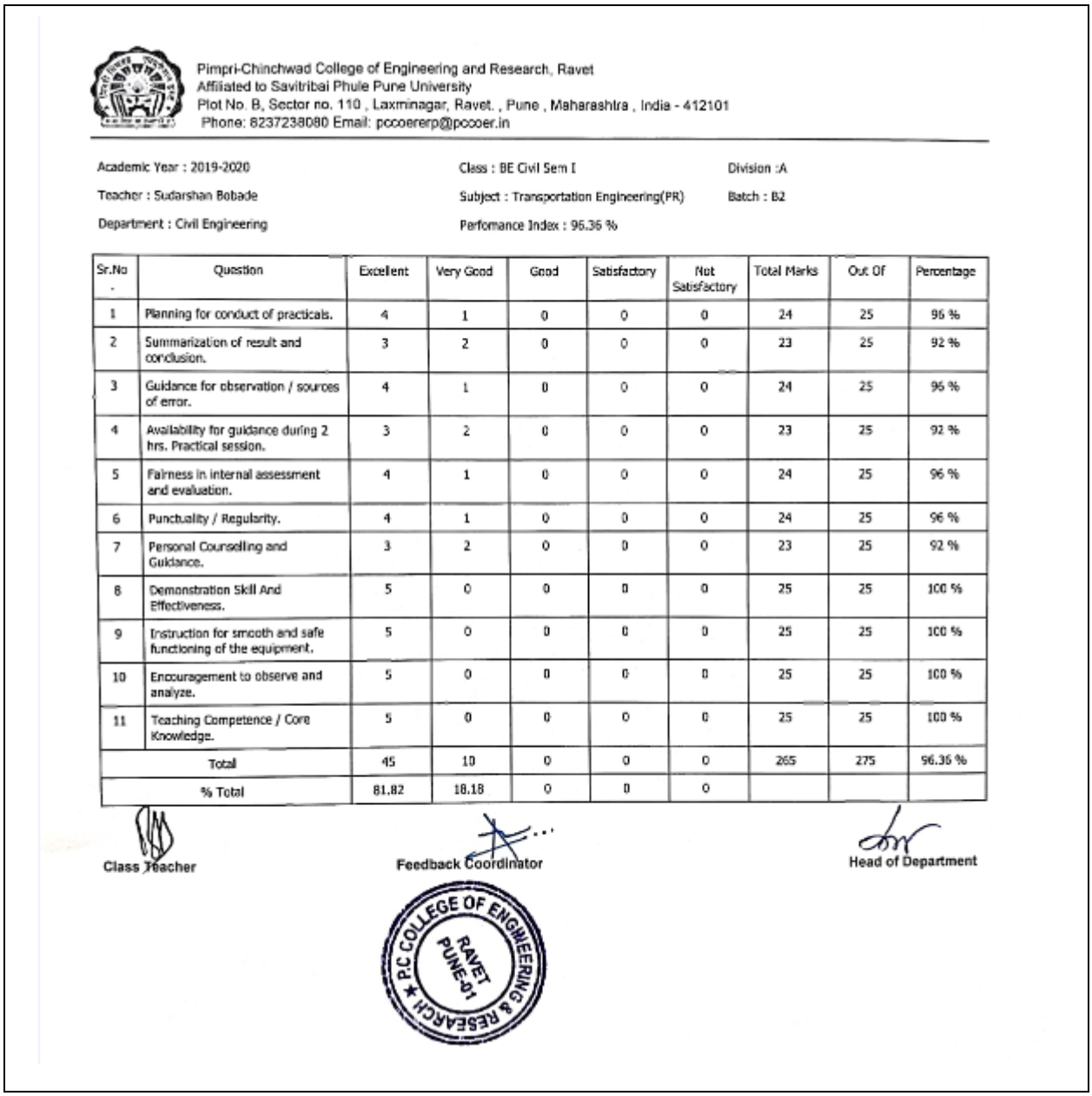
Department : Civil Engineering Perfomance Index : 93.18 %

Sr.No.	Question	Excellent	Very Good	Good	Satisfactory	Not Satisfactory	Total Marks	Out Of	Percentage
1	Personal Counselling and Guidance.	21	5	1	0	2	130	145	89.66 %
2	Punctuality / Regularity.	23	3	2	1	0	135	145	93.1 %
3	Presentation skills and effectiveness.	23	5	0	1	0	137	145	94.48 %
4	Reference to real life application in theory classes.	22	4	2	1	0	134	145	92.41 %
5	Coverage of syllabus.	19	6	2	2	0	129	145	88.97 %
6	Interaction with students.	20	8	0	1	0	134	145	92.41 %
7	Teaching Competence / Core Knowledge.	24	4	1	0	0	139	145	95.86 %
8	Teacher course material and lecture preparation.	22	6	1	0	0	137	145	94.48 %
9	Ability to answer students queries.	26	2	1	0	0	141	145	97.24 %
Total		200	43	10	6	2	1216	1305	93.18 %
% Total		76.63	16.48	3.83	2.3	0.77			

Class Teacher Feedback Coordinator Head of Department

P.C. COLLEGE OF ENGINEERING & RESEARCH RAVET PUNE-01

Figure B. 9.2.a: Sample feedback report for theory course



Pimpri-Chinchwad College of Engineering and Research, Ravet
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Plot No. B, Sector no. 110 , Laxminagar, Ravet. , Pune , Maharashtra , India - 412101
Phone: 8237238080 Email: pccoerep@pccoer.in

Academic Year : 2019-2020 Class : BE Civil Sem I Division :A

Teacher : Sudarshan Bobade Subject : Transportation Engineering(PR) Batch : B2

Department : Civil Engineering Perfomance Index : 96.36 %

Sr.No.	Question	Excellent	Very Good	Good	Satisfactory	Not Satisfactory	Total Marks	Out Of	Percentage
1	Planning for conduct of practicals.	4	1	0	0	0	24	25	96 %
2	Summarization of result and conclusion.	3	2	0	0	0	23	25	92 %
3	Guidance for observation / sources of error.	4	1	0	0	0	24	25	96 %
4	Availability for guidance during 2 hrs. Practical session.	3	2	0	0	0	23	25	92 %
5	Fairness in internal assessment and evaluation.	4	1	0	0	0	24	25	96 %
6	Punctuality / Regularity.	4	1	0	0	0	24	25	96 %
7	Personal Counselling and Guidance.	3	2	0	0	0	23	25	92 %
8	Demonstration Skill And Effectiveness.	5	0	0	0	0	25	25	100 %
9	Instruction for smooth and safe functioning of the equipment.	5	0	0	0	0	25	25	100 %
10	Encouragement to observe and analyze.	5	0	0	0	0	25	25	100 %
11	Teaching Competence / Core Knowledge.	5	0	0	0	0	25	25	100 %
Total		45	10	0	0	0	265	275	96.36 %
% Total		81.82	18.18	0	0	0			

Class Teacher Feedback Coordinator Head of Department

P.C. COLLEGE OF ENGINEERING & RESEARCH RAVET PUNE-01

Figure B 9.2.b: Sample feedback report for practical course

	Pimpri Chinchwad Education Trust's **Pimpri Chinchwad College of Engineering & Research Ravet, Pune**	
Academic Year: 2021 – 22 **Term:** I/II	**Feedback On Teaching-Learning**	Record No: ACAD/R/18-D

Date: 14/06/2021

DEAPRTMENT: _____

FEEDBACK QUESTIONNAIRE FOR ONLINE TEACHING-LEARNING:

Feedback on Learning Process: Rate your response on a scale of 3. (i.e. "0", "1", "2", "3")

1) Regularity in conduction of sessions.
2) Opportunities to ask questions during sessions of this course.
3) Instructor's Interaction with students during session.
4) Availability & Accessibility of Online Learning Material (e.g., ppts, Hand Written Notes, Reference documents, videos and simulations, links to relevant websites) shared by instructor.
5) Contents of this course are useful, interesting, and relevant to real life applications and promotes learning.

Feedback on Learning Facilities: Rate your response on a scale of 3. (i.e. "0", "1", "2", "3")

1) Rate Quality of audio/Video during session of this course.
2) Watching recorded lectures shared by instructor helps you to understand of the material in this course
3) Rate the technical quality of the course materials.
4) Rate how confident you feel about your knowledge on the course.

Students Response/Suggestions: (Short Answers)

1) What can the instructor do differently to help you learn more in this course?
   _____
2) Did you encounter any technical problems during the course? If yes, elaborate.
   _____
3) Suggest any change, according to you, that shall be implemented for better learning of course (subject):
   _____
4) Would you prefer to take this course online or in the classroom? Why?
   _____

******END******

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Figure B 9.2.c: feedback Record for A.Y.2020-21

Pimpri Chinchwad College Of Engineering and Research,Ravet
Plot No.B,Sector no.110,Gate no.1, Laxminagar,Ravet,Haveli,Pune-412101

Record No:
Revision:
Date:

Student Feedback Report

Department : Computer Engineering | **Academic Year :** 2020-2021 | **Semester :** Sem 2
Name of Faculty : Mr.Jameer Gulab Kotwal | **Subject :**Design and Analysis of Algorithm
Feedback Date : 26 May 2021 - 27 Jun 2021 | **No of Students Given Feedback :** 63 -63

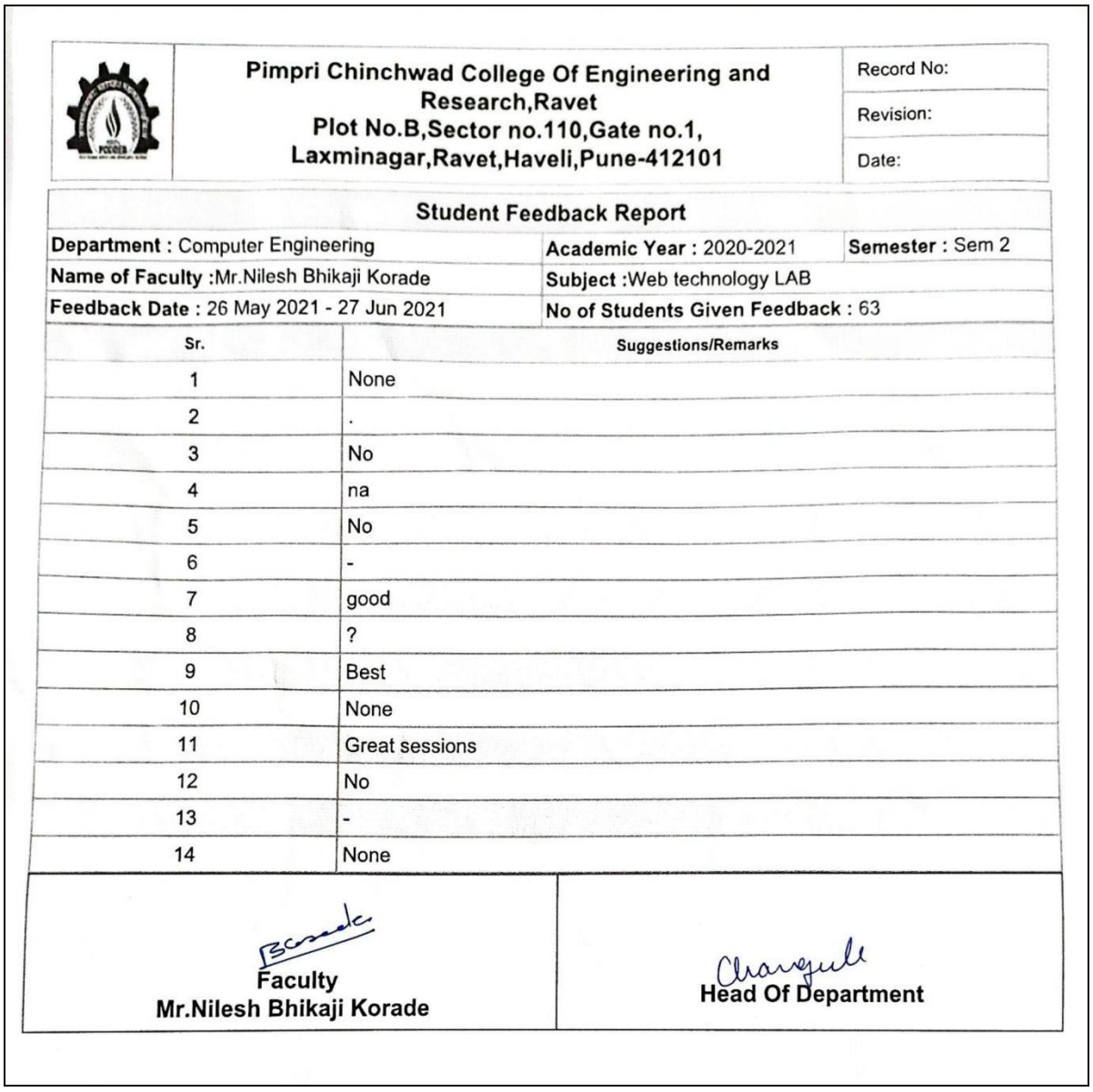
Sr.	Desciption	Excellent	Very Good	Good	Satisfactory	Not Satisfactory	Marks	Out Of	Percentage
1	Regularity in conduction of sessions.	41	18	4	0	0	289	315	91.75
2	Opportunities to ask questions during sessions of this course.	35	23	5	0	0	282	315	89.52
3	Instructor's Interaction with students during session.	37	22	3	1	0	284	315	90.16
4	Learning material availability from course instructor	32	27	2	1	1	277	315	87.94
5	Contents of this course are useful, interesting, relevant to real life applications and promotes learning.	33	28	2	0	0	283	315	89.84
6	Rate Quality of audio/Video during session of this course.	32	27	4	0	0	280	315	88.89
7	Watching recorded lectures shared by instructor helps you to understand of the material in this course	32	26	3	1	1	276	315	87.62
8	Rate the technical quality of the course materials.	36	23	4	0	0	284	315	90.16
9	Rate how confident you feel about your knowledge on the course	36	22	5	0	0	283	315	89.84
	Total	314	216	32	3	2	2538	2835	89.52

Faculty
Mr.Jameer Gulab Kotwal

Head Of Department

P.C COLLEGE OF ENGINEERING & RESEARCH RAVET PUNE-01

Figure B 9.2.d.a: feedback Report for A.Y.2020-21



Pimpri Chinchwad College Of Engineering and Research,Ravet Plot No.B,Sector no.110,Gate no.1, Laxminagar,Ravet,Haveli,Pune-412101	Record No: Revision: Date:

Student Feedback Report

Department : Computer Engineering	**Academic Year** : 2020-2021	**Semester** : Sem 2
Name of Faculty :Mr.Nilesh Bhikaji Korade	**Subject** :Web technology LAB	
Feedback Date : 26 May 2021 - 27 Jun 2021	**No of Students Given Feedback** : 63	

Sr.	Suggestions/Remarks
1	None
2	.
3	No
4	na
5	No
6	-
7	good
8	?
9	Best
10	None
11	Great sessions
12	No
13	-
14	None

Faculty
Mr.Nilesh Bhikaji Korade

Head Of Department

Figure B 9.2.d.b: feedback Report for A.Y.2020-21

B. Feedback Analysis:

Feedback is analyzed through ERP software. Feedback index used for the analysis of course feedback (theory and practical) is given below;

a. **Feedback index:**

$$\%feedback = \left(\frac{\sum_{j=1}^{m} \left(\frac{\sum_{i=1}^{i=5} (n * a_{ji})}{5 \times \sum_{i=1}^{i=5} a_{ji}} \right)^{n=1}_{n=5}}{m} \right) * 100$$

Where,

i= No. of grades

j= No. of Parameter

n=value of grade

m=9 for theory and 11 for practical

a_{ji}= no. of students at $(ji)^{th}$ position

b. Summary of the index values for all courses/faculties:

Analyzed feedback for turn I and II of particular semester is summarized in feedback record as shown below;

	PimpriChinchwad education Trusts **PimpriChinchwad College of Engineering & Research** **Ravet, Pune**	Record No: **ACAD/R/18**
Academic Year: 2019-20	**Students Feedback Report**	Term – II

Department: Civil Engineering Date: 07/04/2020

Sr. No.	Faculty Name	Subject	Turn I Avg Feedback	Turn II Avg Feedback	Avg Feedback
1	Dr. Sameer Sawarkar	Structural Analysis I (PP)	90.53	98	94.26
		Structural Analysis I (TUT)	91.95	94.04	92.99
2	Mr. Rahul Patil	Foundation Engineering (PP)	89.4	88.03	88.71
		Concrete Technology (PR) S3	83.22	85.3	84.26
		Construction Management (PR)	99.09	98.21	98.65

3	Mrs. MayuraYeole	Project Management & Engineering Economics (PP)	73.84	88	80.92
		Achitectural Planning & Design of Buildings (PP)	85.6	87.7	86.65
		Achitectural Planning & Design of Buildings (PR)	82.65	87.03	84.84
4	Mr. AnandKudoli	Concrete Technology (PP)	90.29	92.1	91.19
		Concrete Technology (PR)	93.19	94.15	93.67
		Dams & Hydraulic Structures (PP)	96.67	98.3	97.48
		Dams & Hydraulic Structures (PR)	99.55	97.51	98.53
5	Mr. SudarshanBobade	Quantity Surveying, Conrtacts& Tenders (PP)	96.67	99.5	98.08

		Quantity Surveying, Conrtacts& Tenders (PR)	99.09	94.83	96.96
6	Mr. Amar Shitole	Structural Design II (PP)	82.74	84.62	83.68
		Structural Design II (PR)	81.84	86.33	84.08
7	GajananSupe	Environmental Engineering (PP)	73.02	89.69	81.35
		Environmental Engineering (PR)	69.33	86.45	77.89
8	Mr. Satish Pitake	Advance Surveying (PP)	81.21	88	84.60
		Advance Surveying (PR)	80.07	83.93	82
9	Mrs. Nidhi Khare	Air Pollution & Control (PP)	100	95.3	97.65
		Air Pollution & Control (PR)	99.54	97.8	98.67
10	Mr. AkshayRahane	Engineering Geology (PP)	91.88	81.2	86.54
		Engineering Geology (PR)	93.93	91.67	92.8

11	Dr. JyothiPai	Soft Skills (PR)	82.31	84.65	83.48

Average Feedback of Civil Engineering Department

Average Turn - I Feedback (%)	Average Turn - II Feedback (%)	Average Feedback of Term II (%)
88.3	90.89	89.59



Head of Department

Figure B.9.2.c: Summary of index values for all courses

II. System of reward/corrective measures and its effectiveness:

a. **System of reward:**

- Faculty with highest feedback is awarded as the best teacher. Faculties with consistent excellent feedback in last three years are appreciated by giving appreciation letter.
- Faculty with feedback above the threshold of 80% is appreciated by giving an Appreciation Letter.
- Students' feedback is one of the most important and governing point in self-appraisal.
- Faculties with excellent feedback are requested to act as mentors for the ones with unsatisfactory feedback.

b. **Corrective measures and its effectiveness:**

Root cause analysis for unsatisfactory feedback is done thoroughly. Through mentor meetings, personal interaction of Class Teacher, HoD and Principal with individual students and a small group of students, the exact reason for poor feedback is identified. These conclusions become an invaluable input for the further action plan.

- If a faculty has unsatisfactory feedback they are counseled by HoD and Principal on the basis of root-cause analysis and recorded feedback.
- Faculties are suggested to undergo FDP and NPTEL course for improvement in their specific subject. Improvement is monitored from time to time by module coordinator, if required.
- Faculties with unsatisfactory feedback are asked to follow guidelines of the appointed faculty mentor.

Table B 9.2.b: Details of rewards/ corrective measures taken

S.N.	Awards / rewards/ corrective actions	No. of corrective actions / awards / rewards in last 3 years							
		2020-21		2019-20		2018-19		2017-18	
		Sem I	Sem II	Sem I	Sem II	Sem I	Sem II	Sem I	Sem II
1	No. of faculty received appraisal awards /Appreciation Letter	67	60	62	72	51	67	62	56
2	Number of faculties with excellent feedback appointed as mentors for faculties with unsatisfactory feedback	7	13	10	10	10	10	10	10
3	No of faculty counseled for below average performance	06	14	20	9	6	17	7	19
4	No. of faculty received appraisal awards /Appreciation Letter for consistent excellent feedback in last three years	15		15		15		15	

Overall process of feedback (collection, analysis and corrective measure/rewards) is summarized in Figure B.9.2.d and Table B 9.2.c ;

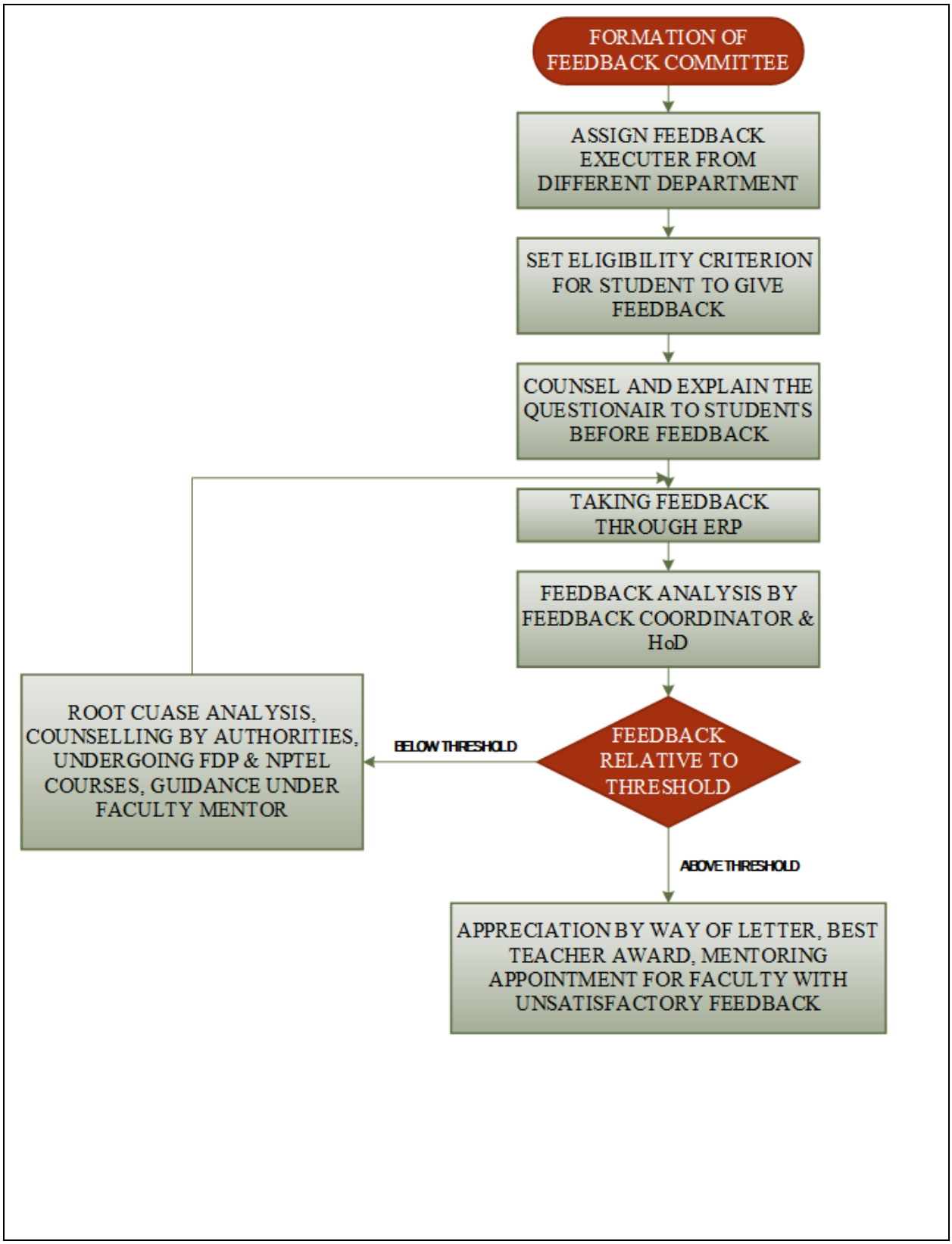


Figure B. 9.2.d: Feedback collection and analysis process

Table B 9.2.c: Feedback collection and analysis process

Sr. No.	Activity	Authorities	Stages Output
1	Formation of Feedback Committee (Team of Dept Feedback coordinators) and identifying Feedback Committee in-charge.	HoDs, Principal	Feedback committee
2	Assign responsibility to take feedback by interchanging departments of Department feedback coordinators	Academic Coordinator	List of committee member &Dept
3	Review of feedback form including performance measures (Academic, Admin, Library, Infrastructure, College canteen, Hostel and mess for students staying in hostel)	Principal, Academic Coordinator, IQAC Coordinator	Feedback form (Performance measuring Questionnaires)
4	Upload and verify feedback form in ERP system and assign department-wise staffs as per subject load distribution (Set schedule)	System Admin, Feedback In-charge	Feedback schedule as per Dept activity calendar
5	Arrange Feedback activity as per departmental Activity Calendar and inform the concerned feedback committee members.	Department Feedback Coordinators	--
6	Counsel and explain the process and questionnaires to students before feedback. Share password & Id to student and Conduct feedback activity.	Concerned feedback committee members	--

7	Get faculty-wise Students' Feedback reports	HOD, Academic Coordinator	**ACAD/R/18**
8	Analysis of feedback, suggestions and Comments. Identify the areas for improvement and initiate corrective actions at department level. (Report to be forwarded to IQAC and CDC)	HOD	**ACAD/R/18-A** Action Taken Report at Department level
9	Submit Feedback Analysis report to Principal and initiate corrective actions at institute level.	HOD, Academic Coordinator, Principal	**ACAD/R/18-B** Action Taken Report at Institute level
10	Issue Faculty Appreciation/Improvement Letters	Principal	**ACAD/R/19**
11	Conduct 2nd Feedback Analysis of feedbacks and initiate corrective actions.	Feedback In-charge, HOD, Principal	--

9.3. Feedback on facilities (5)

Institute Marks 4

PCCOER has all the essential number of classrooms, laboratories, library, canteen, hostel, mess, gymnasium, sports ground, transportation, etc. facilities. However, we endeavor to provide more than essential facilities in the Institute campus as well as hostels. Some of the important facilities are highlighted below;

- **Hostel: The** hostel is comfortably furnished with an accommodation capacity of 200 students. Institute provides separate hostels for boys and girls. The hostels are well guarded with adequate security. There has been sufficient hot-water facility powered by the solar system.
- **Library:** The library at PCCOER is a source of information and a gateway to Knowledge. Over the years, the library has grown in its Physical space and its digital space turning itself into a knowledge hub. The Library and Information Centre at PCCOER was established in the year 2014. It is well equipped with textbooks, reference books, general books, magazines, Journals, CD ROM, Video lectures, online resources and other valuable reading material. Total 9593 volumes 1765 titles, 27 National Journals, 20 Magazines, 482 CD's are available in Library.
- **Medical facility**- PCCOER has tie up with Lokmanya hospital for medical emergencies. First aid box is also provided in each department to give first and immediate assistance to persons suffering from either a minor or serious injury.
- **Auditorium:** A well furnished AC auditorium of 600 seating capacities and seminar hall of 170 seating capacity are available for organizing various technical and cultural events.
- **Transportation facility**: Four forty seater buses are provided for commutation of students in PCMC region. Transportation Facility is also provided for special requirements like Medical Assistance, Industry Visits, etc.
- **Canteen facility:** Specious and Clean Canteen with an area of 250 sq.m. is made available to Students and Staff. Various food items are available at an affordable price during College hours. Food items are prepared and served with utmost care in clean and hygienic environment.
- **Electricity and Power Backup:** In order to provide uninterrupted Power Supply for the Academic and Administrative activities following arrangements are made;

- Three Phase Electrical connections with 440 Volt High Tension and 22 KV Electric supply from Maharashtra State Electricity Distribution Company.
- 200 KVA Transformers with Service Points for distribution.
- 125 KVA Electrical Power Generator Set is provided as Standby when MSEB Mains supply is not available due to Power Shading / Power Failures.
- Rooftop solar panel system of 25 KW is installed in campus to generate electricity. This project received sponsorship of 5 lakh from SPPU under QIP.

- **Telecom facility:** A well planned Telecom Network with advanced Intercom facilities is provided for 75 users.
- **Drinking Water supply:** The College receives its water supply from Pimpri-Chinchwad Municipal Corporation. All Buildings are provided with Water Storage and overhead tanks. All floors are provided with Drinking Water Purifiers and Water Coolers. The Water Purifiers are maintained by external agencies on an Annual Maintenance Contract basis.
- **Housekeeping:** Regular day to day cleaning is taken care of by an external Housekeeping Agency. Team of 17 people including 1 supervisor and 16 janitors are taking care of housekeeping activities, keeping all the classrooms, laboratories, offices, lobbies, corridors and stairways clean and hygienic. Special care is being taken to sanitize all these areas, in addition to the routine cleaning, during a pandemic period.
- **Security:** Security agency is hired on a contract basis to look after the security of all buildings and campus. Team of 8 people, including 1 supervisor and 7 guards, are taking care of supervision activities 24x7 hours. During pandemic, the guards are taking special care to measure and note body temperature of each and every entrant and disallowing anyone to enter without masks.
- **Elevators**: Institute provides a facility of 3 elevators to move people and material from ground to fifth floor.
- **Stationary center**: In-campus stationary and photocopying center is available for the students.

The monitoring of usefulness and functioning of such facilities is done through students' feedback. Process for feedback on infrastructure and facilities is mainly consisting of three phases:

I. Feedback collection

II. Feedback Analysis

III. Corrective measures/action taken

Overall process of feedback on facilities is as mentioned below;

I. Feedback collection process:

- Feedback is collected from the students on the facilities available in the Institute such as class room infrastructure, library, labs, canteen, playground, internet facility, etc. The course feedback mechanism also contains a comments section to give feedback on facilities.
- The tools for collecting feedback on facilities are enlisted below;

  a. ERP Comments (A.Y.2017-18, 2018-19), Google form (From 2019-20)

  b. Mentoring system

  c. Exit survey form

  d. Suggestion box

  e. Student representatives in the CDC meeting.

- Feedback comments received through above mechanisms on different facilities are collectedprogramme-wise for further analysis.
- Process for collection of feedback on facilities is explained below;

  a. ERP Comments (A.Y.2017-18, 2018-19)/Google form (From 2019-20):

Feedback on facilities used to be collected through comments received during course feedback taken by ERP system till A.Y. 2018-19. From A.Y. 2019-20 specially designed Google form is used for facilities feedback collection. In Academic year 2020-21 by considering COVID-19 Pandemic as facilities not used by students physically feedback on facilities is not taken from students but feedback based on learning facilities is conducted as described in fig. fig.9.2.c through ERP.Details of feedback mechanism are given in Table B 9.3.a;

Table B 9.3.a. Feedback collection process through Google forms

Parameter	Description
Availability of Feedback Collection Process	In all programmes
Process	Computerized through Google forms
Feedback Receiver	Feedback coordinator
Frequency of feedback collection	Once in a semester
Metrics used for Calculation	5-Excellent 4-Very good 3-Good 2-Satisfactory 1-Not Satisfactory
Purpose of Comment	For improving the quality of infrastructure and facilities.

b. Mentoring system:

Comments on facilities are collected in mentor meetings from students and forwarded to HoD/Principal through the mentoring system.

c. Exit Survey form:

Answer to specific question pertaining to facilities and comments are collected through exit survey form by feedback coordinator and are forwarded to HoD/Principal for further action.

d. Suggestion box:

Suggestion box is available near the Principal office. Comments are collected through the suggestion box by Principal, whenever seen in the box.

e. CDC meetings:

Student suggestions are also received from the students' representative during CDC meetings, which are noted by the Principal for required actions.

Following template is used for student feedback on facilities in Google form;

	PimpriChinchwad Education Trust's **PimpriChinchwad College of Engineering & Research Ravet, Pune**	
Academic Year: 2021 – 22 **Term:** I/II	**Student's Feedback on Infrastructures and facilities**	Record No.: ACAD/R/18C

Date:

As a part of Continuous Quality Improvement, your feedback is valuable as it helps us to develop and improve our standards on facilities and services.

How do you rate following facilities, services and infrastructure at PCCOE&R on a scale of 5 to 1.

5: Excellent 4:Very Good 3: Satisfactory 2: Average 1: Not satisfactory

Infrastructures and facilities:			
Sr. No.	**Facilities**	**Feedback** (Rate on Scale of 5 to 1)	**Remark/Suggestions**
1)	**Class Rooms:**		
	a) Condition PC		

	&Projector's quality of projection		
	b) Cleanliness		
2)	**Computer Labs**		
	a) Commuters with internet connectivity		
	b) Condition and Quality of Hardware (Desktop/Printers etc)		
3)	**Canteen**		
	a) Food Prices		
	b) Food Quantity/ Hygienic		
	c) Timing		
	d) Varieties of Food		
	e) Adequate sitting arrangement		
	f) Ambience and Cleanliness		
4)	**Washroom**		
	a) Cleanliness		
	b) Lighting of washroom all the time		
	c) Well maintained washrooms		
5)	**Drinking Water**		
	a) Availability of Filtered drinking water		
	b) Cleaning of water tank and surrounding		
6)	**Open Gym**		
	a) Availability of gym equipment's		
	b) Well maintained equipment		
7)	**Library and Reading Room**		
	a) Availability of sufficient copies of books and journals for issue		
	b) Books issued per student are sufficient		
	c) Availability of Digital Library		
	d) Environment of Reading room		
	e) Flexibility in Library		

	&Reading Room Timing.		
	f) Staff behavior/ attitude		
	g) Students are allowed to access books		
8)	**Medical Facilities**		
	a) Availability of emergency medicine and First Aid kit		
9)	**Sport Facility**		
	a) Availability of sport equipment		
	b) Preparation for State/national level competition		
10)	**Administration and Accounts**		
	a) Prompt staff and Services		
	b) Redressal of grievances in a given` time frame.		

Feedback Specific Facilities:

1) **Transport Facility:**
   a) Are you using/used transport Facility? Yes/No
   b) If Yes, mention duration from _____ to _____ (In months - _____)

How do you rate Transport facility for following? (Rate on Scale of 1 to 5)

Sr. No.	Facilities	Feedback	Remark/Suggestions
1)	Availability of buses in all routes		
2)	Availability of seat during travel		
3)	Reporting well before college time.		

2) **Hostel Facility:**
   a) Are you using the Hostel Facility? (Yes/No)
   b) If Yes, mention duration from _____ to _____ (In months - _____)

How do you rate Hostel facility for following? (Rate on Scale of 1 to 5)

Sr. No.	Facilities	Feedback	Remark/Suggestions
1)	Quality of Food and Price		
2)	Cleanliness to rooms,		

	washrooms and hostel campus.		
3)	Timing of mess		

Any Other suggestion for overall improvement:

_____

_____

_____

II. Feedback analysis:

- Feedback received through ERP comments/Google forms/exit survey forms /mentoring system is analyzed by departmental feedback in-charge and mentor in-charge and communicated to the HoD.
- Department level issues are solved by HoD and Institute level issues are discussed with the Principal by HoD through academic review meetings.
- Overall feedback about Institute facilities is also collected through students' representatives in CDC meetings and suggestions received through the suggestion box. Principal will initiate necessary actions based on feedback received.

III. Corrective measures:

Principal reviews the feedback and on consideration initiates the necessary action. For example, there was a comment on dinning space being inadequate in the canteen, upon which, additional space was made available for students. Also, issues related to parking space for students were resolved, acting on the suggestions received in feedback.

Overall process of feedback on facilities is summarized in Figure B.9.3.a below;

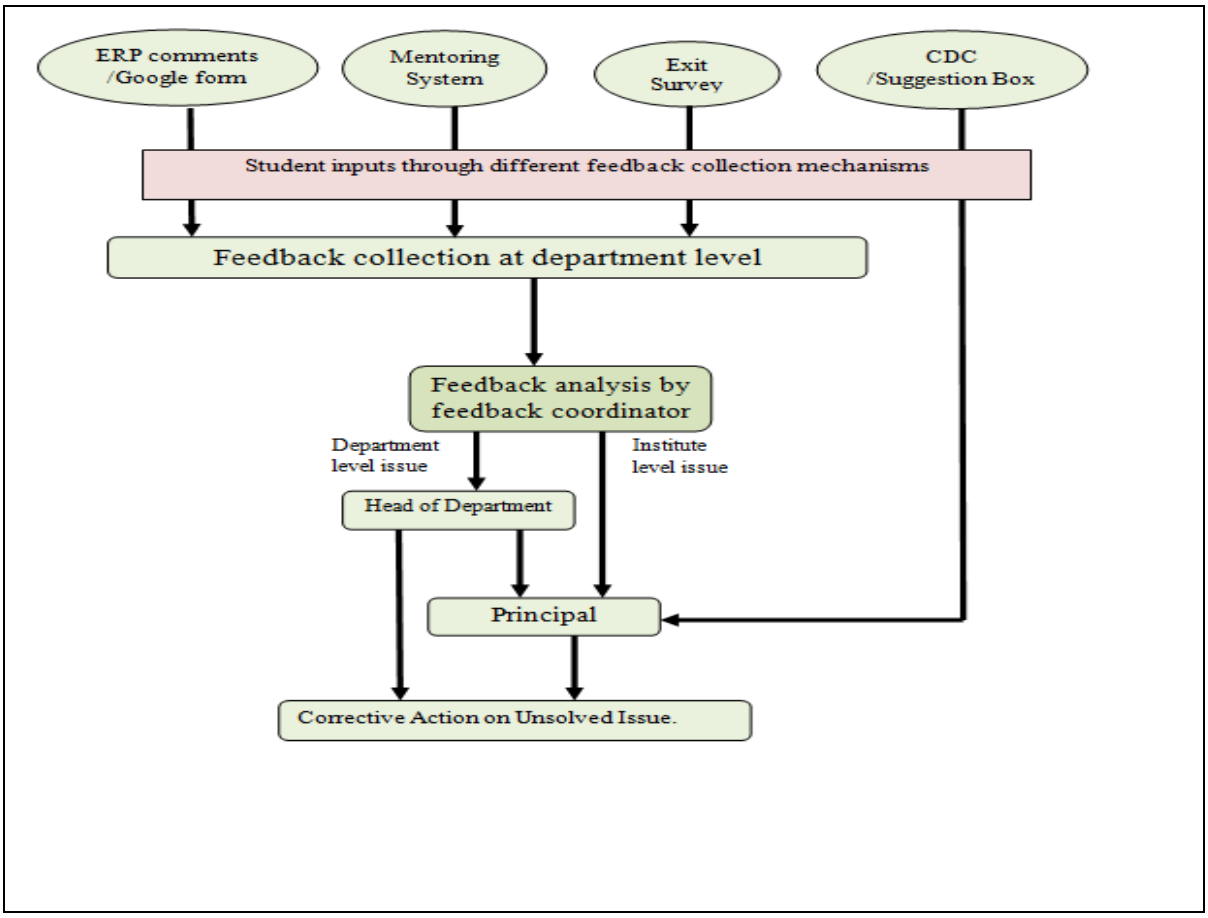


Figure B.9.3.a Feedback collection and analysis process

9.4. Self – Learning (05)

Institute Marks 5

Self-learning method is an evolving form of learning that has emerged due to different learning resources provided by the Institute with which students can give appropriate direction to their studies, without any supervision. The self-learning mode helps the students in developing life-long self learning habits, which is invaluable for the progress in the career of every professional.

I. Scope for Self-Learning:

- Central Library
- Digital library (centralized in institute) for Literature Database i.e. ScienceDirect, Knimbus mobile application for remote access.
- Departmental library

- Web based learning i.e. MOOCs (NPTEL/ SWAYAM, Sololearn, Coursera, Udemy, IIRS), Webinars, YouTube, spoken tutorials etc.
- National Digital Library
- Innovation Centre and project lab
- Professional bodies
- Project based Learning
- Club activities
- Assignments
- Seminars, workshops, Symposiums and Exhibitions.
- Industrial visits/ Training
- CD ROMs study
- Classroom debates and presentations
- Technical and other Events

II. Self-Learning facilities available in Institute

Table B 9.4.a: List of Facility / activity Available in Institute

Sr. No.	Self-learning Facility/ activity	Description
1.	Laboratories	• Students are allowed to use Labs as per requirement for projects, seminar, PBL, etc
2	Innovation centre and Project lab	• Innovation centre and project lab is available for students where they can work for their projects and for activities like SIH, E-YANTRA, Humanoid, BAJA, Go-Kart etc.

3	Central Library	● The institute library is the collection of books and sources of information made accessible to students for borrowing or reference purpose ● It includes books, data books, magazines, newspapers and journals. ● Membership of ARAI, IIT Bombay central Library and Jayakar library (SPPU Pune) ● Turnitin Plagiarism checking software is available ● Wi-Fi and scanning facility
4	Digital Library	● Availability of e-Books, e-journal, audios, manuscripts etc. ● Facility to access Coursera, NPTEL/ SWAYAM, you tube, Project reports, syllabus, University question paper ● Subscribed e-journal package Science direct ● Internet Facility
5	National Digital Library	Institute membership of National Digital Library
6	Departmental Library	● Handbook for career guidance ● Availability of Textbooks and reference books. ● Facility of Project reports, seminar report

7	Web Based Learning	Web-based learning is one way to learn, using web based technologies or tools in a learning process. It is open source of media and materials like, images, text, videos, free soft wares ● Facility of MOOCs (FOSS, NPTEL etc.) ● Facility of IIRS outreach programme center (ISRO)
8	Professional Bodies	ISHRAE, ACM, IEEE, IETE ,IIRS and BAI chapters are established where students get knowledge about recent trends and innovation
9	Project Based Learning activity	● PBL activity is effectively implemented in PCCOER .which was recognized at SPPU level and implemented in curriculum from A.Y.2019-20 .It is method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an authentic, engaging, and complex question, problem, or challenge. ● PBL groups of 4 or 5 students are formed and with new ideas student learn technical as well as management skills ● At the end of the academic year, an exhibition is organized so other students can gain technical knowledge.
10	Club activity	Different clubs such as Departmental associations, NSS, Art circle, Promethean- literary club, shatataraka film and art club, Marathi Vangmay

		Mandal, Yashwanti Treks and trails etc.areavailable where students organize different events through which students get a platform to explore their skills.
11	Assignment activity	• It helps students to gain detailed knowledge about the topic to understand the subject in depth. • Teachers give the assignment regularly in the form of charts, write-ups, presentations ,quizzes etc.
12	Seminar/ Workshops/ Exhibitions	• Seminars /workshop / Exhibitions is a group activity which involves specific topics related to technology, entrepreneurship, Employment, competitive exams, IPR etc. • Benefits of seminars are improved communication skill, knowledge of recent trends and technologies. • Seminars and workshops are conducted frequently in the department and college level • Seminars offer students to interact with industry experts, research persons, entrepreneurs, small business partners and an idea for filing IPR

13	Industrial visit/ Training	• Industrial visit and training helps to understand industrial practice. • The gap between theoretical learning and practical exposure is truly bridged by industrial visits • Through industrial visits students will clarify their doubts and silence their curiosities. • Students can communicate with the individuals in industries for a transparent plan of their dream job. • Provides an opportunity to plan, organize and engage in active learning experiences both inside and outside the classroom. • Industrial visit is a part of college curriculum during which students visit companies and get insight regarding the internal working environment of a company. • At the end of each semester, an industrial training programme (Internship) of minimum 2 weeks needs to be completed by the students.
14	Classroom Debates, GD and Presentations	• Classroom debate is a formal discussion on a particular matter in a public meeting or legislative assembly, in which opposing arguments are put forward • Students are also given topic and asked to present in front of class

		• This helps students in gaining deep knowledge, communication skills and build confidence in student
15	Technical and other events	• Technical Events are organized by engineering colleges to host events related to various technical aspects of what they learn. It helps in gaining practical application knowledge and building network • Technovate, Technospark, Yantraholic and CIPCIS are technical events organized by PCCOER • Along with Technical events, other extracurricular events also help students get a platform to explore their skills.
16	CD ROM	• Students can use CD's of NPTEL, Textbooks and reference books • Students can issue a CD for 1day and learn from it.

III. Utilization and its effectiveness

Objective of these facilities is to provide a platform for self-development. Students realize that the self-learning process is essential to develop beyond the classroom. These facilities help students for career development and lifelong learning (Higher studies, employment and entrepreneurship). A few details of Utilization and its effectiveness for self-learning activity are highlighted below:

- As library facilities are not limited to college campus only, students are able to issue books to learn in their compatible environment. After college hours library

facilities are also available to students. Technical articles, magazines, journals, project reports are available in the central library and digital library. Students are motivated to file patents, copyrights and publish articles through research journals. Students of PCCOER draft their own patents and copyrights. The students who visit the library often and the students certified through MOOC in the respective academic year are felicitated. This motivates the students to make frequent use of library facilities.

- Books available in library, webinars/seminars and Industrial visits help the students in awareness and success in higher studies, placements and entrepreneurship.
- Laboratories are always available to the students during college hours for self-learning, projects and various activities. After college hours Laboratory facilities are also available to students as per requirement and with due permission.
- Through Debates and Presentations, students are able to develop their communications skills, exploring skills and confidence, which helps them in lifelong learning.
- Through Professional body and club activity, students are able to learn teamwork, event management and technical skills, which helps them for placements and encouragement in Entrepreneurial development.

Utilization and Effectiveness of self-learning facility is summarized in Table B 9.4.b:

Table B 9.4.b .Utilization and Effectiveness

Sr. No.	Effectiveness					Utilization
		2020-21	2019-20	2018-19	2017-18	
1	PBL	171	173	143	62	Library, Web based learning, Digital library, professional bodies, Innovation centre and project

						lab
2	MOOC Certification	877	862	363	288	Web based learning, digital library, , professional bodies
3	Higher studies	7	21	28	17	Library, Web based learning, digital library
4	Projects	103	100	93	88	Library, Web based learning, Digital library, professional bodies, Innovation centre and project lab
5	Sponsor Projects	20	26	29	22	Industrial visits/training, MOUs, Library, Web based learning, Innovation centre and project lab
6	Patents/Copyrights	62	47	83	83	Library, Web based learning, National digital library, PBL, Industrial visit/training
7	Quality result	FE-	FE-95.76	FE-97.28	FE-98.31	

		98.34%	%	%	%	Library, web based learning, Assignments, Classroom debates/Presentations
		SE-99.36 %	SE-87.60%	SE-76.22%	SE-71.76%	
		TE-98.38%	TE-77.39%	TE-75.97%	TE-76.89%	
		BE-99.40%	BE-90.70%	BE-95.48%	BE-95.13%	

9.5. Career guidance, Training, Placement (10) **Institute Marks 9**

The T&P Cell of PCET has been performing exceptionally well, pioneering several trends in training and placements and setting several achievement records. It is a major contributing factor in making PCCOER one of the most sought after Institutions. The highlight of the T&P activities is the exhaustive pre-placement activity carried out in each semester, right from Semester I. This innovative and professional approach in T&P is reflected in the international placements, in MNCs, core industries and other high profile companies. T&P Cell of PCET has placed more than 20,000 candidates through On-campus and Off-Campus drives. The placement drives started in PCCOER for eligible candidates in Maharashtra even before PCCOER students became eligible to appear for any placement.

I. Availability of career guidance facilities:

- PCCOER offers career guidance on all aspects of career planning such as jobs, post-graduate studies/Entrepreneurship. Institute provides individual counseling for all the students towards reaching goals.
- Different cells such as training and placement, higher studies/competitive examination, industry institute interaction are formed at Institute level to provide guidance to students for career development.
- Details of different cells structure is given in Figure B 9.5.a :

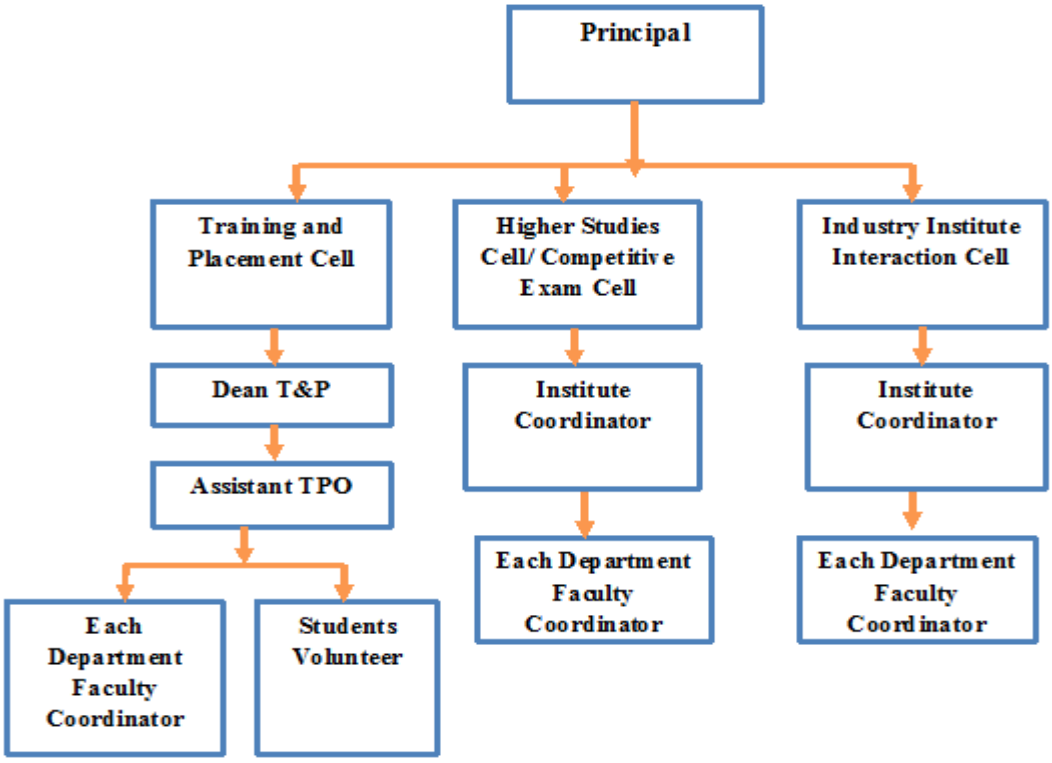


Figure B 9.5.a: Structure of career guidance, training & Placement

- Well-equipped, fully air-conditioned space with all the necessary infrastructure, projection facilities, group discussions sections, counseling cubicles, interviewing rooms, etc. are provided for career guidance and placement cell.

A detail of physical infrastructure available is given in Table B 9.5.a:

Table B 9.5.a Training & Placement Cell infrastructure facility at PCCOER

Sr.No	Description	Number
1	T & P space (Room No. 225)	155 Sq.m
2	TPO Room	1

3	Interview Cabin	4
4	GD Room	2
5	Computer	5
6	LCD Projector	1
7	Printer scanner	2
8	A.C. Seminar hall with audio/video facilities.	150 Capacity

The college has a career guidance and placement cell with 6 staff members, including a full time placement officer.

- Higher studies/competitive examination cell and industry institute interaction cell have also been established at Institute level, which consist of Institute level coordinator and departmental faculty coordinator.
- Institute has also published a career guidance handbook for students. This book presents various opportunities for the graduating Engineer. It also contains details of entrance examination and competitive examinations, scholarships for higher studies, etc.

II. Career guidance and placement cell activities:

- To arrange Campus recruitment drives of various companies.
- To notify the students about various recruitment drives.
- To take the feedback from the placed students & companies.
- To maintain the student database.
- To maintain all necessary records of the Training & Placement cell.
- To plan Internships, Internships – cum – Placements, placements for all the students.
- To orient students on core companies' opportunities and preparations required for placements.

- To interact with companies for remaining students placements and to invite them for internships, internships –cum – placements.
- To place non- eligible Students at Institute level and Department level by inviting companies for internships, internships –cum – placements.
- To arrange mock interviews and GDs regularly so as to equip final and pre-final year students to face the challenges of recruitment scenario.

III. Pre-Placement Training activities:

- Well structuredprogramme for pre-placement training is effectively implemented in PCCOER .Year-wise activities are planned from first year to final year to make students competent for better career opportunities. These activities are summarized in Figure B 9.5.b.

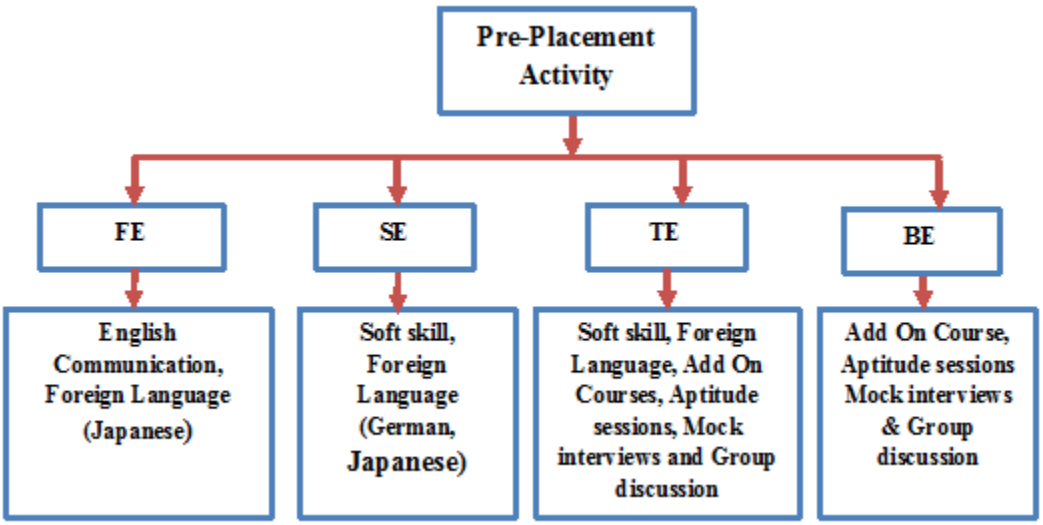


Figure B 9.5.b: Details of Pre-Placement activities

- Mock interviews and Group discussion activities are conducted for third year students.
- Company specific tests such as Co cubes test, TCS ninja, EazyAgroTech etc. conducted for third year students.
- Aptitude Development training and soft skills development sessions are conducted for all programs.

- Ethnus, FACENOW, Campus Credentials are engaged to conduct aptitude development training which is scheduled as a part of academics.
- Technical and domain related sessions are conducted for all the students with basic programming subjects like C, C++, PYTHON, E-TAB, AUTO-CAD, Data Structures, Java, NX, ANSYS and also trained with core subjects.

Following are the activities carried under pre placement training:

Table B 9.5.b: Details of Pre-Placement Training activities

Computer Engineering				
Academic Year	**Details of activity**	**Speaker/Expert**	**No. of students participated**	**Date/Duration**
2020-21	Soft Skills Training	Mrs. JyotiPai	75	june to nov
	japanese classes	Mrs. Vaishali Joshi	12	1 year
	Zensar Training on PL/SQL	Mr. Ganesh Bhosale	42	9/12/2019-13/12/2019 (5 Days)
	Zensar Training on SoftSkills and LifeSkills	Mrs. NametaWagle	42	16/12/2019-19/12/2019 (4 Days)
	Zensar Training on Aptitude	Mr. Pranav and Mr. Aditya	42	15/01/2020-17/1/2020 (3 Days)
	Zensar Training on Core JAVA	Mr. ParmeshwarNarawane	42	24/01/2020-7/02/2020 (9 Days)

	Aptitude Classes	Ethnus	80	1 year
	Resume Writing Session	Ashish Salunke, ShreyashPimpalshende, BarshaKoley	57	07/01/2020
	Mock GD's	Department Faculty and Alumni	79	16/04/2020
	Mock Interviews	Department Faculty and Alumni	79	22/04/2020
	Talk With Seniors Session 1	Ms. TejaswiniGhate from Interactive Brokers, Mr. ShreyashPimpleshinde from Persistent	60	18/04/2020
	Talk With Seniors session 2	Ms. Sudeshna Thakur from Vmware, Mr. KrunalPatil from Quantiphi	61	19/04/2020
	Very Good Opportunity for 2021 Batch students to Appear for Capgemini Specific Test scheduled on 30/05/2020 @ 5:00 pm through Ethnus Platform	FACE	62	30-05-2020
	Cocubes Final Pre-Assessment Test	Cocubes	79	18-01-2020

	First Naukri Assessment test scheduled on 13th April 2020	Firstnaukri	79	13-04-2020
	First Naukri Assessment test scheduled on 23rd March 2020	Firstnaukri	75	23-03-2020
	First NaukriAssessment test scheduled on 18th March 2020	Firstnaukri	64	18-03-2020
	Infosys Company Specific online test scheduled Today 11-06-2020 at 4:00 pm	FACE	61	11-06-2020
	TCS Company Specific online test scheduled Today 03-06-2020 at 4:00 pm	FACE	35	03-06-2020
	Wipro Company Specific online test scheduled Today 05-06-2020	FACE	39	05/06/2020

	Cocubes Final Pre-Assessment Test for 2021 batch scheduled on 18th January 2021 at 4:00 pm	Cocubes	79	18/01/2020
2019-2020	Japanese classes	AmrutaMusale	7	150 hrs
	Soft Skills& Aptitude	Ashish (zensar)	44	28/01/ 2019 to 1/02/2019
	SQL & PL	Ganesh Bhosale-8600995511	44	3/06/2019 to 8/06/ 2019
	AI & ML	Samba(9860681547)	44	10/06/19 to 11/06/19
	Workshop on "Tableau -A Business Intelligence Tool"	Mr. Rahul Madke (Founder and Managing Director),Techknomatic Services Pvt. Ltd. Pune	60	16/02/2019
	Aptitude classes	Ethnus	60	1year
	Rubicon Lifeskills training including GD and MOCK GD	Mr. Rizwan	70	24/06/2019 to 26/06/2019
	Infosys InfyQT webinar	Infosys Campus Connect	71	18/06/2019
	Group Activity ForTiaa	Mrs. SonaliLunawat	32	18/02/2019

	CoCubes Test	Co Cubes	74	16/17/2019, 17/01/2019,18/01/2019
2018-2019	Japanese classes	Mrs. AmrutaMusale& Mrs. Vaishali Joshi	77	145 hrs
	Soft skills	Mr. Tanveer : 9820022653	33	12/3/ 2018 to 15/03/2018
	Aptitude	Mr.Abhishek : 7905965398		16/03/2018 to 17/03/2018
	SQL & PL	Mr. Sagar:8149373714		26/03/ 2018 to 31/03/ 2018
	Core Java	Mr. Manish Sharma-9011072576		2/07/ 2018 to13/07/ 2018
	Aptitude classes	Ethnus	74	1 year
	Technomatic Services SWOT Analysis	Mr. Rahul Madke (Founder and Managing Director),Techknomatic Services &TeamPvt. Ltd. Pune	67	25/01/2018
	Workshop on "Tableau -A Business Intelligence Tool"	Mr. Rahul Madke (Founder and Managing Director),Techknomatic Services Pvt. Ltd. Pune	65	30/06/2018
	Expert session on "Secrets of Guaranteed success in Interviews"	Mr Dinesh Anantwar, Training Consultant	70	03/07/2018 & 04/07/2018
	Mock Group Discussion	Ms. MugdhaKasture (Excellon), Mr.	72	20/7/2018, 24/08/2018

		NoleshWarke (Capgemini),Ms. Shruti (KonikaMiltona), Ms. Anjali Teke (Techfirm), Ms. PriyanshiSaxena (Hitachi)		
	Mock Interviews	Mr. AkhileshRane, Xoriant	11	29/7/2018
	FNAT Test	FNAT Test	70	12/02/2018, 21/3/2018
	Cocubes Test	CoCubes	72/56	6/2/2017, 22/2/2017, 14/8/2017, 17/3/2017
	Aptitude Test in Department	Mrs. SonaliLunawat	75	28/06/2018
	Eassy Writing	Mrs. SonaliLunawat	24	21/03/2018
2017-2018	Programming with Data Structure	Mr. PiyushBhatewara (Software Developer in Yardi Software Systems, Pune)	58	27/06/2015
	Japanese classes	Mrs.AmrutaMusale	80	140hrs
	Session on "Enhancing Employability Skills"	Mr. Aniruddha Joshi (Associate Director, UBS India Pvt Ltd.)	50	27/08/2016
	Soft Skills	Mrs. Madhavi Kale, Zensar	35	25/02/17
	Soft Skills	Mrs. Madhavi Kale, Zensar		03/07/17
	SQL & PL	Mr. Jay Vegasne, Zensar		10/7/ 2017 to14/07/ 2017

	Core Java	Mr.Manish Sharma, Zensar		19/07/2017 to 30/07/2017
	Aptitude classes	FACENOW	50	80 hrs plan
	Mock Group Discussion	Department Faculty	74	8/7/2017
	Mock Interviews	Department Faculty	74	8/8/2017
	Code Mithra Test	Code Mithra Test	65	27/04/2017
	Cocubes Test	CoCubes	65	6/2/2017, 22/2/2017, 14/8/2017, 17/3/2017
	FaceNow Test	FACENOW	65	20/7/2017, 1/7/2017, 29/06/2017
	First Naukri Test	First Naukri	65	24/03/2017
Mechanical Engineering				
Academic Year	**Details Of activity**	**Conducted by**	**No. of students participated**	**Date/Duration**
2020-21	Aptitude training	Ethnus	150 (TE A and B)	3 Jan to 30 Jan (24 Hrs
2019-20	Industrial training program	Mr. Pradeep Bansode (Project Head, Whirlpool Pune)	56	50 hrs
	Aptitude training	FACE NOW Academy	151	17/01/2019 to 28/02/2019
	GD & PI	Faculties/Alumni	134	05/05/2020 to 10/05/2020

2018-19	Industrial training program	Mr. Pradeep Bansode (Project Head, Whirlpool Pune)	42	50 hrs
	German language	Prof. AniketBhor	58	16/08/2018 to 01/02/2019
	Company specific Test	TCS ninja	50	28/08/18 TO 30/08/2018
	Company specific Test	EazyAgroTech	116	21/03/2018
	Aptitude training	FACE NOW Academy	133	12/02/2018 to 30/04/2018
	GD & PI	Faculties/Alumni	139	09/01/2017 to 25/02/2017
2017-18	Aptitude training	FACE NOW Academy	139	09/01/2017 to 25/02/2017
	Industrial Training Program	Mr. Pradeep Bansode (Project Head, Whirlpool Pune)	32	50 hrs
	GD & PI	PCCOER T&P Cell	134	17/08/2017 to 19/08/2017 & 16/01/2018

Electronics and Telecommunication Engineering

Academic Year	**Details Of activity**	**Speaker/Expert**	**No. of students participated**	**Date/Duration**
2020-21	Aptitude training	Ethnus	60	80 Hours
	Aptitude	Anand Rao	38	23/11/2020 to 28/11/2020

	PL/SQL	Milind Chaudhari	38	30/11/2020 to 10/12/2020
	Python	Shaikh Abdul	38	1/2/2021-10/02/2021
	MOCK GD	BE students & Faculty Co-ordinators	70	May-20
	MOCK PI	Alumni & Faculty Co-ordinators	70	May-20
2019-20	PL/SQL	Sanjay Bafna	38	30 hours (09/12/19 to 13/12/19)
	Soft Skills	RanjeetaBhosale	38	18 Hours (16/12/19 to 18/12/18)
	Behavioral/Life Skills	RanjeetaBhosale	38	6 Hours (19/12/19)
	Manual Testing	Rashmi Trivedi	38	60 Hours (20/01/20 31/01/20)
	Aptitude	Pratik Ambastha	38	18 Hours (15/01/20 17/01/20)
	Aptitude training	Ethnus	60	80 Hours
	MOCK interviews (Technical)	Mr. BhimsenPurohit, Mr. Sanjog Birla, Mr. Vinod Patil, Magnastyer India Pvt. Ltd.	70	25/01/2020
	MOCK interviews (HR)	Mr. GaneshprasadShridharan & Mr. Parsh Kothari, Think School, Pune	70	06/01/2020-07/01/2020
	Cocubes Assessment Test	Co-Cubes	70	06/07/2019

	Infosys InfyQT webinar	Infosys Campus Connect	50	18/06/2019
	Rubicon Lifeskills training including GD and MOCK GD	Mr. Rizwan	70	24/06/2019 to 26/06/2019
	Japanese Classes	Mrs. AmrutaMusale	3	150 Hours
2018-2019	Japanese Classes	Mrs. AmrutaMusale	32	150 Hours
	Aptitude training	Ethnus	60	80 Hours
	Expert session on "Secrets of Guaranteed success in Interviews"	Mr Dinesh Anantwar, Training Consultant	50	03/07/2018 & 04/07/2018
	MOCK interviews (Technical/HR)	Mr. BhimsenPurohit, Mr. Sanjog Birla, Mr. Vinod Patil, Magnastyer India Pvt. Ltd.	72	07/02/2019 to 07/02/2019
	Company Specific Training for L& T	Focus 4-D Career Education Pvt. Ltd.	33	14/08/2018 to 15/08/2018
2017-18	Japanese Classes (N5)	Mrs. AmrutaMusale	46	150 Hours
	Aptitude Training	Facenow Academy	50	1 Year

	MOCK Interview	Ms. Heena	23	6/7/2017
	Mu Sigma Free Mock Placement Test	PCCOER T&P Cell	44	23/07/2017
	GD/PI Sessions	PCCOER T&P Cell	23	17/08/2017 to 19/08/2017
	FACE NOWs CAPGEMINI MOCK Aptitude Test - 1	Facenow Academy	23	19/08/2017
	Capgemini Workshop (Aptitude Training (Quant, Verbal and Logical))	Facenow Academy	23	19/08/2017 to 21/08/2017
	GD/PI Session	PCCOER T&P Cell	10	16/01/2018
	NASSCOM Session	Mindmap	15	02/02/2018 to 23/03/2018
Civil Engineering				
Academic Year	**Details Of activity**	**Speaker/Expert**	**No. of students participated**	**Date/duration**
2020-21	Infosys Company Specific online test scheduled	FACE	11	11/06/2020

	Wipro Company Specific online test	FACE	11	05-06-2020
	Cocubes tests	Cocubes	38	18-01-2021
2019-20	Online Group discussion, for TE Civil	Professors and alumni	35	25 /04/2020
	Personal Interview activity	Professors and alumni	52	11/5/2020
	Value added courses	Software Academy for Civil Engineering, Ambegaon ,Pune	25	35Hrs
	Cocubes Test	CoCubes	85	28/02/2020, 26/04/2020
2018-19	Online Group discussion, Personal Interview activity for TE Civil	Senior professors	59	10/1/2018
	Future scope of BIM in the field of civil engineering	Mr. Amitabh Patni, (Co-founder at Stalwart BIM Studio)	46	25/09/2019
	Value added courses	Software Academy for Civil Engineering, Ambegaon ,Pune	34	30 Hrs
2017-18	Value added courses	Software Academy for Civil Engineering, Ambegaon ,Pune	22	50 Hrs
	MOCK	Prof. Biradar& PCCOER	45	24/03/2018

	Interview/GDPI	T&P Cell		
	Value added courses	Civil Engineering Institute of Information Technology	10	35 Hrs
	Workshop on- Skill Development for civil engineering Dept	Mr. Pravin Kolhe , Executive Engineer, Irrigation Dept,Pune	94	22/02/2018
		Mr.YogeshMundhe, Sr.Structural Engineer, DAR Consultants India Pvt ltd		

IV. Career counseling for preparation of Competitive Exam/higher studies

- Higher studies and competitive examination cells are formed at Institute level to provide guidance and facility to students related to higher studies and competitive examinations such as GRE, TOEFL, GATE, UPSC, MPSC, etc.
- The Higher Studies cell consists of Institute level coordinator and Department level coordinator for better coordination and communication.
- Details of higher studies and Competitive Exam cells are given in 9.5.1 .
- The higher study and placement cell organizes seminars on higher studies, Career guidance and motivational lectures by Alumni, entrepreneurs, External guests and faculty and conducts aptitude training sessions.
- Many books and periodicals related to higher studies and competitive examinations are available in the library for the students.

Table B 9.5.c: Details of counseling for preparation of Competitive Exam/higher studies

Academic Year	Details of activity	Conducted by
2020-21	Competitive Exam Preparation	Mr. Amay Deshpande Director, Old monks Philosophy

	MS in US	Miss. YugaliBafna Amazone Development Centre, California, USA
	How to face GATE exam in smart way	Mr.Mahipal Reddy CEO, ACE engineering academy Hydrabad
	A Webinar on Post Graduation and abroad Studies	Dr. TusharDeoras Director, Astute Academy, Pune
	Guest lectutre on preparation strategy for GATE exam	Mr.RanjitKhiste (M.Tech students)
	Guest lectutre on preparation strategy for BMC JE/SEexam	Mr.ShreyashDharmadhikari (Junior Engineer,BMC)
	Webinar on Prior and Post Things for master	Mr.YogeshBorule (MS Student Technical University Braunschweig)
2019-20	Awareness session on GATE/ESE Exam by ICE	Mr. Manu Abhrahim Director . ICE, Pune Division
	Awareness session on GATE/ESE Exam by I2E	Mr. Paresh Gugale, Managing Director, I2E gate Institute, Pune
	MPSC mock examination Competition	Higher studies cell
	AMVI, Examination and preparation (MechDeptt.)	HSC and Prof. Amay Deshpande , Professor, MIT, Kothrud
	MES Foundation Batch For Technical Civil Engineering Exam	Prof. Akash Gunjal, Assistant Professor, PCCOER, Pune
	Opportunities for civil engineers in coming years	Dr. SangramLimaye (Govt.ApprovedValuar Pune)

	Challenges and Opportunities for Civil Engineers	Mr. Pravin Kolhe, Superintending Engineer, Water Resource Dept, Govt. of Maharashtra
	Necessity of Post Graduation Course in Construction Field for Civil Engineers	Mr.HussainPadghawala (Alumni)
	Preparation Strategy for MPSC Civil Engineering Services	Mr.PratikDeore, Speaker,MaziSpardhaPariksha
	Online webinar-Higher Studies in New Zealand & Scope for Civil Engineers	Mr. Swapnil Yewale (Alumni)
2018-19	UPSC/MPSC Classes	Mr. Jayant Savant , CEO, Dronacharya Education Academy
	Session on All about higher studies in US and UK	Ashish Salunke, Chetan Pathade and ChaitnyaNirhali (BE Students)
	German language	Prof. AniketBhor Assistant Professor, PCCOER, Pune
	Awareness session on GATE/ESE Exam by I2E	Mr. Paresh Gugale, Managing Director, I2E gate Institute, Pune
	Awareness session on GATE/ESE Exam by ICE	Mr. Manu Abhrahim Director . ICE, Pune Division
	How to qualify GATE and other competitive exam	Mr.Vishwaskhedkar (Member ICI Pune)
	UPSC/MPSC Classes	Mr. Jayant Savant CEO, Dronacharya Education Academy
	How to prepare GATE and MAB	TIME Academy

2017-18	Discussion on Great career opportunity in BIM	Mr. Yogesh Mundhe, (Senior structural Engineer, BIM-Dar al Handash Consultants),Pune
	To focus on Career opportunity for Civil Engineering students	Mr. PravinKolhe , Executive Engineer, Water Resource Dept, Govt. of Maharashtra
	How to face GATE exam in smart way	Mr.Reddy Assistant ACE engineering academy Hyderabad
	Awareness session on GATE/ESE Exam by I2E	Mr. Paresh Gugale , Managing Director, I2E gate Institute, Pune
	Awareness session on GATE/ESE Exam by ICE	Mr. Manu Abhrahim , Director . ICE, Pune Division
	Japanese Language	Mrs. AmrutaMusale Japanese Trainer

V. Industry interaction for training / Internship / Placement

- Industry institute interaction cell is formed at Institute level to provide guidance and facility to students related to training, Internship, Placement. This cell consists of Institute level coordinator and each departmental member for better coordination and communication
- Details of higher studies and Competitive Exam cell are given in Table B 9.5.c.
- Experts are invited from various MNCs and other industries to give lectures on recent domain based advancements, cutting edge technologies & mechanisms; the state of art research topics, latest software's to enhance the knowledge in areas of Engineering and technology domain.
- Industry academia interactions are further strengthened by sending the students for internship in companies through MoU's and otherwise.

Table B 9.5.d: Details of department wise Active MOU'S signed with industries

NO. of MOU'S signed by each Dept.	A.Y.	CIVIL	COMP	E&TC	MECH	TOTAL
	2020-21	3	1	1	-	5
	2019-20	2	3	4	4	13
	2018-19	-	1	2	1	4
	2017-18	3	2	-	3	8

- A separate industrial visit coordinator is deputed to organize all the activities related to industry visits of students. Students are encouraged to go for industrial visits in each semester.

VI. Placement process and support for students

a. PCCOER training and placement cell provides placement and support for placement to students. Details of process are given below;

- To identify the company for campus recruitment & communicate with company HR.
- To confirm the date & eligibility criteria suggested by the company.
- To communicate to HOD or Training & placement faculty coordinators & students about date & criteria of campus drive by Email.
- To complete the registration of students appearing for the campus drive & verify the student's documents as per the need of the company.
- To arrange Pre-placement talk of the company professionals for the students.
- To support the conduction of Aptitude/Technical Test by company (Online/Offline).
- To arrange the Group Discussion & Technical / HR interviews of shortlisted students as per requirement of companies.

b. In addition, Placement is also done for Non- eligible Students by the central placement cell as well as at department level by inviting companies for internships, internships–cum – placements etc.

c. In order to get maximum placement in core companies department wise initiatives are taken such as faculty industrial training, each faculty is in contact with at least two industries which will help students for industrial projects, internships and their placements.

VII. Efficacy of career Guidance, Training, Placement

a. Efficacy of career Guidance, Training, Placement cell facilities is summarized in Table B 9.5.e

Table B 9.5.e. Impact of career guidance, training, placement

S.N.	Academic year	Total no. of students	No. of students placed	No. of students admitted to Competitive Exam/Higher studies	No. of students as entrepreneur	No. of Interns
1	2019-20	352	219	21	11	254
2	2018-19	343	207	28	7	243
3	2017-18	304	195	17	10	173

b. Special achievements of Training and placement cell

- Two International Placements in First (2017-18) batch: Ms. Shruti Subramaniyam placed as a Data Scientist in **Konica Minolta, Inc.**, Tokyo, Japan with package of 16.8 Lacs and Ms. Anjali Teke was placed as a Software Engineer in **Techfirm**, Tokyo, Japan with a package of 14.9 Lacs.
- Ms. Ankita Arvind Vaidya, a student of 2018-19 batch from Computer branch was placed in product Development Company **Quantiphi** with package 7.5 Lacs.

- Ms. Sudeshna Udaysingh Thakur, a student of 2019-20 batch from Computer branch was placed in product Development Company **VMware** with package 10 Lacs.
- Ms. Gauri Nagesh Basutkar student of 2020-21 Batch from Computer engineering department placed in **Credit Suisse** product Development Company with package 11.92 LPA.
- Mr. Sachin Jaganlal Patekar student of 2020-21 Batch from Computer engineering department placed in **VMware** product Development Company with package 10 LPA.
- Mr. Abhijit Panikar student of 2020-21 Batch from Electronics and Telecommunication engineering department and Mr. Sushant Dattatray Said students of 2020-21 Batch from Computer engineering department are placed in **Quantiphi** product development company with package 9.5 LPA.

9.6. Entrepreneurship Cell (5)

Institute Marks 4

I. Incubation and Entrepreneurship Cell PCCOER

EDC works on developing innovative thoughts and ideas in student's minds and converting these into commercial products. Students are main resources and they can get opportunities to expose their skill and excellence. Innovations are essential for technological development, which should begin in the Institute campus itself. To create awareness about entrepreneurship and infuse an enterprising spirit among the students, EDC was established on 05/01/2017. A survey called Career Options was conducted and the aptitude and interest shown by the students towards entrepreneurship further strengthened and accelerated the growth of EDC.

a. Aim- On mission towards building an enterprising India, Entrepreneurship Cell is committed to developing and strengthening entrepreneurial qualities in students.

b. Objectives-

- To inculcate "entrepreneurship as a career option" in students and to inspire students to take up the challenge of entrepreneurship.
- To promote creative thinking and an entrepreneurial mindset among the students.

- To build entrepreneurial capabilities through Technology Incubation and entrepreneurship training and equip them with necessary skills, fund support, mentoring, evaluation and prototype branding.
- To promote innovation and product orientated research and development.
- Develop courseware and a variety of training programs for PCET stakeholder and public.
- To encourage the development of ingenious products and packages and bridging the gap between R&D and commercialization.

c.EDC Structure-

To provide guidance and conduct different activities related to entrepreneurship, EDC is formed at PCCOER, which consists of institute level faculty in-charge and each department faculty member. Detailed structure of EDC is given in Figure. B 9.6.a;

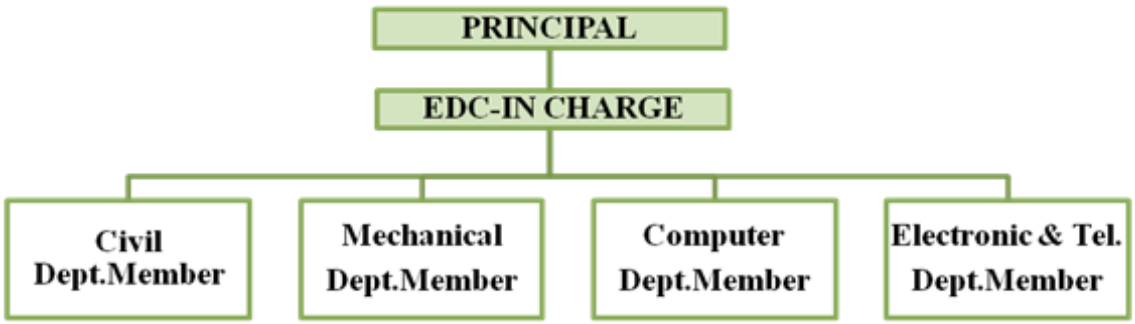


Figure B. 9.6. a: Structure of EDC

d. EDC Survey for Career option Form (COF)

- EDC was established in the year of 2017 at institute level to support and motivate the students to undertake the innovative ideas which could be converted into successful startups or enterprises.
- To know the exact inclination of the students towards various career options available, the carrier option form was designed and the responses of the students

were recorded and analyzed. A detail of career option form analysis is given in Figure B 9.6. b and c.

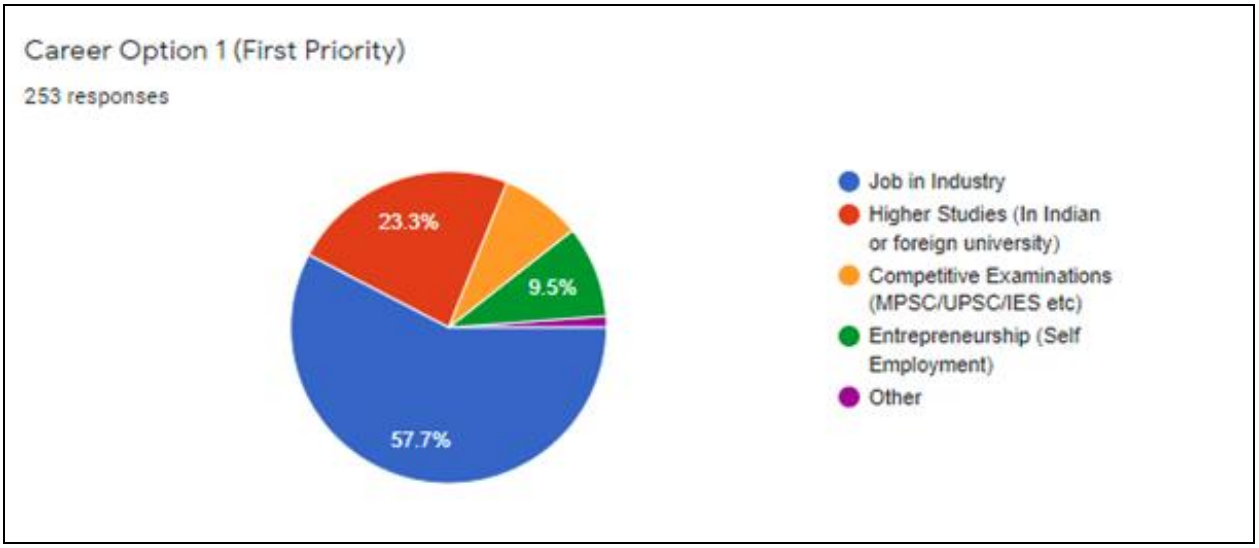


Figure B. 9.6.b: Analysis of Career option form

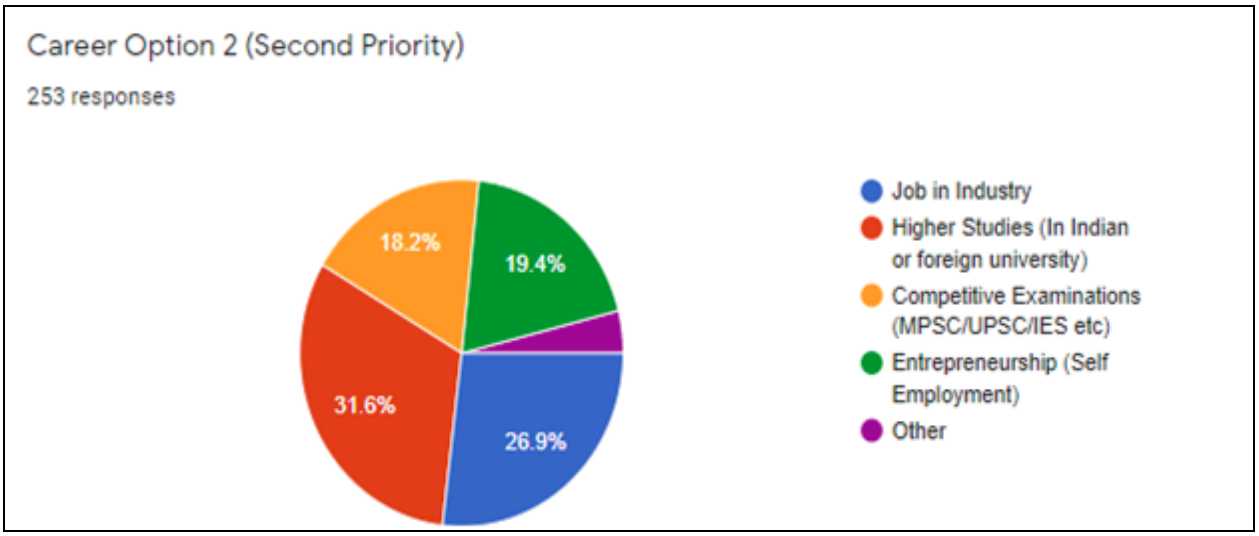


Figure B. 9.6.c: Analysis of Career option form

- Based on 253 responses received from students it is observed that 9.5 % students gave Entrepreneurship as the first option and 19.4% students gave it as the second option.

- It was apparent from the analysis (COF) that the number of students interested in entrepreneurial activities was considerable. In view of that EDC is provided with some financial assistance by the institute to support the students.

II. EDC activities

To create awareness about entrepreneurship & motivation among students EDC organized different activities. These activities are summarized in table Table B 9.6.a:

Table B 9.6.a List of activity conducted through Entrepreneurship Development cell

Sr.No	Activity Particulars	Date	Outcome
1	Dipex-2017	17/03/2017	Students got an opportunity to present UG project at Dipex
2	NIDHI-EIR	8/07/2017	Successfully applied for funds under National Initiative for Developing and Harnessing Innovations (NIDHI)
3	AICTE-startup	15/09/2017	Applied for startup competition under 'Start-up India' Initiative by AICTE
4	Open Govt data Hack	4/10/2017	Applied for competition
5	National startup competition for rural technology –swadeshi startup meet	2/12/2017	Registration done and Invited for project presentation
6	Entrepreneurship awareness camp-MCED three days workshop	16/02/2018 to 18/02/2018	159 students were participated who realize opportunities for innovative entrepreneurs and support system for startup
7	Atal innovation Mission	28/08/2018	Applied under various domains. More than 15 Application were posted

8	CII Higher Education Summit- Attended one day program at Mumbai by EDC member	10/08/2018	EDC members got an idea about how to develop an Entrepreneurship cell.
9	Vibrant Gujarat startup summit-2018- Attended three days program at Gandhinagar Gujarat	11/10/2018 to 13/10/2018	EDC members got an idea about how to develop EDC and promotion of incubating their ideas.
10	Atal New India Challenge (NITI) ayog	28/02/2019	Shortlisted for demonstration of prototype and Presentation at Delhi
11	Fellowships admission to applying to Atal New India Challenge ANIC applicant	27/09/2019	Applied for Fellowships admission under Atal New India Challenge.
12	Keynote session by Mr. MandarLele on "SMEs: Management, Challenges and Compliance awareness"	07/01/2019	Got an Opportunities and challenges in the management of SMEs
13	Keynote session by Mr. SuryakantJadhav on "Innovation & Startups"	07/01/2019	Gain innovative ideas and how to apply for successful startups
14	Innovative Ideas for Clean Environment.	11/10/2019	Useful in Facing the challenges of environmental changes, which is a major cause for concern for us and our future generation
15	5 days workshop on" Entrepreneurship Awareness & Startups"	14/01/2019 to 18/01/2019	Realized potential and opportunities in a enterprise and support system required for Start ups
16	One day workshop on Design Thinking (Latest trend in Industry)	16/03/2019	Recognized the recent trends in the industry and develop innovative thinking for new design
17	“Student Awareness Program “on Innovation,	03/07/2019	Comprehend the importance of innovative ideas and compete at

	Incubation & Enterprise in association with SPPU,		various stages and levels for realization of the ideas into start ups
18	College Level Start Up Competition	10/10/2019	Top two groups from the college were selected for the Start Up Competition at University Level
19	A Webinar on “How to Generate Your Ideas from Scratch by using lean canvas model”	30/12/2020	Students learnt to the idea of lean canvas for developing their own enterprise
20	INOFEST-2021(I-2-e) SPPU	27/01/2021 to 05/03/2021	Total 09 Groups participated in the completion
21	"ThinkTrans Startup Engagement Initiative"	27/02/2021	Total 15 Ideas submitted to Director, Think Tanks
22	Actionable Entrepreneurship Program	15/02/2021	30 Hrs. Program is being run online and has started from 15/02/2021will be immensely useful for the budding entrepreneurs

III. Effectiveness of EDC

EDC has provided the platform for the students of all the departments to showcase their talent and skills related to incubation and entrepreneurship. The students are getting benefited in the following ways;

- The platform is provided for the students who are really willing to undertake incubation and entrepreneurship.
- More students are going for this option and the trend is encouraging.
- Financial assistance/Funding and guidance is made available for the ideas of the students having potential to be successful startups/enterprises by EDC in coordination with the Institute. As an example Incubation funding of Rs. 2.5 lakh was provided for development of E-bicycle.
- Success stories of PCCOER EDC are summarized in Table B 9.6.b

Table B 9.6.b Student benefited (Success stories) Year wise data

Sr. no.	Academic Year	Name of Student	Designation /Company Name/registered address	CIN number and Registration number	Department
1	2017-18	Omkar Jadhav	Kingz Room Constructions	100427972003	Civil
2	2017-18	Siddhesh Kajale	Kajale Constructions	193000313616286	Civil
3	2017-18	Pratik Jadhvar	Proprietorship	27881687943P	Civil
4	2017-18	Mayur Khadke	MSK Enterprises	102649972003	Civil
5	2017-18	Gaurav Taras	GT Buildcon	100333572003	Civil
6	2017-18	Avinash Taware	Tutorials	27ABOFA5045Q1ZS	Civil
7	2017-18	Amol Thube	Abhimol constructions	1731000311374291	Civil
8	2017-18	Prajakta Koyate	Compdroid Solutions (OPC Pvt. Ltd.)	U72900PN2019OPC184090	Computer
9	2017-18	Aniket Padale	Manufacturing	MH30A003256	Mechanical
10	2017-18	Vipul Chaudhari	Pioneer Rubber Ind.Pvt.Ltd.,Pune	27AFZPC182M1ZW	Mechanical
11	2018-19	Suhas Kolhe	Contractor	ZP/5A/UE/348/2019/2808.2019	Civil
12	2018-19	Rahul Marne	Sark Industries	U511001MH2012PTC230116	Civil
13	2018-19	Kaustubh Narvekar	PWD-works	UE-CAT-01/06/141	Civil
14	2018-19	Priyanshu Kukkar	Ecoz Bolt	105023801903	E & TC

15	2018-19	Mahesh Pawar	Ecoz Bolt	105023801903	E & TC
16	2018-19	Sanket Patil	Neoteric Mediaworks	107972251903	E & TC
17	2018-19	Umesh Wali	M S Nirmala Construction	101357481903	Mechanical
18	2019-20	Vaibhav Parade	All in services	2031000314142094	Civil
19	2019-20	Akash ashok Gaware	Gurudatta Enterprises	2031000314656200	Civil
20	2019-20	Aksh Gaikwad	ECO solution	AATCA8092N	Civil
21	2019-20	Nishant Kharcahe	Tirupati Enterprises	-	Civil
22	2019-20	Sana Iqbal Mulla	Sana Enterprises	2031000314141566	Mechanical
23	2019-20	Rohit Bhagawat	Durvankur Engineering	20401500314142260	Mechanical
24	2019-20	Sairaj Waghmare	Suyash Engineering	2031100314142398	Mechanical
25	2019-20	Saurabh S. Kshirsagar	kshirsagar Engineering	2031000314142480	Mechanical
26	2019-20	Rahul D. Shinde	kridamitra	2031000314141919	Computer
27	2019-20	Rudrapratapsingh Bhatti	Vrudra Electronics	104313542103	E & TC
28	2019-20	Vrushabh Hande	Vrudra Electronics	104313542103	E & TC

29	2020-21	Manali A. Munot	Webly	2031000314142571	Computer
30	2020-21	Mulani Mhmd. Jaid	Hanker Tech	2031000314141691	Computer
31	2020-21	Samruddhi D. Bhosle	Reuse And Restate	2031000314141422	Computer

9.7. Co-curricular and Extra-curricular activities (10)

Institute Marks 9

I. Co-curricular Activities:

Co-curricular activities act as supplement and catalysts in understanding of curricular subjects by the students. Various Co-curricular activities such as students' association activities, Seminars, Workshops, Certificate courses, Lectures by experts in technical areas, technical events and industrial visits are organized for the benefit of students under co-curricular activities. Institute provides sumptuous funding for organizing such activities in the campus. Institute also gives travelling allowances, registration expenses and the like for participating students and faculty. This encourages the beneficiaries to partake co-curricular activities in large numbers. Various co-curricular activities are summarized in Figure B.9.7.a:

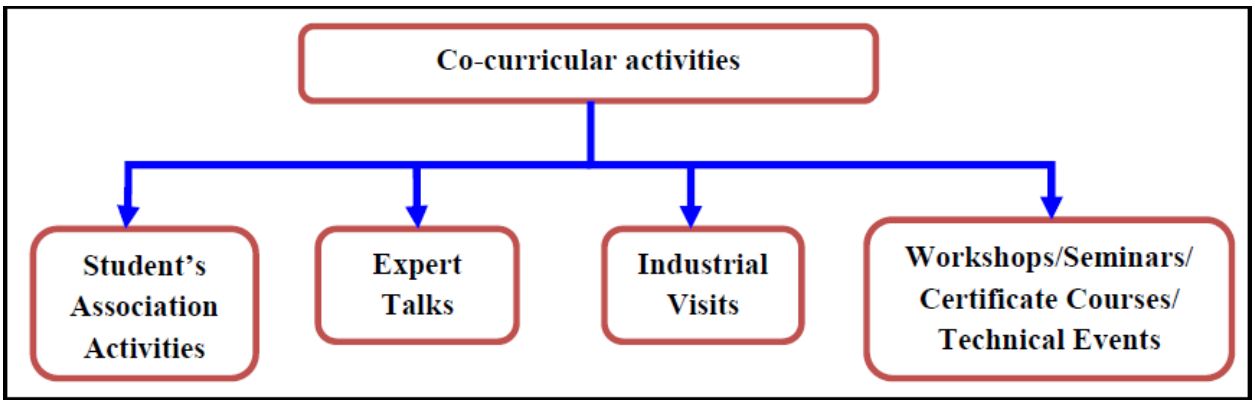


Figure B.9.7.a Summary of Co - curricular activities

a. Student associations and chapters:

Each department has active student associations and chapters which organize various activities for development of students. Students associations and chapters were formed to bring about the technical development of students by organizing seminars, workshops and other activities and also to improve non-technical abilities of students by inculcating good communication skills, managerial abilities, presentation skills and team work. Department wise student associations and chapters are listed below:

- FESA(First year engineering student associations)
- CESA(Civil engineering student associations)
- C-CUBE(computer cosmos consortium)
- ETESA(Electronics and telecommunication engineering student associations)
- MESA (Mechanical engineering student associations)
- Student chapters -IEEE, IETE, ISHRAE, ACM etc.

b. Summary of co curricular activities:

Major institute level co curricular activities are listed below:

- "Technospark@PCCOE&R" an online intercollegiate Technical-Fest was organized from 29th May to 30th May 2020 with 7 sub events.
- "CIPCIS" National conference on Indian patents, copyrights, innovation and startups was organized on 21st and 22nd December 2019 and 18th -19th February 2021.
- "Technovate" a technical intercollegiate event has been organized by PCCOER students every year.

Different curricular activities organized at each department under co curricular activities are summarized in Table B 9.7.a.

Table B. 9.7 a. Summary of co - curricular activities of PCCOER

Co-curricular activities	A.Y.	CIVIL	COMP	E&TC	MECH	FE	TOTAL
No. Of Workshops / Seminar / Certificate Courses / Technical events Organized By Each Dept	2020-21	6	35	16	6	3	63
	2019-20	7	34	23	5	3	72
	2018-19	4	19	13	4	-	40
	2017-18	6	16	5	4	-	31
Expert Talks By Each Department	2020-21	18	9	37	12	16	92
	2019-20	20	4	15	7	10	56
	2018-19	6	1	5	4	3	19
	2017-18	8	2	5	2	2	19
No. Of Industrial Visit Organized By Each Department	2020-21	0	0	0	0	0	00
	2019-20	14	2	5	11	3	35
	2018-19	6	1	4	14	1	26
	2017-18	13	-	1	13	1	28

c. Outcomes of co-curricular activities:

A.Y.2020 -21:

- Asian Conference on Innovation in Technology (ASIANCON '2021) is an International Conference technically sponsored by IEEE Bombay Section and Hosted by Pimpri Chinchwad College of Engineering and Research, Pune on 28th and 29th August 2021 with ISBN No. 978-1-7281-840-5. It provides a platform for students and professionals from all around the world to share their findings in the fields of Engineering and Technology and others innovative Technologies. This year a special emphasis is to be placed on, Data Science, Artificial Intelligence automation technologies and robotics. 728 Research Scholars participated in Conference.

- "CIPCIS-2020" National conference on Indian patents, copyrights, innovation and startups was conducted successfully with 210 IPR registered and 150 IPR presented 293 delegates from Industry and academia registered for the conference.

- One week online Faculty Development Programme (FDP) on "Emerging Trends in Refrigeration & Air Conditioning" is conducted by Department of Mechanical Engineering, PCCOER with a total 1351 Faculty/ Research Scholar/ Industrial Person / Graduate participating from all over India.

- Three groups published papers in Scopus Indexed Springer International Conferences. PIYUSH INGLE & group members of E&TC have presented a paper in the Scopus indexed International conference organized by King Mongkut University of Technology, Thonburi, Thailand.

- Mr.Ishpeaswani secured 4th rank in SPPU Sponsored PCMC Hackathon. 2021.

- Mr. SrinathChavan, Mr. Akash Dangat and Mr. Siddharth Kore, Department of Civil Engineering, PimpriChinchwad College of Engineering and Research,Ravet, Pune has secured First Prize in National Level Tech Fest - Project Competition Conducted at SUNTECH 2k21 organised by School of

Engineering and Technology, Sandip University, Nashik on 3rd and 4th June 2021.

- Total 742 students of PCCOER completed online certification courses such as NPTEL, Coursera, and FOSS etc.

- 7 Groups OF FE won prizes in Navdhara - state level project competition - 21 August 2021 - Organized by FE dept.of PCCOER.

AY: 2019-20:

- "Technospark@PCCOE&R" an online Technical-Fest was conducted successfully with more than 2700 participants in different sub events.
- "CIPCIS-2019" National conference on Indian patents, copyrights, innovation and startups was conducted successfully with 536 articles published in the proceedings of the conference.
- Team SV-GRAVITY PCCOER WON 1st position and Rs.1, 00,000/- cash prize in Smart India Hackathon, Maharashtra.
- Team MECHAHOLIC PCCOER, stood all India 9th Rank in AUTO-India Racing Championship season-4 held at Pune, Maharashtra.
- Team NASHORN PCCOER, stood all India 2nd Rank in INDURO Student India 2020 (Shootout Special) at Talegaon, Pune Maharashtra.
- Team SONIC DIGGER PCCOER cleared virtual round in SAE-TIFAN 2019-20 at VIT Pune.
- Team Civil awarded Second prize (Rs. 7000) in Techno Managers in National Level Conference entitled INSIGHT20 with theme Recent Construction Technology Trends organized by MIT college of management.
- JiyotBabrah& Team, E&TC, PCCOER, Secured 1st Prize & cash worth Rs. 20000/- In National Level Technology Dissemination Contest for students TDCS-2019 / Eu-Reka organized by IEEE Pune Section at MIT COE, Pune on July-August 2019.

- HaritaSelvakumari, E&TC, PCCOER, Secured Secured Second Prize & cash prize worth Rs. 5000/- In Digimania Contest organized under silicon fusion organized by AISSMS COE, Pune on 18-20 September 2019.
- Mr. RanjjitKhiste selected in IIT Roorkee for M.techprogramme whose All India rank is 600 in GATE 2K19.
- JiyotBabrah& Team, E&TC, PCCOER, Secured 1st Prize In Project Competition at PadmaShriVasantdadaPatil IT, Pune on 13 & 14 March 2020.
- 72 students participated in Project Exhibition 'ABHIKALP 2020' organized by SavitribaiPhule Pune University, Pune 13 & 14 March 2020.
- Mr.PratikWalunj from SE –computer won 2nd position in "GMRT Science Exhibition 2020 At HMRT Khodad – National Science Day".

AY: 2018-19:

- Team BYTE-US PCCOER WON 1st position and Rs.50000/- cash prize in Smart India Hackathon, Maharashtra.
- Mr.Sushant Said won gold medal in "The joy of Computing Using Python" in NPTEL exam july-oct '18.
- Team MECHAHOLIC PCCOER stood all India 3rd Rank in Jaipur Street Karting CUP Season-2 and best CAE award.
- Team NASHORN PCCOER, cleared SAE-BAJA virtual round at Pithampur Indore, Madhyapradesh.
- Four students Stood SPPU ranksfrom the civil engineering Department.
- Mr. ShreyashDharmadhikari- achieved success at MCGM, Jr Engineer Exam. 37th Rank in all over Maharashtra.
- Team MECHAHOLIC PCCOER stood all India 3rd Rank in Jaipur Street Karting CUP Season-2 and best CAE award.
- 30 students of PCCOER participate in ROBOCON 2019.

AY: 2017-18:

- Team NASHORN PCCOER, stood all India 5th Rank in SAE-BAJA Competition at IIT Rooper, Punjab.
- Team MECHAHOLIC PCCOER cleared the virtual round in Indian Karting Championship at Mohite racing Academy, Kolhapur, Maharashtra.
- ShubhamKulakrni Civil-Project Grant of 50 lakh was announced under PM Yojana in Atal New India Challenge.
- Mr. Swapnil Yewale selected for MS programme in New Zealand.
- Two students stood SPPU rankers from the Civil engineering Department PCCOER.
- 1 project group, E&TC, PCCOER, Secured 3rd Rank In Project Exhibition at KK Wagh COE, Nashik on 28 Jan 2018.
- Rohini Bali & Team, E&TC, PCCOER, won 2nd Prize In National Level Workshop on Internet of Things at DYPCOE, Akurdi, Pune on 22nd & 23rd Sept, 2017.
- YashAadhav, E&TC, PCCOER, won 2nd Prize In Byldan in Mindspark 17 at COE, Pune on 22nd to 24th Sept 2017.
- 32 students participated in 'ROBOCON 'held at Shree Shiv Chhatrapati Sports Complex, Balewadi, Pune on the 1–3 March 2018.
- Mr.Rishabh Jain won 2nd position in IOT-Internet of things.

II. Extracurricular activities:

Technical knowledge and cultural arts are two sides of the same coin. Management believes that without the recreation of cultural activities, development in technical knowledge is incomplete. The Institute motivates the students to get actively involved in extracurricular activities such as student associations activities, sports, art circle and NSS activities, which helps students in their overall development. Extra-curricular activity also helps students to expand their network, which is beneficial for finding career opportunities after graduation. Various Extracurricular activities are summarized in Figure B.9.7.b

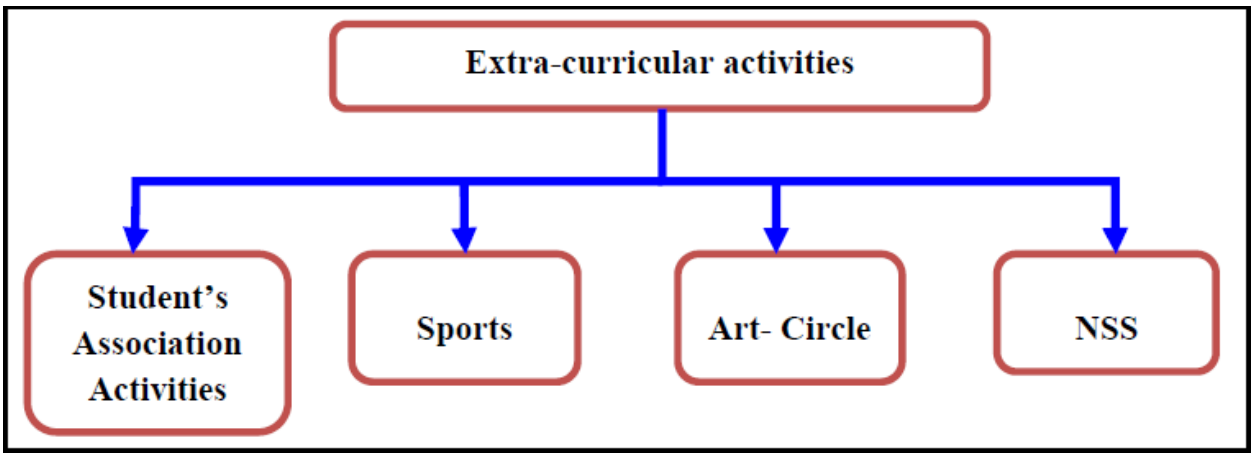


Figure B .9.7.b Summary of Extra-curricular activities

A. Sports:

Physical activity and exercise, including sports, is invaluable for mental, physical, psychological and social growth of every student. Sports section at PCCOER is equipped with indoor and outdoor facilities for the staff and students to take part in individual and group activities. The Institute has sufficiently large open ground for outdoor sports with an open gymnasium. The indoor activities include Carrom board, chess board, Table tennis hall, badminton hall, etc. Students are encouraged to and provided funds for participating in intra and inter university tournaments. Every year annual sport competitions have been organized in the institute named as "Sport Days.

a. Availability of sports facilities:

Table B 9.7.b: List of indoor sports facility available in the campus

Sr.No.	Name of the sport Facility	Place of availability
1.	Caroms	507
2.	Chess	507
3.	Table Tennis	507
4.	Badminton	Badminton Hall

Table B 9.7.c:List of outdoor sports facility available in the campus

Sr. No.	Name of the sport facility	Place of availability
1	Volleyball	Open ground
2	Basketball	Open ground
3	Net Cricket	Open Ground
4	Kho-Kho	Open Ground
5	Kabbaddi	Open ground
6	Lawn Tennis	Open ground
7	Open gymnasium	Open ground

b. Summary of Students achievements in sport activities is listed below:

- PCCOER Organized Pune District Table Tennis Sports in association with Pune District Sport Zone at PimpriChinchwad college of Engineering and Research, Ravet on 16-17 august 2017 and our College got 3 rd rank among 30 participant teams.
- Mr. Wasim Shaikh from Civil EnggDept has been selected for the National Level Yoga competition which was held at Bhubaneswar in the month of September 2017.
- Mr.OmkarLadkat from Civil Enggdept selected at zonal level Lawn Tennis Sport competition held at DYPCOE, Lohegaon on 16/09/2017.
- Mr. Pradnesh Mane From 1st year dept selected at zonal level for Rifle Shooting competition dated 24/10/2017 which was held at Rifle Association, Hadapsar.
- Mr. YashankJagtap from Mechanical Engg.Dept achieved Bronze Medal in Archery competition and was selected for National level Archery competition on 26/12/2017 which is going to be held at Bhubaneswar .

- Mr.Ashishkumar (Mech. Dept), Mr Kristi (FE Dept) and Ms. Rohini Bali (EnTcDept) selected for university level korfball competition on 10/12/2017 which was held at E.S.Divekar college of Arts & commerce, Varvand.
- PCCOER students also participated in various Sport competitions such as Cricket, Football, Basketball, Kho-Kho across the Pune District Sport Zone in between September to December 2017.
- Mr. Pradnesh Mane (SE-Mechanical) participated in 10 mtr Rifle Shooting SPPU zonal Level competition conducted at Hadapsar (2018-19).
- Mr. Pradnesh Mane (SE-Mechanical) Stood 3rd position in 10 mtr. Rifle Shooting competition at Intercollegiate Level SPPUconductedatHadapsar (2018-19).
- PCCOER girls Basketball Team participated in Intercollegiate Basketball competitions conducted at DholePatil College Wagholi.
- PCCOER student's boys teams participated in various Sport competitions such as Cricket, Football, Basketball, Volley ball across the Pune District Sport Zone in between September to December 2018.
- Mr. AtharvSalunkhe (SE- Computer) Stood 2nd position in 50 mtr freestyle swimming competition at Intercollegiate Level SPPU conducted at Arts, Comm., Science college Narayangaon.(2019-20).
- Mr. Pradnesh Mane (TE-Mechanical) Stood 3rd position in 50 mtr freestyle swimming competition at Intercollegiate Level SPPU conducted at Arts, Comm., Science college Narayangaon.(2019-20).
- Mr. Pradnesh Mane (TE-Mechanical) Stood 2nd position in 10 mtr Rifle Shooting competition at Intercollegiate Level SPPU conducted at Hadapsar(2019-20).
- PCCOER boys Basketball Team participated in Intercollegiate Basketball competitions conducted at DholePatil College Wagholi(2019-20).
- PCCOER boysBadminton Team participated in Intercollegiate Badminton competitions conducted at Baramati (2019-20).
-

B. Student Association activity:

Different Extracurricular activities are organized by the departmental student association which helps students to expand their network which is beneficial for finding career opportunities after graduation.

Along with student associations different clubs such as Promethean-The Literary Club, Shat-taraka Film and Art Club, Yeshavanti Trekking Club, photography club, women empowerment cell are formed at institute and department level to conduct extracurricular activities.

Table B 9.7.d Details of extra-Curricular activities organized by each department

Extra-Curricular activities	A.Y.	Institute level	CIVIL	COMP	E&TC	MECH	FE	TOTAL
No. Of Extra-Curricular activities Organized By Each Dept	2020-21	2	2	2	2	1	2	11
	2019-20	9	9	7	3	3	9	40
	2018-19	11	3	2	5	2	8	31
	2017-18	3	5	5	3	3	1	20

C. Art Circle:

- The Art Circle is an integral part of the Institute. There is an Art circle committee that conducts extracurricular activities in college. Annual Social Gathering “Expression” is arranged every year. The aim of the Gathering is to provide a platform for students to showcase their talents and sharpen the organizational skills.
- Students participate in various extracurricular activities like Drama competition, Dance competition, Singing competition, Rangoli, Art and Craft, Mehandi etc., along with the celebration of various days like Traditional Day, Group Theme day.

- The Art circle has organized various activities for encouraging students to share their ideas through Marathi Bahasa divas; Elocution and debate competition etc. These activities are beneficial in developing leadership skills and make them work in teams.
- For practice of different art circle activities, the institute provides separate places for art circle activities
- Various events conducted by Art circle are funded by the institute to the tune of Rs.6 lakhs which help students to participate in large numbers. Events organized by state and university level, such as FirodiyaKarandak, GadkariKarandak, Dajikaka, etc. are also funded by the Institute to showcase and enhance their art skills.

a. Achievements in art circle events:

To broaden the horizons of students, they are encouraged to participate in several intercollegiate events such as FirodiyaKarandak, GadkariKarandak, Dajikaka, YuvaMahotsav etc. Some of the special achievements are summarized in table Table B 9.7.e

Table B 9.7.e.Summary of achievements of students participated in art circle events

Sr. No.	Name of the event	No. of students participated and won in art circle events (SPPU/State /national level)			
		2017-18	2018-19	2019-20	2020-21
1	All India Essay writing competition	----	08 Students Participated	06 students participated, One student got 9th rank in State level	07 students participated
2	YuvaMahotsav organized by SPPU	09 students Participated	20 students participated & 09 students qualified for the semifinal	37 students participated & 05 students qualified final round	----
3	Firodiya	29	29 Students	29 Students	----

		Students Participated & qualified pre-primary round	Participated	Participated	
4	Dr. Arvind B. Telang Inter collegiate Elocution competition	----	----	Two students got first prize trophy	----
5	GadkariKarandak	----	20 Students Participated	One student got a consolation prize for acting, 21 Students participated.	----
6	CM UJALA Chashak	----	01 student got first prize	----	----
7	COEP Impression	----	----	One student got second prize in Poona 5 event Rap song, 06 Student participated	One student participated
8	DajikakaKarandak	----	17 Students Participated	----	----
9	UdgarNatyavachan Drama Competition	----	07 Students Participated	----	----
10	Abhivyakti Drama Competition	----	13 Students Participated	----	----
11	KATHA KATHAN Drama Competition	----	02 Students Participated	----	----

D. National Service Scheme (NSS):

- National Service Scheme (NSS) has been introduced at SPPU since 1969 as a part of the academic programmes and since then NSS has been functioning as a regular feature in the realm of our university education.
- NSS is a voluntary association of students in Colleges, Universities. The cardinal principle of the NSS programme is Development of the Personality of College Students through Community Service. Motto of NSS is NOT ME BUT YOU
- Special campaigns are organized generally on various developmental issues of national importance. The NSS Camp will be of 10 days duration. The projects should be selected as per the guidelines, after identifying the needs of the village.
- NSS Unit of PCCOER is started in A.Y. 2015-16. The strength of the NSS Unit of PCCOER is 50 volunteers. Details of institute NSS Cell structure and facility provided are summarized in Figure B.9.7.c .and Table B.9.7.f respectively.

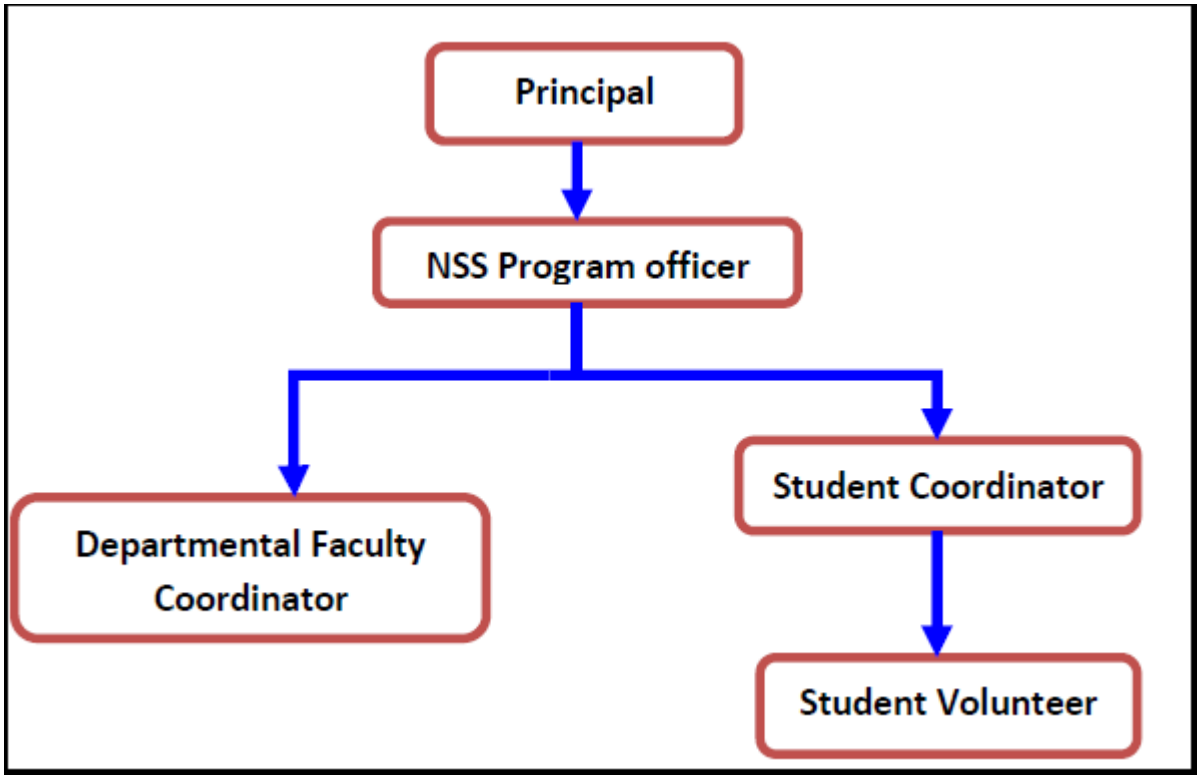


Figure B. 9.7.c. Structure of institute NSS Cell

a. Availability of NSS facilities:

Table B.9.7.f. List of NSS facilities available in the campus

Sr. No.	Name of the facility	Numbers Available	Place of Availability	Whether available beyond regular college
1	NSS Room	01	201 (2nd Floor)	Yes
2	NSS Store Room	01	323 (3rd Floor)	Yes
3	Tree plantation Equipments	As per dead stock	Store Room of NSS	-
4	Utensils for Winter Camp	As per dead stock	Store Room of NSS	-

b. NSS Special Achievements:

- **Unnat Bharat Abhiyaan (UBA)** is the flagship programme of Ministry of Human Resource Development, Govt. of India, which supports participating institutions for rural development through government funding. NSS Unit of PCCOER is involved in the development of five remote villages(Mau, Wadeshwar, Kusawali, Dahuli,Khandi) through UBA and Special winter Camps of NSS. The villages are situated at Tal: Maval, Dist: Pune.
- The survey of five villages has been completed by NSS Volunteers and details have been uploaded on UBA portal. The development plan of villages has been prepared through student involvement to enter into the next phase of UBA.
- NSS Student Volunteers were appreciated for Participation in Guinness world record “Swachha Wari Swastha Wari” under NSS by SPPU.
- Our students have participates in a Poster and Video Making Competition for Students of Participating Institutes (PIs)' organized by Unnat Bharat Abhiyan.

c. NSS activities:

Different extra-Curricular activities organized by NSS cell are summarized in Table B.9.7.g.

Table B.9.7.g. Details of extra-Curricular activities organized by NSS

Sr.No.	Name Of Event	No. of Student Participated	Date of Event
1	COVID-19 Vaccine: Public Awareness Campaign Contest	330	11/04/2021 to 14/04/2021
2	Women's Day Celebration	64	08/03/2021
3	Tree Plantation	50	1/7/2020 to 7/7/2020
4	Making of face shield and Survey of families for Fight against Covid-19	43	1/4/2020 to 30/6/2020
5	Blood donation	171	22/02/2020
6	Gandhi Jayanti Celebration	25	2/10/2019
7	Yoga one week Workshop for students	280	14/8/19 to 18/08/19
8	Guinness world record Event	118	23/6/2019
9	International Yoga day	300	21/06/2019
10	Blood Donation Camp	134	15/02/2019
11	SwachhataAbhiyan	25	13/01/19

12	SardarVallabhbhai Patel Jayanti	310	31/10/18
13	Gandhi Jayanti Celebration : Gifts to SwachhataKarmachari , Rangoli Competition, Elocution Competition, SwachhataAbhiyan, Street Play Competition	50	26/9/2018 to 2/10/18
14	Tree Plantation	20	5/7/2018
15	Yoga Day	330	21/06/1018
16	SardarVallabhbhai Patel Jayanti	300	31/10/2017
17	Blood Donation Camp	85	15/10/17
18	SwachhataPakhawada	50	1/8/17 to 15/8/2017
19	Pune Cyclothan	5	17/07/2017
20	Tree Plantation week	25	1/7/2017 to 7/7/2017

III. Annual Student Activities:

- Every year orientation sessions for FE at institute level and SE students at programme level have been conducted in the programme, so as FE, SE students get familiar with programme activities, policies etc. This benefits them in getting comfortable in PCCOER for their academic and other activities.

- "Technovate" is an annual technical intercollegiate event organized by PCCOER students.
- Every year annual social gathering such as "EXPRESSION" has been organized by PCCOER students.
- Farewell function for final year students has been organized in each programme by student associations.
- Every year International Yoga Day function is organized in PCCOER for all students and faculty members.
- Every year annual sport competitions have been organized in PCCOER named as "Sport Days".
- Every year "CIPCIS" National conference on Indian patents, copyrights, innovation and startups and "Technospark@PCCOE&R" an online intercollegiate Technical-Fest has been organized at PCCOER.

CRITERION - 10	GOVERNANCE,INSTITUTIONAL SUPPORT AND FINANCIAL RESOURCES	120

Total Marks 110

10.1 Organization, Governance and Transparency (40)

Institute Marks 37

10.1.1 State the Vision and Mission of the Institute (5)

Institute Marks 5

The vision and mission of the Institute are:

Vision of the Institute:

To be a Premier Institute of technical education and research to serve the need of society and all the stakeholders.

Mission of the Institute:

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

The vision has been set taking into consideration the present day technical needs of the society as well as forecasting the future requirements in various technological fields so as to become an element in the growth of the society and nation. The focus of the Institute is on outcome based education. Knowledge, skill, attitude and behavior are considered as the pillar to build the Institute philosophy in framing vision and mission.

- To accomplish the vision of the institute, the mission is comprehensive.
- Providing good infrastructure, state of the art laboratories, and presence of qualified, experienced and eminent faculty to improve the quality of technical education.

- Organizing programs to encourage students and faculty to do research, building interaction with outside world and providing conductive environment to learn are identified as source of the basic needs to meet the present day technical challenges.
- Arranging different spiritual and value based activities to inculcate social commitment among students.

Vision and Mission are displayed at the following prominent places for internal and external stake-holders such as:

- Institute entrance
- Management office
- Principal office
- HOD office
- Notice Boards
- Central library
- Canteen
- Hostels
- College corridor
- Newswire
- They are also available on:
  - ✓ Institute website
  - ✓ Departmental Brochure(s)
  - ✓ Attendance Book
  - ✓ Lab manual
  - ✓ Course File
- Vision and Mission statements are disseminated to all the stakeholders of the programs through meetings (Parents meet, Alumni meet etc.) and awareness workshops.

- Department presentation starts with Vision and Mission statements in all academic activities organized by department such as conferences, workshop etc.

- The Vision and Mission statements help to translate the objectives of the organization

into working structure of the department.

- The vision of the professional education is to develop logical thinking, intellectual ability and research pertaining to modern industrial requirements so as to inculcate entrepreneurship and aspirant to acquire in-depth knowledge among the UG students.
- The knowledge sharing allows us to work in transparent environment which is essential while taking decisions and work with more clarity towards a common Vision of empowering others for transformational change through technology.

10.1.2 Governing body, administrative setup, functions of various bodies, service rules, procedures, recruitment, and promotional policies (10).

Institute Marks 10

Pimpri Chinchwad College of Engineering and Research was established in the year 2014 as a self-financing Institute founded and managed by "Pimpri Chinchwad Education Trust" which has more than 25 years of footing in the field of quality education. PCET helps serving and meritorious students through *Pimpri Chinchwad College of Engineering and Research*. The trust has ten high performing Institutions covering the entire gamut of educational needs of the society from KG to Doctoral Program in various disciplines of learning.

The governing body, administrative setup, functions of various bodies

In order to meet the organization's objectives and to bring transparency, the organization structure and flow of authority is well defined. The duties, responsibilities and powers are assigned and coordinated at the different levels of management as given below.

1. Governing Body

Governing Body is the supreme directing and governing body of the PCCOE&R and is responsible for articulating the Organization's Vision and Mission and for major policy decisions. The Governing Body is constituted under the statutory provisions of AICTE. Governing Body (GB) provides the necessary direction for growth of the Institute. GB governs and monitors the growth and development of PCCOE&R through following:

Functions and responsibilities:

- To guide and govern the overall growth and development of PCCOE&R

- To approve the budget estimates-recurring and non recurring for the Financial Year in advance recommended by CDC.
- To approve Posts of Teaching and Non-Teaching (Technical and Administrative) staff requirement for the Institute.
- To consider and approve the proposal for creation of infrastructure such as Building, Equipment, Library and Staff on a continuous basis.
- To consider and make provisions for meeting the general and specific conditions laid down by the council(AICTE),the State Government, Affiliating Body and monitor the progress in fulfilling the conditions.
- To supervise the observance of service conditions for the staff as prescribed by the Affiliating body/Government.
- To approve recommended Minutes of Meeting(MOM) of CDC
- To consider any other matter in so far as it enhances the Academic atmosphere in the Institution.
- To consider any proposal for extension of Educational activities to be made to the Council /Government/Affiliating body.

Committee Members:

The composition of the governing body is given in Table B.10.1.2.a.

Table B.10.1.2.a Composition of Governing Body

Sr No	Name	Designation	Particulars
1.	Shri. D.P.Landge	Chairman	Pimpri Chinchwad Education Trust
2.	Smt.Padmatai Bhosale	Vice-Chairperson	Pimpri Chinchwad Education Trust
3.	Shri.V.S.Kalbhor	Secretary	Pimpri Chinchwad Education Trust
4.	Shri.S.D.Garade	Treasurer	Pimpri Chinchwad Education Trust
5.	Dr.G.M.Desai	Member	Executive Director ,PCET
6.	Shri.C.S.Dhamankar	Member	**Industrialist**,Forbes Marshall Pvt Ltd.Pune
7.	Prof.Dr.C..M.Sewatkar	Member	**Research,HOD** Mechanical,Govt COE,Awasari, Pune
8.	Dr.Aditya S.Abhyankar	Member	Dean, Faculty of Technology Professor and Head, Dept of Technology, SPPU Pune

9.	AICTE Representative	Member	Nominee of the AICTE, WRO, Mumbai
10.	DTE Representative	Member	Nominee of the Director, Technical Education, Govt. of Maharashtra State
11.	Dr.Rahul G.Mapari	Member	Faculty Member, PCCOER
12.	Mr.Mahendra B.Salunke	Member	Faculty Member, PCCOER
13.	Dr. Harish U. Tiwari	Member Secretary	Principal

Frequency of meeting: Twice in a year.
The meeting dates of the governing body are given in Table B.10.1.2.a'.

Table B.10.1.2.a' Meeting dates of Governing Body

Academic Year	Number of meetings	Date of meeting
2021-22	1	7th September 2021
2020-21	1	8th January 2021
2019-20	1	9th September 2019
	2	27th December 2019
2018-19	1	24th August 2018
	2	25th February 2019
2017-18	1	15th September 2017
	2	12th March 2018
2016-17	1	19th September 2016
	2	17th March 2017

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Dnyaneshwar P. Landge	Padmatai Bhosale	Vitthalrao S. Kalbhor	Prof. Dr. Harish Tiwari
Chairman	Vice Chairperson	Secretary	Principal

Ref. No. : Date :

Ref. No. PCCOER/ GB/ 2021/ 679 **Dt.** 09 / 03/**2021**

To,
The Chairman / Secretary
Pimpri Chinchwad Education Trust, Pune

Sub: - Formation of Governing Body Members.

Respected Sir,
I am here by submitting the list of Governing Body Members of Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering & Research, Ravet, Pune- 412101.for your kind approval.

Governing Body Members

The Governing Body comprises of well known people from the field of Industry & academic having plethora of knowledge in their respective fields and interest in promotion of quality education. The Governing Body : **(Constituted as per Appendix 18 of AICTE Hand book 2020-21)**

S. N.	Name of the Member	Designation	Particulars
1	Shri. D. P. Landge	Chairman	Pimpri Chinchwad Education Trust
2	Smt. Padmatai Bhosale	Vice- Chairman	Pimpri Chinchwad Education Trust
3	Shri. V. S. Kalbhor	Secretary	Pimpri Chinchwad Education Trust
4	Shri. S. D. Garade	Treasurer	Pimpri Chinchwad Education Trust
5	Dr. G. M. Desai	Member	Executive Director PCET
6	Shri. C. S. Dhamankar	Member	Nominee from Industry
7	Prof. Dr. C. M. Sewatkar	Member	Nominee from Technologist & Educationist
8	Dr. Aditya S. Abhyankar	Member	Nominee of the Savitribai Phule Pune University
9	AICTE Representative	Member	Nominee of the AICTE, WRO, Mumbai
10	DTE Representative	Member	Nominee of the. Director, Technical Education, Govt. of Maharashtra State
11	Dr. Rahul G. Mapari	Member	Faculty Member
12	Mr. Mahendra B. Salunke	Member	Faculty Member
13	Dr. Harish U. Tiwari	Member Secretary	Principal

Dr. H. U. Tiwari
Principal

Shri. S. D. Garade **Treasurer** Shri. V. S. Kalbhor **Secretary** Smt. Padmatai Bhosale **Vice Chairman** Shri. D. P. Landge **Chairman**

COLLEGE OF ENGINEERING & RESEARCH ★ PC RAVET PUNE-41

2. College Development Committee-

As per the Maharashtra Public Universities Act 2016, Section 97, the College Development Committee is formed at the college. It has representation of Academia, Industry, students to represent all stake-holders. As per the guidelines of University Act, representatives from various sectors Academics, Research, Social Service and Industry are included in CDC. Before College Development Committee came in force, Local Management Committee (LMC) was active according to the Section 85 of Maharashtra University Act, 1994.

Function & responsibilities-

- Prepare an overall comprehensive development plan of the college regarding academic, administrative and infrastructural growth, and enable college to foster excellence in curricular, co-curricular and extracurricular activities
- To monitor the development of PCCOE&R under
  a. Academic excellence
  b. Research & Innovation
  c. Training & Placement
  d. Student and Faculty development
- To recommend to the management, about introducing new academic courses and the creation of additional teaching and administrative posts
- To make specific recommendations to the management to encourage and strengthen research culture, consultancy and extension activities in the college;
- Make specific recommendations to the management to foster academic collaborations to strengthen teaching and research
- To prepare the annual financial estimates (budget) and financial statements of the college or institution and recommend the same to the management for approval
- To make recommendations regarding the students' and employees' welfare activities in the college
- To recommend the administration about appropriate steps to be taken regarding the discipline, safety and security issues of the college

- To consider and make appropriate recommendations on inspection reports, local inquiry reports, audit report, report of National Assessment and Accreditation Council, etc.
- To recommend the distribution of different prizes, medals and awards to the students. Prepare the annual report on the work done by committee for the year ending on the 1st June and submit the same to the management of college and the university.

Committee Members:

The composition of college development committee is given in Table B.10.1.2.b.

Table B.10.1.2.b Composition of College Development Committee

Sr No	Name	Designation	Particulars
1.	Shri. D.P.Landge	Chairman	**Chairman**,Pimpri Chinchwad Education Trust
2.	Smt.Padmatai Bhosale	Member	**Vice Chairman**,Pimpri Chinchwad Education Trust
3.	Shri.V.S.Kalbhor	Member	**Secretary**,Pimpri Chinchwad Education Trust
4.	Shri.S.D.Garade	Member	**Treasurer**,Pimpri Chinchwad Education Trust
5.	Dr.G.M.Desai	Member	**Executive Director** ,PCET
6.	Dr.Mrs.Archana Chaugule	Member	**Head** of the Department (Computer),PCCOER
7.	Mr.Snatosh N.Randive	Member	**Teacher** Representative (E&TC),PCCOER
8.	Mr.Vijay P.Desai	Member	**Teacher** Representative (Mechanical),PCCOER
9.	Mrs.Mayura M.Yeole	Member	**Teacher** Representative (Civil),PCCOER
10.	Mr.Prakash B.Yeole	Member	**Non-Teaching Staff**,PCCOER
11.	Prinicpal/Director,PCCOE	Member	**Educationist**,Director,PCCOE,Akurdi Pune
12.	Mr.C.S.Dhamankar	Member	**Industrialist**,Forbes Marshall Pvt Ltd.Pune
13.	Dr.C..M.Sewatkar	Member	**Research, HOD** Mechanical,Govt

			COE,Awasari, Pune
14.	Dr. Pandit N.Shelke	Member	**Social Service**, Principal,Annasaheb Magar College,Hadapsar,Pune
15.	Dr.Sham H.Mankar	Member	**Co-ordinator**,Internal Quality Assurance Committee
16.	Mr.Sushant Balgude	Member	**President** of the College Students council
17.	Mr.Sushil Yesane	Member	**Secretary** of the College Students Council
18.	Prof.Dr. Harish U. Tiwari	Member Secretary	**Principal** of PCCOER, Ravet, Pune

Frequency of meeting-3 times in a year

The meeting dates of CDC are given in Table B.10.1.2.b' .

Table B.10.1.2.b'Meeting Dates of College Development Committee

Academic Year	No of Meeting	Date of meeting
2021-22	1	7th September 2021
2020-21	1	8th January 2021
	2	16th March 2021
2019-20	1	9th September 2019
	2	27th December 2019
	3	2nd March 2020
2018-19	1	24th August 2018
	2	25th February 2019
	3	10th May 2019
2017-18	1	15th Sept 2017
	2	12th March 2018
2016-17	1	19th September 2016
	2	17th March 2017

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Dnyaneshwar P. Landge	Padmatai Bhosale	Vitthalrao S. Kalbhor	Prof. Dr. Harish Tiwari
Chairman	Vice Chairperson	Secretary	Principal

Ref. No. : PCCOER/CDC/2020-21/680 Date : 09/03/2021

To,
The Chairman / Secretary
Pimpri Chinchwad Education Trust,
Pune - 412101

Sub: - Formation of College Development Committee.

Respected Sir,

I am here by submitting the list of **College Development Committee** of Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering & Research Ravet, Pune - 412101 **for your kind approval.**

COLLEGE DEVELOPMENT COMMITTEE

College Development Committee has been constituted as per the requirement having Members from Management, Teaching & non – teaching, Educationist, Industrialist, Research , Social Service, Students Council representative.

College Development Committee to meet regularly to discuss operational matters for better management & development of college.

The College Development Committee: (Constituted as per Maharashtra Public Universities Act, 2016)

Sr.No.	Name of the Member	Designation	Particulars
1	Shri. D. P. Landge	Chairman	**Chairman ,** Pimpri Chinchwad Education Trust
2	Smt. Padmatai Bhosale	Member	**Vice Chairman,** Pimpri Chinchwad Education Trust
3	Shri. V. S. Kalbhor	Member	**Secretary ,** Pimpri Chinchwad Education Trust
4	Shri. S. D. Garade	Member	**Treasurer ,** Pimpri Chinchwad Education Trust
5	Dr. G. M. Desai	Member	**Executive Director,** Pimpri Chinchwad Education Trust
6	Dr. Mrs. Archana Chaugule	Member	**Head** of the Department (Computer), PCCOER
7	Mr. Santosh N. Randive	Member	**Teacher** Representative (E & TC), PCCOER
8	Mr. Vijay P. Desai	Member	**Teacher** Representative (Mechanical), PCCOER
9	Mrs. Mayura M. Yeole	Member	**Teacher** Representative (Civil), PCCOER
10	Mr. Prakash B. Yeole	Member	**Non-Teaching** Staff, PCCOER
11	Principal / Director, PCCOE	Member	**Educationist,** Director, PCCOE, Akurdi, Pune
12	Mr. C. S. Dhamankar	Member	**Industrialist,** Forbes Marshall Pvt. Ltd. Pune
13	Dr. C.M. Sewatkar	Member	**Research,** HOD Mechanical, Govt.COE, Awasari, Pune
14	Dr. Pandit N. Shelke	Member	**Social Service,** Principal, Annasaheb Magar College, Hadapsar, Pune

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Dnyaneshwar P. Landge Chairman	Padmatai Bhosale Vice Chairperson	Vitthalrao S. Kalbhor Secretary	Prof. Dr. Harish Tiwari Principal

Ref. No. : Date :

15	Dr. Sham H. Mankar	Member	**Co-ordinator**, Internal Quality Assurance Committee
16	Mr. Sushant Balgude	Member	**President** of the College Students council.
17	Mr. Sushil Yesane	Member	**Secretary** of the College Students council.
18	Prof. Dr. Haresh Tiwari	Member Secretary	**Principal** of PCCOER, Ravet, Pune

For your kind approval.

Prof. Dr. H. U. Tiwari
Principal
PRINCIPAL
Pimpri Chinchwad College of Engg. & Research
Laxminagar, Ravet, Pune-412 101

PCC COLLEGE OF ENGINEERING & RESEARCH RAVET PUNE-01

Shri. S. D. Garade
Treasurer

Shri. V. S. Kalbhor
Secretary

Smt. Padmatai Bhosale
Vice Chairman

Shri. D. P. Landge
Chairman

3. Special Standing Cell (SC/ST/OBC Reservation Committee)

In Pimpri Chinchwad College of Engineering and Research, Ravet Special Standing Cell was established on 14/07/2016 to safeguard the rights of the students belonging to reserved category, faculty and staff members and also to provide platform to listen to complaints.

The motivation to have this cell is to ensure a speedy delivery of justice by processing each complaint through suitable action in compliance with Savitribai Phule Pune University guidelines and in compliance with the laws and regulations of the Government of India.

Role, Function and Responsibilities:

- The Special Standing Cell will monitor and endeavor to resolve issues, grievances related to all reservation candidates and staff at the Institute level.
- The Compliant if any will be forwarded to the said Committee/Cell by the Students or faculty.
- The said Committee/Cell will look into the complaint and call the concern complainant personally for hearing the grievance.
- The Coordinator of the Committee/Cell will forward their report in the sealed envelope to the Principal within one week from the date of receipt of complaint.
- Create awareness about issues faced by students and discrimination.
- To provide a forum to build awareness and hence build preventive actions in matters related to students problems.
- To provide and disseminate information about rights and laws for grievances.
- To facilitate speedy delivery of justice by processing each complaint through suitable action.

Mechanism :

- The complaint box shall be opened at decided frequency to collect and sort out the complaints. It shall be opened immediately if the complainant so desires.
- The complainant shall be summoned to hear complaints (if necessary). Complaint will be promptly and carefully investigated. Investigation will include interview with all relevant

person and decision on grievances to be taken at a fairly senior level. After hearing of complaints, the committee shall take appropriate decision in accordance with the rules applicable to the Respondent or where no such service rules exist, in accordance with rules framed under the act and then same will be communicated to the complainant within a period of fifteen days in general. If the nature of complaint is complicated, it may take longer to take a decision.

- Where both the parties are employees in the same workplace, the parties during the course of the inquiry shall be given an opportunity of being heard and a copy of the findings shall be made available to both the parties enabling them to make representation against the findings before the Committee.
- If the complainant is not satisfied with the decision taken, she can take up the matter higher up the ladder to Complaints Committee.
- Inquiry Report On the completion of inquiry will provide a report of the findings to the employer within 10 days from the date of completion of the inquiry and such report will be made available to the concerned parties.

Committee Members

The Composition of Special Standing Cell (SC/ST/OBC Reservation Committee) is given in table B.10.1.2.c.

Table B.10.1.2.c Composition of Special Standing Cell (SC/ST/OBC Reservation Committee)

Sr. No.	Names	Particulars of the members	Designation/ Position	Email ID & Mob. No.
1	Prof. Dr. Harish Tiwari	Head of the Institute Principal	Chairperson	principal@pccoer.in 8806461401
2	Mr. Pradeep Gaikwad	Assistant Professor (Mechanical Engg.)	Secretary	pradeep.gaikwad@pccoer.in 8510030448
3	Mrs. Jayashri Chopade	Assistant Professor (Mechanical Engg.)	Member	jayashri.chopade@pccoer.in 9075241267
4	Mr. Amar Shitole	Assistant Professor (Civil Engg.)	Member	amar.shitole@pccoer.in 9561172448
5.	Mrs. Madhuri Badole	Assistant Professor (Computer Engg.)	Member	madhuri.badole@pccoer.in 8805771974
6.	Prof. Dr. Rahul Mapari	HOD; Associate Professor (E&TC Engg.)	Senior Faculty	rahul.mapari@pccoer.in 8830550073
7.	Prof. Dr. Archana Chaugule	HOD; Associate Professor	Senior Faculty	archana.chaugule@pccoer.in 8007773086

		(Computer Engg.)		
8.	Mr. Prakash Yeole	Registrar (Admin)	Member	prakash.yeole@pccoer.in 9765459194
9.	Mr. Dnyaneshwar Poule	Lab Assistant	Non-Teaching Representative	dnyaneshwar.poule@pccoer.in 9890153090

Frequency of meeting: Twice in a year & unplanned one depending upon the seriousness of any case. The Meeting dates of SC/ST committee are given in Table B.10.1.2.c'.

Table B.10.1.2.c' Meeting dates of SC/ST committee

Academic Year	No of Meeting	Date of meeting
2021-22	1	19th July 2021
2020-21	1	21stJuly 2020
	2	22nd September 2020
2019-20	1	19th July 2019
	2	20th September 2019
2018-19	1	20th July 2018
	2	14th September 2018
2017-18	1	14th July 2017
	2	15th September 2017
2016-17	1	15th July 2016
	2	16th September 2016

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Dnyaneshwar P. Landge Chairman	Padmatai Bhosale Vice Chairperson	Vitthalrao S. Kalbhor Secretary	Prof. Dr. Harish Tiwari Principal

Ref. No. : PCCOER/FC/2019-20/181-1 Date : 17/07/2019

Formation of Committee
(Special Standing Cell)

Special Standing Cell is meant to safeguard and promotes well-being of all students under reserved category of the organization. It takes care of all complaints at workplace and action taken for redressal of complaint.

With reference to The Scheduled Castes and The Scheduled Tribes (Prevention of Atrocities) Act, 1989,UGC guideline for Implementation of Reservation Policy, 2006 and Govt. of Maharashtra Resolution No. BCC-2010/C.N.409/16-B, Dt. 16/08/2010, 'Special Standing Cell' has been constituted. Special Standing Cell has been constituted and updated as per the requirement having members from teaching faculty.

Sr. No.	Names	Particulars of the members	Designation/ Position	Email ID & Mob. No.
1	Prof. Dr. Harish Tiwari	Head of the Institute Principal	Chairperson	principal@pccoer.in 8806461401
2	Mr. Pradeep Gaikwad	Assistant Professor (Mechanical Engg.)	Secretary	pradeep.gaikwad@pccoer.in 8510030448
3	Mrs. Jayashri Chopade	Assistant Professor (Mechanical Engg.)	Member	jayashri.chopade@pccoer.in 9075241267
4	Mr. Amar Shitole	Assistant Professor (Civil Engg.)	Member	amar.shitole@pccoer.in 9561172448
5.	Mrs. Madhuri Badole	Assistant Professor (Computer Engg.)	Member	madhuri.badole@pccoer.in 8805771974
6.	Prof. Dr. Rahul Mapari	HOD; Associate Professor (E&TC Engg.)	Senior Faculty	rahul.mapari@pccoer.in 8830550073
7.	Prof. Dr. Archana Chaugule	HOD; Associate Professor (Computer Engg.)	Senior Faculty	archana.chaugule@pccoer.in 8007773086
8.	Mr. Prakash Yeole	Office Superintendent (Admin)	Member	prakash.yeole@pccoer.in 9765459194
9.	Mr. Dnyaneshwar Poule	Lab Assistant	Non-Teaching Representative	dnyaneshwar.poule@pccoer.in 9890153090

Prof. Dr. Harish Tiwari
Principal

PRINCIPAL
Pimpri Chinchwad College of Engg. & Research
Laxminagar, Ravet, Pune-412 101

P.C COLLEGE OF ENGINEERING & RESEARCH RAVET PUNE-61

4. Right to Information Cell

With reference to General Administration Dept .Govt. Circular NO. CRTI 2005/C.No.190 /05/05 dated 6th August 2005, to show transparency in public sector work and to get more & more information related to work, Maharashtra Right to Information Act 2005 has been formed in force with effect from 15th June 2005. According to said act code 5 (1) (2), following officers has been appointed as Information Officer, Asst. Information Officer & Appellant Information Officer. This committee will be in action till further orders.

Roles and Responsibilities-

- To bring transparency answerability in the administration and functionality of the institution.
- To provide information about the institution, faculty, and students to all the stake holders.
- To provide free shareable information about the institution data a Right to Information Cell is established in the College.

Committee Members : Table B.10.1.2.d shows the Composition of Right to Information Cell.

Table B.10.1.2.d Composition of Right to Information Cell

Designation	Name & Designation	E-mail ID & Contact No
1st Appellate Authority	Prof.Dr.H.U.Tiwari Principal	principal@pccoer.in 8806461401
Public Information Officer	Mr.Vijay Desai Asst.Professor	Vijay.desai@pccoer.in 9834927934
Asst. Public Information Officer	Mr.P.B.Yeole Registrar	Prakash.yeole@pccoer.in 8237238080

Frequency of meeting- Twice in a year & unplanned one depending upon the seriousness of any case.

PIMPRI CHINCHWAD EDUCATION TRUST's
PIMPRI CHINCHWAD COLLEGE OF ENGINEERING & RESEARCH
(An ISO 9001:2015 Certified Institute)
Plot B, Survey No. 110 (p), Laxminagar, Ravet, Pune 412101.
☎ : 8237238080 Email : pccoer.ravet@gmail.com Website : www.pccoer.com

Dnyaneshwar P. Landge Chairman	Padmatai Bhosale Vice Chairperson	Vitthalrao S. Kalbhor Secretary	Prof. Dr. Harish Tiwari Principal

Ref. No. : PCCOER/RI/2021-22/75-1 Date : 06/07/2021

Right to Information Act, 2005
PIO's Details

Designation	Name & Designation	E-Mail ID & Contact No.
1st Appellate Authority	Prof. Dr. H. U. Tiwari Principal	principal@pccoer.in
Public Information Officer	Mr. Vijay Desai Asst. Professor	vijay.desai@pccoer.in 9834927934
Asst. Public Information Officer	Mr. P. B. Yeole Registrar	prakash.yeole@pccoer.in 8237238080

Prof. Dr. H. U. Tiwari
Principal

B. Published service rules, policies and procedures with year of publication

In view of staff, faculty and student development PCCOE&R have some additional policies as recommended by GB, CDC and PCET. The references are as follows:

• **The Service Rules,** Code of Conduct, Ordinances, Procedure, Recruitment policies and promotional policies are governed by the Maharashtra University Act, 1994, University Statutes and AICTE. All the amendments are binding on the College. The parent Institution also follows these rules. Pay Scale, Annual Increments, Gratuity, Provident Fund, Career Advancement benefits are being given as per the AICTE directives.

Various Rules, Policies and Procedures are informed to Students and Staff as and when required via Notifications. Office Copies are maintained in the Admin Office.

Copies of all rules published by AICTE, DTE, Savitribai Phule Pune University and Government of Maharashtra are made available at all departments, College Website, central library and admin office.

Information regarding rules for Students, Policies and Procedures for Staff Members is available at all departments, College Website, Central Library and Admin. Office.

The college has prepared its own Policy Manual and ISO process manuals to streamline and support in ensuring quality in Academic Processes and overall administration of the College. There are two Engineering colleges, (Pimpri Chinchwad College of Engineering & Pimpri Chinchwad College of Engineering and research) under PCET and the policies, rules and regulations are uniform for the colleges. The directives of AICTE, Govt. of Maharashtra and Savitribai Phule Pune University are stringently followed.

Staff, faculty, student development policies, Policy manual and ISO Process Manuals (Academic and Admin.) are available with respective HODs and Section In charges and also available on college website and disseminated among all students and faculties.

For Teaching Staff:-

All administrative Rules, Procedures and Policies are as per directives of

- Norms of All India Council for Technical Education, New Delhi.
- G.R. from Government of Maharashtra.
- Maharashtra University Act 1994
- Maharashtra University Act 2016
- Statute of Savitribai Phule Pune University.

For Non – teaching Staff:-

- Norms of All India Council for Technical Education, New Delhi.
- G.R. from Government of Maharashtra
- The Maharashtra Civil Services Rules 1979.

Recruitment and Promotion:-

Policy statement:

"The College recognizes that its Staff is fundamental to its success. The college therefore needs to be able to attract and retain staff of the highest caliber and a strategic, professional approach to recruitment is essential to do this."

"The College aims to attract, select, appoint and retain quality Staff. This policy sets out principles and procedures to ensure Staff Recruitment and Selection practices are consistent, merit-based and aligned with the Savitribai Phule Pune University primary goals of Teaching, Research and Training."

"Management is committed to provide qualified and competent Teaching Faculty, at appropriate time. Management shall not hesitate in offering attractive salary for deserving candidates"

PCET's Trust policies are well defined and implemented by the Institute and are also approved by Governing Body.

- The Recruitment Procedure has been defined ISO Process Manual.
- Promotional Policies are formulated based on the requirement in the departments and performance appraisal

C. Minutes of the meetings and action-taken reports

All the MOMs and action taken reports are available on Institute website as well as in Admin department. GB is conducted twice in a Year and CDC is conducted thrice in a Year.

MOM of GB dated 9th September 2019 is as follows.

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Plot No. B, Sector No.110 (P), Laxminagar Ravet Pune.

❖ Minutes of Governing Body meeting No. 10

The Governing Body meeting was held on Monday, 9th September 2019 at 1:00 P.m. The venue was PCCOER-Board room. Following members were present for the meeting.

Sr. No.	Name	Designation
1	Shri. D.P. Landge Chairman, Pimpri Chinchwad Education Trust	Chairman
2	Shri. V. S. Kalbhor Secretary, Pimpri Chinchwad Education Trust	Member
3	Shri. Bhaijan Kazi Trustee, Pimpri Chinchwad Education Trust	Member
4	Shri. C. S. Dhamankar Forbes Marshal Chinchwad	Member
5	Prof. Dr. C.M. Sewatkar College of Engineering Pune	Member
6	Prof. Dr. Rahul Mapari HOD E&TC Engg Dept.	Member (Faculty Representative)
7	Asst. Prof. M.B. Salunke Computer Engg Dept.	Member (Faculty Representative)
8	Prof. Dr. H. U. Tiwari Principal, Pimpri Chinchwad College of Engineering & Research.	Member, Secretary

Principal Dr. H. U. Tiwari welcomed Hon'ble Chairman, GB members and special Invitees present. The meeting started with the permission of Hon. Chairman Shri. D. P. Landge.

Leave of absence granted to – Smt.Padmatai Bhosale, Shri.S.D.Garade, Dr. Girish Desai

Following points were discussed in the meeting as per Agenda –

1. To confirm the Minutes of meeting of last Governing Body meeting held on 25th February 2019 –

Principal Dr. H. U. Tiwari read the Minutes of meeting held on 25th February 2019 and the Minutes of meeting were confirmed.

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Action taken report of GB meeting held on 25th February 2019-

	Actionable Points	Action Taken
Subject No.3	NBA Preparation	Process started, committee has been formed and work in progress
Subject No.5	Seminar hall requirement	Seminar hall with all required facility of 700 capacity has been built & is being utilized by PCCOE&R and SBPPS

2. Review of readiness to apply for NBA –

Principal put forth Pre-qualifier status of the Institute and he further discussed about the essential and desirable parameters as per Pre-qualifier guidelines and told that the Institute satisfies the norms. He further assured all trustee members and GB Committee that College is eligible for Accreditation and definitely get accredited with good results. All trustee expressed satisfaction on the readiness of the Institute for NBA.

3. Review of Readiness of PCCoE&R to face challenges of engineering admission at state level –

Principal put forth the year wise and branch wise student admission data. He further discussed about the various challenges in engineering admissions and told that Computer and E&TC Engineering departments' admissions were filled but in Mechanical and Civil Engineering departments some seats remained vacant. He further put up the action plan to improve admissions of Mechanical and Civil Engineering. He told that, in Mechanical Engineering more focus is on core placement and organizing in-house industry collaboration courses and in Civil Engineering as per student demand Government Competitive Exams cell has been started, especially to prepare students in view of MPSC and UPSC. HoD Civil told that many activities have been initiated and are further in progress in view of preparing students for carrier in government services.

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4. Review of Risk & opportunity for the Institute as per ISO guidelines –

Principal put up various Risks and opportunities as per ISO guidelines. He put up some external and internal issues/ queries faced by Institute and also put up the action plan to resolve the same. Hon' Shri V. S. Kalbhor assured to support the Institute on behalf of PCET. Principal told the committee that ISO has been implemented from December 2018 and has been helpful in the overall monitoring and quality improvement and further would help for NBA/NAAC preparation.

5. Road map for further development-

Principal put forth the further development plans of the Institute and discus about them. Principal presented review of institute till date & also review of short term and long term goals of the institute. All governing body members were satisfied about the overall development of the Institute.

Principal told that our Institute will be eligible for NIRF in academic year 2020-21 and will apply for ranking. As mentioned above he told the committee that Institute and the departments have started the preparation for NBA and the Institute will apply for NBA in the academic year 2019-20 for all four departments. He also told that the progress of the Institute has been planned as per NBA & NIRF guidelines and parameters and it has been very useful in maintaining overall quality and growth of the Institution.

6. Reformation of CDC and GB -

Principal put forth the changes in College Development Committee and Governing Body Committee for the approval of all trustees.

- Appointed Savitribai Phule Pune University representative Dr. Aditya Abhyankar (HoD, Dept. of Technology, SPPU, Pune) as a member in Governing Body Committee.
- Prof. Mahendra Salunke is replaced by Prof. Dr. Archana Chaugule as a Head of Computer Department in College Development Committee.

All trustees approved the changes in College Development Committee and Governing Body Committee.

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7. Any other point with the permission of Honorable Chairman-

i. Principal put forth requirement of Infrastructure and beautification work as per NBA norms. The trustee and GB approved principally and suggested that put it up in annual budget and get it approved in 2020-21 budgets.

ii. Principal presented the pre-qualifier status of the Institute for all four departments. He further told that the approach of the Institute right from the beginning is in line with the requirements and guidelines of NBA. He told the committee that the Institute meets all the mandatory as well as maximum desirable requirements stated by NBA for prequalifies.

All the heads of the departments assured that the departments are fulfilling the mandatory norms and essential requirements.

The committee asked about the infrastructure requirements. Principal told the committee that Infrastructure is also sufficient as per AICTE and NBA requirements.

Prof. Dr. C. M. Sewatkar asked about paper publication and other faculty contribution aspect as per criteria of NBA. Principal told that the Institute has well-defined criteria for appraisal of staff and faculty and in self appraisal research contribution self development initiatives of faculty and staff is appreciated.

Principal asked for suggestions to all committee members. Mr. Dhamankar asked about staff development policies of the Institute. Principal told that the institute has well defined policies for staff and faculty. He also told that the policies are same as of PCCoE which has been successfully accredited by NBA three times. He further told that some of the policies have been revised on 18th march 2019 after mutual discussion between Principal Dr. A. M. Fulambarkar and him to further support the faculty and staff. He further told that as a result of Institute policies and encouragement around 30 faculty members have registered and pursuing their Ph.D. work.

The chairman and the G.B. committee members expressed satisfaction over the overall development and growth of the College. The chairman appreciated efforts of the whole team for the overall growth in last five & half years.

Meeting ended with vote of thanks by Principal Dr. Harish Tiwari.

Prof. Dr. H. U.Tiwari
Principal
Member Secretary GB

COLLEGE OF ENGINEERING & RESEARCH * RAVET PUNE-01 *

Shri. D.P. Landge
Chairman
PCET Nigdi Pune-44

MOM of CDC dated 24th August 2018 is as follows:

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❖ **Minutes of College Development Committee meeting No.3**

The College Development Committee meeting was held on Friday, 24th August 2018 at 12:00 p.m. The venue was PCCOER-Board room. Following members were present for the meeting.

Sr. No.	Name	Designation
1	Shri. D.P. Landge Chairman, Pimpri Chinchwad Education Trust	Chairman
3	Shri. V. S. Kalbhor Secretary, Pimpri Chinchwad Education Trust	Member
4	Shri. S. D. Garade Treasurer, Pimpri Chinchwad Education Trust	Member
5	Prof. Dr. Girish Desai Ex. Director, Pimpri Chinchwad Education Trust	Member
6	Dr. A.M. Fulambarkar Principal, Pimpri Chinchwad College of Engg Nigdi Pune.	Member
7	Shri. C.S. Dhamankar Forbes Marshal Chinchwad	Member
8	Prof. Dr. C.M. Sewatkar HOD Mech COEP Pune	Member
9	Asst. Prof. Mahendra Salunke HOD Comp Engg Dept.	Member
10	Asst. Prof. Sham Mankar HOD Mech Engg Dept. & Co-coordinator, Internal Assurance Committee	Member
11	Asst. Prof. Mayura Yeole Civil Engg Dept.	Member (Faculty Representative)
12	Asst. Prof. Vijay Desai Mech Engg Dept.	Member (Faculty Representative)
13	Asst. Prof. Santosh Randive E&TC Engg Dept.	Member (Faculty Representative)
14	Shri. Prakash Yeole Office Superintendent	Member (Non-teaching Representative)
15	Prof. Sonali Kanase HOD F E Engg Dept.	Special Invitee

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16	Asso. Prof. Dr. Rahul Mapari HOD E&TC Engg Dept.	Special Invitee
17	Asso. Prof. Sameer Sawarkar HOD Civil Engg Dept.	Special Invitee
18	Mr. Nobel Varghese President of College Students council	Member
19	Mr. Pratik Khedekar Secretary of College Students council	Member
20	Prof. Dr. H. U. Tiwari Principal, Pimpri Chinchwad College of Engineering & Research.	Member, Secretary

Principal Dr. H. U. Tiwari welcomed Hon. Chairman, all trustees, CDC members and special Invitees present. Meeting started with the permission of Hon. Chairman Shri. D.P. Landge.

Leave of absence granted to – Smt. Padmatai Bhosale, Shri. Bhaijan Kazi and Dr.Pandit Shelke.

Following points were discussed in the meeting as per the agenda –

1. To Confirm the Minutes of the last meeting held on 12th March 2018 -

   Principal Dr. H. U. Tiwari read minutes of last College Development Committee meeting held on 12th March 2018 and the minutes were confirmed with the permission of the Chairman.

2. To Confirm the Action taken report of meeting held on 12th March 2018 –

   Principal put forth the action taken report of last College Development Committee and the action taken report was confirmed.

3. Review of Admission of First and Direct Second Year Engineering for the A. Y. 2018-19 –

   Principal put forth the Admitted student data of all year for the academic year 2018-19. O.S. Mr. Yeole told the committee that admission for all the years are almost full and 292 students admitted to First Year against 315 maximum possible and 98 students admitted to direct second year against 100. All committee members expressed satisfaction over the overall status of admissions.

4. Review of Academics and University results.

   Principal Dr. H. U. Tiwari put forth the vision and mission of Academic Monitoring and Control (AMC). He also explained the outcome based approach. The department wise results were put forth by HODs of respective departments.

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Department	First Year		Second Year		Third Year		Final Year
Academic Year	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2017-18
First Year	57.34	62.90	–		–		–
Mechanical	–		58.62	58.33	74.10	62.77	93.93
E & TC	–		60.27	60.53	79.59	66.23	93.18
Computer	–		60.00	78.95	89.23	85.14	100
Civil	–		38.16	45.16	71.88	42.85	100

First Year HOD Asst. Prof. Sonali Kanase put forth the result of First Year Engineering. She told that College stood 4th in University results among all Colleges in SPPU. She also told about special achievements by First Year Engineering department in University result by presenting quality results. Hon. Shri V.S. Kalbhor inquired about Institute level admitted students' results. FE HOD told that result of such students is less as compared to other students admitted through CAP. She also explained the efforts taken on weak/slow learners. Principal attributed the success in First Year results to the devotion and hardwork of faculty. The committee appreciated the F.E. results and congratulated the F.E. HOD & team.

Mechanical Engineering HOD Asst. Prof. Sham Mankar put forth the Mechanical Engineering department year wise results. Hon. Shri V.S. Kalbhor expressed concern over the Second and Third Year results. HOD assured all Trustees that Mechanical department team is working in proper direction for the improvement of Academic performance. All Committee members appreciated the Final Year result for held highest in SPPU.

E&TC Engineering HOD Assot. Prof. Rahul Mapari put forth the E&TC Engineering department result year wise. The results were satisfactory and committee expressed the same.

Civil Engineering HOD Asst. Prof. Sameer Sawarkar put forth the Civil Engineering department result year wise. HOD also told that Final Year result is 100% and top in the University. HOD also expressed the reasons for unsatisfactory S.E. and T.E. results. Committee members appreciated the Final Year result.

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Computer Engineering HOD Asst. Prof. Mahendra Salunke put forth the Computer department result year wise. HOD told all results are among top 3 to 5 in the SPPU. HOD also told that Final Year result is 100%. Committee members appreciated the efforts taken by all faculties.

Hon. Shri V.S. Kalbhor and Hon. Shri. S. D. Garade suggested focusing on result and finding out problem which affect the Second Year and Third Year results. Principal assured all Trustees that all departments are already working hard to improve results further.

5. Review of Student and faculty development activities -

Principal put forth the various Student development activities carried out in College Principal told that various activities were conducted under each department's student Association to showcase and improve technical as well as non-technical skills.

He further gave information and mentioned a few important events including BAJA, Go-kart & TIFAN. He further told that students participated in BAJA SAE India at Ropar Punjab and secured 31st rank in virtual round recently. Principal also told about the social campaign of collecting old clothes for orphanage by Mechanical Engineering Student Association (MESA). He further gave information about Project Based Learning Exhibition, Drone Technology course and E-Waste collection conducted by E&TC department. Dr. Girish Desai told that the Training program of Drone Technology is an undertaking of Maharashtra Government.

Principal gave information about one week orientation program conducted for First Year Engineering students as per AICTE guidelines and same for direct second year admitted students for one full day. He told about good response to the Induction program for First and Direct Second Year Engineering students.

Shri. C. S. Dhamankar suggested for more industrial training which will be helpful for Placement. Mechanical HOD gave information about Industrial Training Program of 50 hrs. for students which is helpful for placement as well as Projects.

Principal gave information about Staff Development activities like Conference, Workshop and FDP attended by faculties. He also told that College has refunded the registration fees of NPTEL courses to encourage faculties and thankful to all Trustee for the same. He told that two of our faculties Asst. Prof. Sham Mankar and Asst. Prof. Ramesh Rathod have recently completed Ph.D. Principal also told about the award 'Most Result oriented College in Pune' and 'Innovative Leader National Award 2018'. All committee members congratulated Principal and all staff for the awards.

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6. Review of T&P activities and Placement -

Training & Placement officer Asst. Prof. Shridhar Sharanappa put forth the highlights of T&P Cell activities. He told that total 169 numbers of students placed against 209 eligible students. He also told about the International Placement of Ms. Anjali Teke and Ms. Shruti Subramanyam from Computer department. He further told that two of our students were selected for Internship in USA. All members appreciated the efforts taken by Principal, TPO, all faculty members and students.

TPO Asst. Prof. Shridhar Sharanappa gave information regarding various T&P Drives and placement of last year. He also gave information about 'Industry requirement from graduates' i.e. various skills like Technical, Communication, Professional and aptitude skill. He further told about the various activities conducted by T&P Cell like Internship and Higher studies. He gave information about the eligible students of this academic year and training provided for students like Aptitude Test etc.

Dr. C.M. Sewatkar asked about the IT and Core companies placement. TPO Mr. Shitalkumar Rawandale told that there is 50-50% of placement in IT and Core companies. Dr. Girish Desai insisted that percentage of placement in Core companies should increase. Dr. A.M. Fulambarkar told that technical events like BAJA, Supra improves technical skill which is helpful for placement. Dr. C.M. Sewatkar suggested to arrange one Industry person session for a week to improve core companies placement.

7. Review of Research & Innovation activities and approval for Research promotion policy -

Principal Dr. H. U. Tiwari put forth the strategic approach to inculcate research and innovation attitude among students as well as faculties. He also gave information about various activities carried out in College for the same. Further, he gave information about Project Based Leaning (PBL) for FE to BE students and PBL Exhibition. Principal put up some highlights related to R&D like MOU with WIT, Sangli, Proposed National Level Conference on Copyrights, Patents & IPR. Principal also shared information of a conference conducted based on Project (UGCON).

Principal gave information regarding revenue generation from Patent Consultancy services. The chairman and committee members congratulated Dr. H. U. Tiwari and the team for the efforts.

Principal further put forth the various Research and Promotional Policies. Dr. A.M. Fulambarkar suggested maintaining similar policies in both the Colleges for students as

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well as faculties. Principal told that PCCoE&R is following the same norms as followed in PCCoE.

8. Review of Expenses incurred till 31st July 2018 and revised Budget for the A.Y. 2018-19
Principal put forth the expenditure till 31st July 2018 and revised Budget for the A.Y. 2018-19. All committee members viewed and approved the same.
9. Human Resource - New faculties appointed
Principal put forth the list of newly joined faculty list. The committee enquired about the qualification and experience of the newly joined faculty and welcome them to PCCOE&R.
10. NBA and NAAC Preparation -
Principal gave information regarding various activities conducted and planed for NAAC. He also put forth some Infrastructural requirement for the same. The trustees and Committee assured that the infrastructure requirement will be fulfilled for NAAC as per the demand.
Meeting ended with a vote of thanks by Principal Prof. Dr. Harish Tiwari.

Prof. Dr. Harish Tiwari
Principal
Member Secretary CDC

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Shri. D.P. Landge
Chairman
PCET Nigdi Pune-44

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Prof. Dr. Harish Tiwari
Principal
Member Secretary CDC

COLLEGE OF ENGINEERING & RESEARCH RAVET PUNE-01

Shri. D.P. Landge
Chairman
PCET Nigdi Pune-44

10.1.3 Decentralization in working and grievance redressal mechanism. **Institute Marks 10**

A. Decentralization in working:

For Smooth Administration the institute has adopted the process of distributing or dispersing functions, powers and people away from a central authority.

The academic and other overall administration of the College is carried out by the Principal, Head of the Departments, and Registrar as per the Organization Structure is defined in Figure 10.1.3a. Their major duties and responsibilities are given below.

- Principal is the head of the Institute and empowered with sufficient authority and power from the management. Principal delegates necessary administrative and academic authorities to the HODs.
- Each departmental head is empowered with necessary freedom for development and administration of the department. The academic responsibilities are fairly divided among all the staff members.
- Faculty members from all departments enthusiastically contribute as member/head in functional committees.

The institute strongly believes in achieving progress through delegation of responsibilities, authorities and powers. Decentralization of responsibilities and authorities is demonstrated in the Organizational structure of the Institute as follows: (**Figure B.10.1.3a: Organization Structure)**

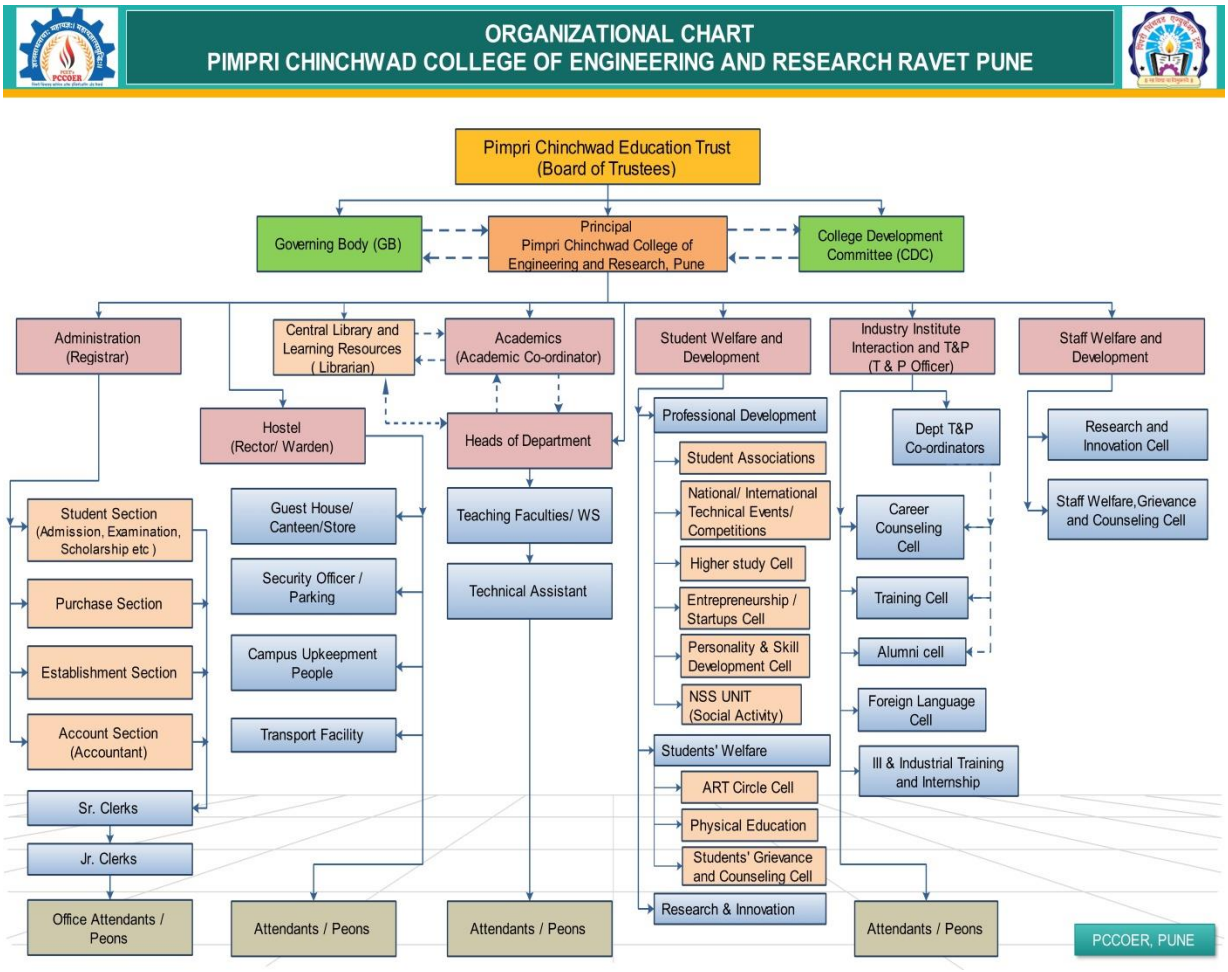


Figure B.10.1.3a: Organization Structure

Administrators and Decision makers:

Various committees are formed in the department for the smooth and efficient management of activities. It also gives the opportunity to the faculty to grow and develop in their extracurricular activity/field and administrative skills. The committees are constituted by the HOD in consultation with faculty for one academic year or until new committees are constituted. For specific events like conference, technical event, Annual day etc Committees are formed. In charges are given responsibility and authority to work and take decisions independently including financial decisions.

Roles and Responsibilities of Head of Department

Objectives: Looking after for smooth functioning and overall growth of department.

Input: Staff, Student

Responsibilities:

a. Planning:

1. Estimating teaching work load as prescribed in curriculum to work out staff requirement
2. Check for laboratory requirements with regard to curriculum
3. Plan availability of laboratory consumables and stationary at the right time
4. Check for adequate furniture, academic space, teaching aids well in advance.
5. Plan for teaching and supporting staff recruitments.
6. Preparation of budget and purchase plan.

b. Development:

1. Design & development of new academic programmes.
2. Understanding training needs of teaching and supporting staff.
3. Provide opportunities for training and improvement of qualifications.
4. Curriculum development.
5. Modernizing teaching techniques for continuous improvement in teaching.
6. Enrichment of laboratories and modernization of laboratory equipment.
7. Building and strengthening relations with industries.
8. Developing and strengthening of departmental library and central library as well.
9. Developing learning resources.
10. Encouraging research and consultancy work.

c. Administration:

1. Teaching work distribution.
2. Assigning duties to supporting staff.

3. Maintaining staff attendance and leave records.

4. Performance appraisal of staff.

5. Exercising quality checks on submission work and assignments.

6. Exercising quality checks on internal examination.

7. Handling grievances of students and staff.

8. Conducting departmental meetings to review progress of teaching activities.

9. Arranging substitute arrangement for duties of staff on vacation/ absence on valid reasons.

10. Assigning examination duties.

11. Preparation of reports for additional intake.

12. Coordination in industrial visits and other extracurricular activities.

13. Result analysis, student's feedback analysis.

14. Arranging parents meet, alumni meet.

d. Monitoring:

1. Monitoring teaching performance of staff.

2. Monitoring status of equipment.

3. Monitoring progress of other duties assigned to staff.

4. Monitoring attendance, performance and overall development of students.

5. Maintaining discipline in staff in staff and students.

Faculty members who have been delegated powers for taking administrative decisions are shown in **Table B.10.1.3.a**

Table B.10.1.3.a List of faculty members with administrative responsibilities

Sr. No	Name Of The Faculty	Department	Assigned Responsibility
1.	Dr.H.U.Tiwari	PCCOE&R	Principal Head Of The Institute
2	Dr.Ramesh Rathod	Mechanical Engineering	Head of Mechanical Engineering Department
3	Dr.Rahul Mapari	E&TC Engineering	Head of E&TC Engineering Department
4	Mrs.Archana Chougule	Computer Engineering	Head of Computer Engineering Department
5	Dr.Sameer Sawarkar	Civil Engineering	Head of Civil Engineering Department
6	Mr.Tushar Gaikwad	First year Engineering	Head of First year Engineering Department
7.	Mr.Prakash Yeole	Registrar	Admin office
8.	Mrs.Rajashree Darwatkar	Head Clerk	Purchase Section
9.	Mr.Shripad Bhandari	Accountant	Account Section

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Dnyaneshwar P. Landge	Padmatai Bhosale	Vitthalrao S. Kalbhor	Prof. Dr. Harish Tiwari
Chairman	Vice Chairperson	Secretary	Principal

Ref. No. : Date :

List of faculty members with administrative responsibilities (2021-2022)

Sr.No	Name Of The Faculty	Department	Assigned Responsibility
1.	Dr. H. U.Tiwari	PCCOE&R	Principal Head of the Institute
2	Dr. Ramesh Rathod	Mechanical Engineering	Head of Mechanical Engineering Department
3	Dr. Rahul Mapari	E&TC Engineering	Head of E&TC Engineering Department
4	Dr. Archana Chougule	Computer Engineering	Head of Computer Engineering Department
5	Dr. Sameer Sawarkar	Civil Engineering	Head of Civil Engineering Department
6	Mr. Tushar Gaikwad	First year Engineering	Head of First year Engineering Department
7.	Mr. Prakash Yeole	Registrar	Admin office
8.	Mrs. Rajashree Darwatkar	Head Clerk	Purchase Section
9.	Mr. Shripad Bhandari	Accountant	Account Section

Regular Meeting of HODs, Section In charges for overall Planning, Coordination, Monitoring and Control are conducted by the Principal. Subsequently regular Departmental Meetings are held by the respective Head of the Departments, Section in charges and Committee / cell in charges for efficient functioning of Academics, overall development of Students and monitoring of developmental Activities.

Additional Committees / Cells

College has formed various additional Committees / Cells and the Functions of these Committees/ Cells are properly defined, considering the overall development of the Institute.

The Principal administers various Academic Activities and other related developmental Activities, Students and Staff Welfare activities through Departmental Heads, Registrar. Regular Meetings are held with HOD sand Section In charges to effectively plan, implement and monitor &control various Academic and Administrative functions of the College.

The Function of these Committees/Cells is to plan and execute various activities in accordance with Vision, Mission and Objectives of the College and its overall development. This also aims at active participation and involvement of all Teaching and Supporting Staff Members through Team spirit and work with synergy. The Functions of these Cells are properly framed and informed to all Staff Members are given in Table B.10.1.3.b. Following is the list of Committees/Cells –

Table B.10.1.3.b Portfolio Committee and their function

Sr. No.	Committee	Function
Overall Coordination and Development Cell		
1	Overall Coordination and Development Cell	To monitor overall growth and development of the Institute.
2	College Promotion and Publicity Website Updating and Maintenance	To promote and publish college activities ,achievements ,events, success s stories in news paper ,website ,social media etc.
3	Right To Information	To bring transparency in the administration and functionality of the Institution.
4	Special Standing Cell (Reservation	To monitor and endeavor to resolve

	Committee)	issues, grievances related to all reservation candidates and staff at the Institute level.
5	Faculty & Staff Development	To initiate overall development in the faculty and staff to make them competent professionals and conscious human beings
6	Soft Skill , Communication Skills	To strengthen Language and communication Skills of the students with a special emphasis on sharing information through good interpersonal skills and skills related to language. It helps in strengthening PO10
7	Campus Beautification, Housekeeping & Cleanness and Overall Maintenance Committee	To maintain cleanliness and overall maintenance of college
8	System & IT support & ERP System	To provide IT and administrative support to the system.
9	Mess Committee	To regulate and monitor the kitchen activities and maintain healthy and hygienic food quality
10	Annual Magazine & wall Magazine	To publish institute achievement annually and monthly.
11	NBA	To ensure implementation of OBE philosophy for accreditation process.
12	ISO	To ensure the process needed for the quality management system.
13	College Presentation CDC,GB & NBA	To prepare Institute presentation required or CDC,GB and NBA
14	NIRF & Other Ratings	To help and guide the institute about NIRF and other rankings.
Academic committees		
15	Academic Monitoring and Control(AMC)	To monitor the academic activity of the institute, review and make recommendations to the institute's administration about academic programs and strategic priorities.
16	Student Counseling Cell	To provide counseling facility to members of the college, including mainly students, as well as faculty and other staff of the college.
17	University Exam Conduction Cell	To manage examination preparation process.
18	Admission Regulation	To coordinate for smooth and transparent conduction of admission process.

19	Library	To ensure availability of library resources to students and faculties
Research Committees		
20	Research and Project based learning	To help students in developing model based products, projects and to strengthen PO9 and PO11
21	Innovation , Patents and Copyrights	To drive strategic planning and provide guidance across academic and research programs and to attain PO4,PO11
22	Technical Event	To carry out various technical events to help students to work in teams, hence to strengthen PO9
Student Development and Welfare Cell		
23	Students Welfare	To motivate students in overall student development of the college.
24	Grievance Redressal Committee	To ensure transparency by technical institutions imparting technical education, in admissions and with Paramount Objective of preventing unfair practices and to provide a mechanism to innocent students for redressal of their grievances.
25	Women's Empowerment	To encourage and empower every female student as well as staff for their personal development.
26	Sports	To encourage students to participate in various sports activities and ensure the availability of facility.
27	Art Circle	To help student to build team spirit ,self confidence and to provide an ethical learning environment and connect to the societal issues ,hence to strengthen PO6 and PO8
28	NSS	To help students to grow individually and also as a group, make the students confident, develop leadership skills, and gain knowledge about different people from different walks of life ,hence it strengthen to achieve PO6 and PO7
29	Foreign Language	To help students to learn different foreign languages.
30	Internal Complaint Committee (Women's Grievance)	To create awareness about issues faced by women and provide forum to build awareness.

31	Anti Ragging Committee	To keep constant vigilance and ensure anti-ragging as per guidelines of UGC
32	LRDC	To facilitate learning resources to students and faculties.
Training and Placement Committees		
33	Training & Placement	To organize campus recruitment drives and assist student to do industrial training and hence obtain placement.
34	Higher Studies & Competitive Exams Incubation & Entrepreneurship development	To facilitate the students to higher studies and competitive examination.
35	Industry Institute Interaction Cell	To give industrial exposure to Faculty members and students, thus enabling them to tune their knowledge to cope with the industrial culture.

B. Grievance Redressal Mechanism

The institute has constituted Grievance Redressal cell (GRC), Internal Complaints Committee (ICC) and Ant ragging Committee as per the guidelines by the competent authority. Online Grievance Redressal system is purchased and installed.

1. Grievance Redressal Committee

PCCOER has a Staff (teaching and non-teaching) and Students Grievance Redressal Committee. The functions of the Committee are to look into the complaints lodged by any staff member or student, and judge its merit. The Grievance Redressal Committee is also empowered to look into matters of harassment.

Objective:

The objective of the Grievance Redressal Committee is to develop a responsive and accountable attitude among all the stakeholders in order to maintain harmonious educational atmosphere in the institute.

A Grievance Redressal Committee has been constituted (Table B.10.1.3.c) for the redressal of the problems reported by the Students of the College with the following objectives:

1. Upholding the dignity of the College by ensuring strife free atmosphere in the College through promoting cordial Student-Student, Student-Staff and Staff-Staff relationships.
2. Encouraging the Students and Staff to express their grievances / problems freely and frankly, without any fear of being victimized.
3. Advising Students and Staff of the College to respect the right and dignity of one another and show utmost restraint and patience whenever any occasion of rift arises.

4. Advising all the Students to refrain from inciting Students against other Students, teachers and College administration.
5. Advising all staffs to be affectionate to the Students and not behave in a vindictive manner towards any of them for any reason.
6. Ragging in any form is strictly prohibited in and outside the institution. Any violation of ragging and disciplinary rules should be urgently brought to the notice of the Principal.

Scope:

The Committee deals with Grievances received in writing from the students and staff about any of the following matters:-

Academic Matters: Related to timely issue of duplicate Mark-sheets, Transfer Certificates, Conduct Certificates or other examination related matters.

Financial Matters: Related to dues and payments for various items from library, hostels, salaries, promotions, increments, etc.

Other Matters: Related to certain misgivings about conditions of sanitation, preparation of food, availability of transport etc.

Functions:

Anyone with a genuine grievance may fill the online form available on Institute website to approach the Grievance Redressal Cell. In case the person is unwilling to do so themselves, the grievance form may be filled by a representative.

The cases are attended promptly on receipt of written grievances from the students and staff. On receiving any such complaint, the Committee calls a special meeting immediately to resolve the issue and come up with mutually satisfactory solution.

In ordinary situation, Committee formally meets to review the situation, prepares a statistical reports about the number of cases received, attended to and the number of pending cases, if any, which require direction and guidance from the higher authorities.

The Committee is requested to Contribute effectively to dispose the grievances at the earliest.

Roles & Responsibilities:

Following are the general guidelines regarding roles and responsibilities of the committee members;

Sr. No	Local Committee	Roles & Responsibilities
1	Chairperson	Decision making on the basis of set rules, regulations and policies in any grievance complaint after carefully studying and understanding all the sides of the argument
2	Member Secretary	Monitoring grievance redressal forms/entries, organizing meetings of the committee members at scheduled frequency, assisting aggrieved candidate in appearing in front of the grievance committee, acting as coordinator between aggrieved candidate and committee.
3	Member	Helping the chairperson in decision making by making suggestions on the basis of set rules, regulations and policies after carefully studying and understanding all the sides of the argument

In the case, the complainant not satisfied with the decision of the Committee, they may send their appeals to the "OMBUDSMAN" appointed by SPPU. The OMBUDSMAN will fix a date for hearing the Complainant which shall be communicated to the Institute and the aggrieved person.

The Institution shall comply with the order of the ombudsman. Any order of the OMBUDSMAN not complied with by the Institution, will be reported to AICTE for appropriate action.

In case of any false/frivolous Complaint, the ombudsman may order appropriate action against Complaint.

Exclusions:

The Grievance Redressal Committee shall not entertain the following issues:

1. Decisions of the Executive Council, Academic Council, Board of studies and other Administrative or Academic Committees constituted by the University.
2. Decisions with regard to award of scholarship, fee concessions, medals, etc.
3. Decisions made by the University with regard to disciplinary matters and misconduct.
4. Decisions of the University about admissions in any courses offered by the Institute.
5. Decisions by competent authority on assessment and examination result.

Mechanism of Grievances Redressal Cell:

- All complaints are first addresses to College Grievance Redressal Committee.
- A complaint made online is viewed through Principal log-in.
- After receiving any complaint, a meeting is called within two working days.
- The quorum for the meeting is three, including Chairperson.
- The GRC follow the principles of natural justice while considering the grievances of the students.
- The GRC is expected to resolve the issue stated in grievance and expected to come up with a mutually satisfactory solution within 5 working days from the date of receipt of grievance.
- The GRC sends the report and recommendations to the appropriate authority within a period of 15 days of receiving the complaint.

Table B.10.1.3.c Composition of Grievance Redressal Committee

Sr.No	Name	Designation	Local Committee	Contact Number
1	Dr. H. U. Tiwari	Principal	Chairperson	8806461401
2	Dr. ArchanaChaugule	HoD, Computer Engg	Member	8007773086
3	Mr. TusharGaikwad	HoD FE	Member	9860821154
4	Mr. Nikhil Sahadev	Student	Student Representative	9403067351
5	Mr. PrakashYeole	Office Superintendent	Member	9765459194
6	Dr. Ramesh Rathod	HoD, Mechanical Engg	Member	9823545677
7	Dr. Rahul Mapari	HoD, E&TC Engg	Member	8830550073
8	Dr. Sameer Sawarkar	HoD, Civil Engg	Member Secretary	8850159922

Frequency of meeting: Twice in a year & unplanned one depending upon the seriousness of any case.

Table B.10.1.3.c' Meeting Dates of Grievance Redressal Committee

Academic Year	No of Meeting	Date of meeting	Action Taken
2021-22	1	23rd August 2021	1) Updated the list of committee members on college website. 2) Verified the working of online link to report grievance.
2020-21	1	24th August 2020	3) Displayed updated posters to create awareness among students and staff about the roles and responsibilities of GRC. 4) Updated the list of committee members on college website. 5) Verified the working of online link to report grievance. 6) Addressed all the students regarding scope of GRC, possible grievances, grievance redressal cell structure and grievance redressal process.
	2	15th March 2021	1) Prepared semester wise report of GRC. 2) A meeting of all the mentors and mentor-coordinators was conducted to discuss common minimum mentoring programme and effective mentoring that would make the mentors identify early signs of grief in

			students.
2019-20	1	28th August 2019	1) Displayed updated posters to create awareness among staff and students about the roles and responsibilities of GRC. 2) Checked and updated the list of committee members on college website. 3) Verified the availability of online link to report grievance. 4) Conducted department-wise meetings to ascertain that all the students are aware of GRC and its functioning.
	2	21st February 2020	1) Prepared semester wise report of GRC.
2018-19	1	23rd August 2018	1) Displayed updated posters to create awareness among staff and students about the roles and responsibilities of GRC. 2) Checked and updated the list of committee members on college website. 3) Verified the availability of online link to report grievance. 4) Conducted department-wise meetings to ascertain that all the students are aware of

			GRC and its functioning.
	2	12th March 2019	1) Prepared semester wise report of GRC.
2017-18	1	22nd August 2017	1) Displayed updated posters to create awareness among staff and students about the roles and responsibilities of GRC. 2) Checked and updated the list of committee members on college website. 3) Verified the availability of online link to report grievance. 4) Conducted department-wise meetings to ascertain that all the students are aware of GRC and its functioning.
	2	23rd February 2018	1) Prepared semester wise report of GRC.

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Dnyaneshwar P. Landge Chairman	Padmatai Bhosale Vice Chairperson	Vitthalrao S. Kalbhor Secretary	Prof. Dr. Harish Tiwari Principal

Ref. No. : Date : Date: 01/07/2021

GRIEVANCE REDRESSAL COMMMITTEE

This is to intimate that the Grievance Redressal Committee, which has been in force since its formation i.e. since Year 2020-21, has been revised. The Grievance Redressal Committee has been constituted at the Institute Level and will operate at local level (Local GRC). Member Secretary is expected to coordinate and maintain the summary of all activities and transactions related to grievances in PCCOER.

Ombudsman and its registry for PCCOER will be referred to from Savitribai Phule Pune University (SPPU) Circular (Ref CA/8233), as PCCOER is affiliated to SPPU, Pune.

Sr. No	Name	Designation	Local Committee	Contact Number	Sign
1	Dr. H. U. Tiwari	Principal	Chairperson	8806461401	
2	Dr. Archana Chaugule	HoD, Computers Engg	Member	8007773086	
3	Mr. Tushar Gaikwad	HoD FE	Member	9860821154	
4	Mr. Nikhil Sahadev	Student	Student Representative	9403067351	
5	Mr. Prakash Yeole	Office Superintendent	Member	9765459194	
6	Dr. Ramesh Rathod	HoD, Mechanical Engg	Member	9823545677	
7	Dr. Rahul Mapari	HoD, E&TC Engg	Member	8830550073	
8	Dr. Sameer Sawarkar	HoD, Civil Engg	Member Secretary	8850159922	

P.C.C. COLLEGE OF ENGINEERING & RESEARCH RAVET PUNE-01

Prof. Dr. Harish Tiwari
(Principal, PCCOER)

2. Anti-Ragging Committee

With reference to Maharashtra Prohibition of Ragging Act 1999, UGC Regulation on Curbing Menace of Ragging in Higher Educational Institution 2009 and AICTE notification dated 1st July 2009, Anti Ragging Committee has been constituted in the institute. The Committee Constitution is given in Table B.10.1.3.d.

Table B.10.1.3.d: Composition of Anti-Ragging Committee (AY-2021-22)

Sr. No.	Name of Staff		Contact No.
1	Prof.Dr.H.U.Tiwari (Principal)	Chairman	8806461401
2	Dr. Ramesh Rathod (Mech)	Co-ordinator	7030903224
3	Mr. Sandeep Boragaonkar	Student Welfare Officer	9869977531
4	Dr. Archana Chaugule (Comp)	Member	9763722206
5	Dr. Rahul Mapari (ENTC)	Member	8830550073
6	Dr. Sameer Savarkar (Civil)	Member	9423933241
7	Prof. Tushar Gaikwad (F.E.)	Member	9850780995
8	Prof. Vijay Desai (Mech)	Member	9762427151
9	Mr. Ganesh Borade (Rector)	Member	9850501387
10	Mr. Gorakh Bhalekar	Member Local Resident	9422006815
11	Mr. Gajanan Pote	Parent	9881611511
12	Mr. D.D. Chaudhari	A.S.I	9823663273
13	Mr. Tulsidas Shinde	Press reporter (Sakal)	9552530271
14	Mr. Chinmay Jagtap	Student T.E. (Comp)	7385573810
15	Mr. Dinesh Patil	Student S.E. (Mech)	7758896182
16	Miss. Simran Agarwal	Student B.E. (comp)	7972188879
17	Mr. Aaush Kedari	Student T.E. (E&Tc)	7744095525
18	Mr. Prachil Kolhe	Student B.E. (Civil)	9970747857

Mechanism of Anti Ragging Cell:

- To keep constant vigilance and ensure preventive measures against the ragging as per guidelines given by UGC.
- To insure that PCCOE&R Campus and Hostel is free of any kind of ragging.

Function & responsibilities:

Ragging is a problem faced by students in the campus during and after college hours. The consequences of students who faced ragging are very serious and shocking. Thus this committee was constituted to prevent ragging and provide relief to the students who come under this shadow. The committee has the powers to take stringent action on students involving in such activities. Committee comprises of the following members.

Formation of anti ragging core committee

- Maintaining the coordination between all the department by appointing the vigilance squad
- Visit to the FE Classes to create awareness among the students regarding the consequences of involvement in any type of ragging
- Scheduling of regular visits of squad and committee to the hostel particularly during the initial phase of FE students to curb the ragging
- Reporting to the concerned authority at University level as per SPPU guidelines

Frequency of meeting: Twice in a year and in case of any reports. The MOM are given Table B.10.1.3.d'.

Details of any cases found-No case is found till date**.**

Table B.10.1.3.d': Meeting Dates of Anti-ragging Committee

Academic Year	Meeting No.	Date of meeting	Action Taken/Planned
2021-22	1	27th July 2021	1) To make students aware of rules and regulations of Anti-Ragging as per AICTE and SPPU guidelines in view of COVID-19 2) To instruct students of possible consequences of ragging 3) Strategy for surveillance of hostel as per the norms laid by the government for COVID-19 as and when students are admitted in the hostel
2020-21	1	23rd July 2020	1) To make students aware of rules and regulations of Anti-Ragging as per AICTE and SPPU guidelines in view of COVID-19 2) To instruct students of possible consequences of ragging 3)Strategy for surveillance of hostel as per the norms laid by the government for COVID-19 as and when students are admitted in the hostel
	2	15th January 2021	1) First year engineering admissions did not take place hence no students were admitted to the hostel. 2) To make students aware of rules and regulations of Anti-Ragging as per AICTE and SPPU guidelines in view of COVID-19 well before the first year students start coming to the hostel. 3)Strategy for surveillance of hostel
2019-20	1	22nd July 2019	1) To make students aware of rules and regulations of Anti-Ragging as per AICTE and SPPU guidelines 2) To instruct students of possible consequences of ragging. 3) Strategy for surveillance of hostel
	2	14th January 2020	1) Discussion on reports received from core committee. 2) Finding of any possible case of ragging if it has happened. 3) If not then insure that the existing system is followed effectively

2018-19	1	20th July 2018	1) To make students aware of rules and regulations of Anti-Ragging as per AICTE and SPPU guidelines. 2) To instruct students of possible consequences of ragging. 3)Strategy for surveillance of hostel
	2	18th January 2019	1) Discussion on reports received from core committee. 2) Finding of any possible case of ragging if it has happened. 3) If not then insure that the existing system is followed effectively
2017-18	1	25th July 2017	1) To make students aware of rules and regulations of Anti-Ragging as per AICTE and SPPU guidelines 2) To instruct students of possible consequences of ragging. 3) Strategy for surveillance of hostel
	2	23rd January 2018	1) Discussion on reports received from core committee. 2) Finding of any possible case of ragging if it has happened. 3)If not then insure that the existing system is followed effectively

3. Internal Complaint Committee (Women Grievance Committee)

In Pimpri Chinchwad College of Engineering and Research, Ravet Women's Grievance Redressal Cell was established on 14/8/2014 (Table B.10.1.3.e) to safe guard the rights of the female students , faculty and staff members and also to provide platform to listen to complaints .

The motivation to have this cell is to ensure a speedy delivery of justice by processing each complaint through suitable action in compliance with Savitribai Phule Pune University guidelines and in compliance with the laws and regulations of the Government of India.

Objectives:

- To create an environment of gender justice, where men and women work together with a sense of personal security and dignity.
- To resolve issues pertaining to girls, women's sexual harassment.

- To equip the females students, faculty and staff members with the information of their legal rights.
- Safe guard the rights of female students, faculty and staff members to provide platform to listening to their issues, complaints.
- Provide Platform for Redressal of grievances.

Functions and Responsibilities:

- Create awareness about issues faced by women due to gender biases and discrimination.
- To provide a forum to build awareness and hence build preventive actions in matters related to gender discrimination.
- To provide and disseminate information about rights and laws for women.
- To facilitate speedy delivery of justice by processing each complaint through suitable action.

Complaint procedure

- A grievance box shall be kept in the office premise for collecting the complaints. In case of urgency, complainant can directly hand it over to the Presiding Officer. A complaint can be registered via online mode available on college website.
- Any women employee who wants to file a complaint can do so by a written and signed complaint addressed to the Presiding Officer of the cell. In case of sexual harassment the complainant shall include the specific nature of the incident, date and the place of the incident, name of all parties involved as well as a detailed report of all pertinent facts. Complaint can be filed within three months from the date the incident took place. The Internal Committee can extend the time limit not exceeding another 3 months if it is satisfied that the circumstances were such that prevented the woman from filing the complaint within the said period. If the aggrieved woman is unable to make a complaint on account of her physical or mental incapacity or death, her legal heirs or such other person as may be prescribed may do so.

- Inquiries and/or complaints will be investigated immediately. Investigation will be conducted in confidential manner as compatible with a thorough investigation process.
- During the process of handling the complaint the witnesses/complainants should not experience any kind of discrimination or victimization.

Redressal procedure

- The complaint box shall be opened as per decided frequency to collect and sort out the complaints. It shall be opened immediately if the complainant so desires or if any complaint can be raised via online mode can take into consideration.
- The complainant shall be summoned to hear complaints (if necessary). Complaint of harassment will be promptly and carefully investigated. Investigation will include interview with all relevant persons, including the aggrieved and other potential witnesses in the case of sexual harassment and decision on grievances to be taken at a fairly senior level. After hearing of complaints, the committee shall take appropriate decision in accordance with the service rules applicable to the Respondent or where no such service rules exist, in accordance with rules framed under the Act and then same will be communicated to the complainant within a period of fifteen days in general. If the nature of complaint is complicated, it may take longer to take a decision.
- Where both the parties are employees in the same workplace, the parties during the course of the inquiry shall be given an opportunity of being heard and a copy of the findings shall be made available to both the parties enabling them to make representation against the findings before the Committee.
- If the complainant is not satisfied with the decision taken, she can take up the matter higher up the ladder to the higher component authority.
- Inquiry Report On the completion of inquiry the ICC will provide a report of the findings to the employer within 10 days from the date of completion of the inquiry and such report will be made available to the concerned parties.

Time limit of Inquiry

The inquiry should be completed within a period of **90 days** from the date of receipt of the Complaint.

Recommendation

The ICC shall give recommendations of any of the following to the employer on completion of the inquiry:

I. If the ICC arrives at the conclusion that the allegation against the Respondent has not been proved, it shall recommend to the employer that no action is required to be taken.

II. If the ICC arrives at the conclusion that the allegation against the respondent has been proved, it will recommend to the employer the following actions:

a. To take action for sexual harassment as a misconduct in accordance with the provisions of the service rule applicable to the Respondent;

b. And where no such service rules have been made or not applicable to the Respondent then the following actions shall be recommended to be taken.

   i. A written apology
   ii. Warning
   iii. Reprimand or censure
   iv. Withholding of promotions, pay rise or increments
   v. Terminating the respondent from service
   vi. Undergoing counseling session
   vii. Carrying out community work.

c. If the ICC arrives at a conclusion that the allegation against the respondent is malicious or the aggrieved woman or any other person making the complaint has made the complaint knowing it to be false or the aggrieved woman or any other person making the compliant has produced any forged or misleading document, it may recommend to the employer to take action against the woman or the person who has made the complaint. The employer shall have to act upon the recommendations within 60 days of the receipt of the enquiry report.

Internal Complaint Committee Members:

Table B.10.1.3.e Composition of Internal Complaint Committee

Sr. No	Name	Designation	Position
1	Mrs. Mayura Yeole	Faculty of Civil Dept.	Presiding Officer
2	Mr. Vijay Desai	Faculty of Mechanical Dept	Member
3	Mrs. V.S. Kumbhar	Faculty of E & TC Dept.	Member
4	Mrs. Jayashri Chopade	Faculty of Mechanical Dept.	Member
5	Mrs. Asmita Sapkal	Non Teaching Staff	Member
6	Mrs. Rajashree Darwatkar	Non Teaching Staff	Member
7	Ms.Yamini Patil	Student	Member
8	Ms.Vedangi Thakur	Student	Member
9	Ms. Vishakha Solankure	Student	Member
10	Mr. Atul Sawakhande	NGO	Member

Frequency of meeting- Twice in a year and if required for any emergency (Table B.10.1.3.e').

Table B.10.1.3.e' Meeting Dates of Internal Complaint Committee

Academic Year	No of Meeting	Date of meeting	Action Taken
2021-22	1	23rd July 2021	Planning meeting with students to share the objectives and functioning of Internal Complaint Committee, along with complaint and redressal process, encouraging the students to come forward for any issues.
2020-21	1	10th August 2020	11) Members of the committee are made aware of the background of the formation, objectives,

			functions, and responsibilities of the committee. 2) Till date no such complaint received with ICC, this happens only because of sincere efforts of all committee members, who transfer ICC mechanism and importance to their department Staff & students.
	2	23rd February 2021	1) Applied for Lilawati Award & Shelar award. 2) Online Awareness sessions to be conducted for girl students and staff, in collaboration with Women Empowerment cell were discussed. 3) Preparation of annual report.
2019-20	1	9th July 2019	1. Members of the committee were made aware of the background of the formation, objectives, functions, and responsibilities of the committee. 2. Awareness sessions and activities to be conducted for girls students and staff, in collaboration with Women Empowerment cell was discussed.
	2	24th February 2020	1) Report of activities done for/attended by girl students and staff, such as Sanitary and Hygiene awareness among school girls, Self defense training for girls students, Counseling session through Nirbhay Kanya Abhiyan, guiding Session on 'Schemes available for women for startup' was discussed. 2) Planning of activities to be

			conducted in semester II such as Self Defense workshop was discussed.
2018-19	1	24th July 2018	1) 1) Members of the committee are made aware of the background of the formation, objectives, functions, and responsibilities of the committee. 2) Awareness sessions and activities to be conducted for girls students and staff, in collaboration with Women Empowerment cell was discussed.
	2	4th February 2019	1) Report of activities done for/attended by girl students and staff, such as personality development, self awareness of health and hygiene, awareness session about background of the formation and objectives, awareness of Self protection and laws for women, was discussed. 2) Planning of activities such as self defense training for girl's students, debate on gender equity to be conducted in semester II was discussed and inputs given for smooth conduction.
2017-18	1	4th July 2017	1) Members of the committee are made aware of the background of the formation, objectives, functions, and responsibilities of the committee.
	2	7th February 2018	1) Report of activities done for/attended by girl students and staff, such as awareness session about background of the

			formation and objectives, was discussed. 2)Planning of activities such as self defense karate training workshop, women empowerment workshop for girls students to be conducted in semester II was discussed and inputs given for smooth conduction.

PIMPRI CHINCHWAD EDUCATION TRUST's
PIMPRI CHINCHWAD COLLEGE OF ENGINEERING & RESEARCH
(An ISO 9001:2015 Certified Institute)
Plot B, Survey No. 110 (p), Laxminagar, Ravet, Pune 412101.
☎ : 8237238080 Email : pccoer.ravet@gmail.com Website : www.pccoer.com

Dnyaneshwar P. Landge Chairman	Padmatai Bhosale Vice Chairperson	Vitthalrao S. Kalbhor Secretary	Prof. Dr. Harish Tiwari Principal

Ref. No. : PCCOER/WGC/2020-21/209-1 Date : 05/10/2020

Internal Complaint Committee

Sr. No.	Names	Particulars of the members	Designation	Email ID & Mob. No.
1	Mrs. Mayura Yeole	Faculty of Civil Dept.	Presiding Officer	mayura.yeole@pccoer.in 8788675134
2	Mr. Vijay Desai	Faculty of Mechanical Dept	Member	vijay.desai@pccoer.in 9762427151
3	Mrs. V.S. Kumbhar	Faculty of E & TC Dept.	Member	vijayalaxmi.kumbhar@pccoer.in 8390281285
4	Mrs. Jayashri Chopade	Faculty of Mechanical Dept.	Member	jayashri.chopade@pccoer.in 9545452766
5	Mrs. Asmita Sapkal	Non Teaching Staff	Member	asmita.sapkal@pccoer.in 8007894998
6	Mrs. Rajashree Darwatkar	Non Teaching Staff	Member	rajashree.darwatkar@pccoer.in 9096933961
7	Ms.Yamini Patil	Student	Member	yamini.patil_civil2018@pccoer.in 7709833556
8	Ms.Vedangi Thakur	Student	Member	vedangitakur21@gmail.com 8669598235
9	Ms. Vishakha Solankure	Student	Member	vishakha.solankure_mech2018@pccoer.in 9371072573
10	Mr. Atul Sawakhande	NGO	Member	atul.sawakhande@gmail.com 9921976277

PCCOER COLLEGE OF ENGINEERING & RESEARCH RAVET PUNE-01

Prof. Dr. Harish Tiwari
Principal
PRINCIPAL
Pimpri Chinchwad College of Engg. & Research
Laxminagar, Ravet, Pune-412 101

Institute Marks 7

10.1.4 Delegation of Financial Powers (10)

1. Principal is authorized to do the expenditure as per sanctioned budget for the financial year (sanctioned by CDC). Pre approval in advance is expected to obtain from the Trust before initiating the expenditure or procurement process as per sanctioned budget head.

2. However in case of urgency and in case of regular expenses or scheduled expenditure (as decided and recommended by Principal). Principal is authorized to sanction and do the expenses as per requirement. The principal should forward the details of expenditure sanction for approval later with sufficient and necessary justification for the same.

3. Principal is authorized to sanction or do expenditure up to **Rs.20,000/-** as a single expenditure as per requirements without prior permission.

4. The HODs are authorized to sanction or do expenditure up to **Rs.5,000/-** as a single expenditure as per requirement without prior permission.

5. The event coordinator/Portfolio coordinators/Activity coordinator or Authority appointed by the Principal for academic/co-curricular/extracurricular activity or other such activities happening in the Institute are authorized to do the expenditure as per pre sanctioned budget with details of estimated expenditure (for the event/activity).

6. The head of the departments (HODs) and the student association coordinator are jointly authorized to do the expenditure as per requirements for various co-curricular and extracurricular student development activities (Standard and required necessary process must be followed for the expenditure and or procurement under departmental student development activities). An audit from competent authority should be done yearly.

PIMPRI CHINCHWAD EDUCATION TRUST
Pimpri Chinchwad College of Engineering & Research.
Plot No. B, Sector No.110 (P), Laxminagar Ravet, Pune.

Policy for 'Financial Authority'

PCCOER/Fin.Policy/2017/ Date : 12/06/2017

1. Principal is authorized to do the expenditure as per sanctioned budget for the financial year (sanctioned by CDC). Pre approval in advance is expected to obtain from the Trust before initiating the expenditure or procurement process as per sanctioned budget head.
2. However in case of urgency and in case of regular expenses or scheduled expenditure (as decided and recommended by Principal). Principal is authorized to sanction and do the expenses as per requirement. The principal should forward the details of expenditure sanction for approval later with sufficient and necessary justification for the same.
3. Principal is authorized to sanction or do expenditure up to **Rs.20,000/-** as a single expenditure as per requirements without prior permission.
4. The HODs are authorized to sanction or do expenditure up to **Rs.5,000/-** as a single expenditure without prior permission as per requirement.
5. The event coordinator/Portfolio coordinators/Activity coordinator or Authority appointed by the Principal for academic/co-curricular/extracurricular activity or other such activities happening in the Institute are authorized to do the expenditure as per pre sanctioned budget with details of estimated expenditure (for the event/activity).
6. The head of the departments (HODs) and the student association coordinator are jointly authorized to do the expenditure as per requirements for various co-curricular and extracurricular student development activities (Standard and required necessary process must be followed for the expenditure and or procurement under departmental student development activities). An audit from competent authority should be done yearly.

Prof.Dr.Harish Tiwari
Principal
PCCOE&R

PC COLLEGE OF ENGINEERING & RESEARCH RAVET PUNE-01

Prof.Dr.Girish Desai
Executive Director
PCET

10.1.5 Transparency and availability of correct/unambiguous Information in public domain

Institute Marks 5

Website is updated regularly for:

- Academic programs details, faculty profile, facilities, notices related to Workshops, Guest Lectures, Industry-Institute Interaction, scholarships, upcoming Events are available on Institute website and displayed on Institute notice boards. Rules and regulations details such as Anti-ragging Prohibition, Anti-ragging Committee and Grievance Redressal are also available on Institute website.
- Information such as Annual Fees, Fee Proposal submitted to Fee Regulatory Authority, Mandatory Disclosure as per defined guidelines AICTE are also available on Institute website https://www.pccoer.com/governance
- Information on policies, rules, processes and its dissemination is made available to the stakeholders on the college website. Besides, the same is there in the college brochure also.
- The College Website Committee is formed to ensure the availability of up to date information to all its Stake Holders. The Website is updated on regular basis or as and when required. The Website is updated within two days by the following process –
    - As and when any update needs to be posted on the College Website, it will first be received by the Committee member of the respective Department. Once the request is received from the Faculty Coordinator and the Content is approved by Website In charge, it will be sent for final uploading on the College Website, to the Service Provider.
    - After uploading, the concerned Head of Department as well as Principal will review the content.
    - Frequency of meeting for website updating is once per semester and as and when required. Minutes of Meetings are maintained by the Website Coordinator.

        ✓ Six monthly College Bulletin ‘News Wire’ is regularly prepared, printed and distributed to all Students, Faculty and Staff Members to communicate the Salient
        ✓ Features, Distinguished Activities, Achievements and also to acknowledge their Contributions and Performances.

- ✓ Adequate Internal Communication, Dissemination of Information is enrooted through Internal Email System.
- ✓ All the circulars and notices for the students are displayed on the notice boards in the department as well as on the main notice board.
- ✓ Students' attendance is displayed on the notice board every month with class teacher and HOD approval.
- ✓ Institute has implemented Enterprise Resource Planning (ERP) system. faculty, staff,

Students can get details about following things through ERP as well as Parents are also communicated about attendance of ward through ERP.

- Syllabus
- Course structure
- Class time table
- Notices
- Attendance report
- Faculty and staff details
- Mentee system

10.2 Budget Allocation, Utilization, and Public Accounting at Institute level (30)

Institute Marks 28

Summary of current financial year's budget and actual expenditure incurred (for the institution exclusively) in the three previous financial years.

Total Income at Institute level: for CFY, CFY*m*1, CFY*m*2 & CFY*m*3

CFY: Current Financial Year, CFY*m*1 (Current Financial Year minus 1), CFY*m*2 (Current Financial Year minus 2) and CFY*m*3 (Current Financial Year minus 3)

Table B.10.2.a For CFY 2020-21

Total Income: 14,04,62,068.2				**Actual expenditure:10,43,51,704**			**Total No. of students:1474**
Fee	**Govt.**	**Grant(s)**	**Other Sources (specify)**	**Recurring including Salaries**	**Non-recurring**	**Special Projects/Any other, specify**	**Expenditure per student**
13,60,25,873	0	0	44,36,195.2 (University Fees, Consultancy & Competitive Exams)	9,60,63,645	82,88,059	0	**70,794.91**

For CFYm1 2019-20

Total Income:12,06,40,798.64				**Actual expenditure:11,36,48,772**			**Total No. of students:1356**
Fee	**Govt.**	**Grant(s)**	**Other Sources (specify)**	**Recurring including Salaries**	**Non-recurring**	**Special Projects/Any other, specify**	**Expenditure per student**
11,60,37,099	0	0	46,03,699.64 (University Fees, Consultancy & Competitive Exams)	10,63,02,565	73,46,207	0	83811.78

For CFYm2 2018-19

Total Income:11,46,46,859.38				Actual expenditure: 11,45,32,464			Total No. of students:1350
Fee	**Govt.**	**Grant(s)**	**Other Sources (specify)**	**Recurring including Salaries**	**Non-recurring**	**Special Projects/Any other, specify**	**Expenditure per student**
11,04,95,106	0	0	41,51,753.38 (University Fees, Consultancy & Competitive Exams)	9,30,94,994	2,14,37,470	0	84,838.86

For CFYm3 2017-18

Total Income:11,30,35,704				Actual expenditure: 10,58,93,478			Total No. of students: 1327
Fee	**Govt.**	**Grant(s)**	**Other Sources (specify)**	**Recurring including Salaries**	**Non-recurring**	**Special Projects/Any other, specify**	**Expenditure per student**
10,88,10,763	0	0 (Over and Above: SPPU)	42,24,941 (University Fees, Consultancy & Competitive Exams)	8,67,26,783	1,91,66,695	0	79799.15

For CFYm4 2016-17

Total Income:8,28,13,231				Actual expenditure: 7,90,93,050			Total No. of students: 997
Fee	**Govt.**	**Grant(s)**	**Other Sources (specify)**	**Recurring including Salaries**	**Non-recurring**	**Special Projects/Any other, specify**	**Expenditure per student**
7,95,62,355	0	0	32,50,876 (University Fees, Consultancy & Competitive Exams)	5,72,66,732	2,18,26,318	0	79,331.04

Table B.10.2a

Items	Budgeted in CFY 2020-21	Actual expenses in CFY 2020-21	Budgeted in CFY*m*1 2019-20	Actual Expenses in CFY*m*1 2019-20	Budgeted in CFY*m2* 2018-19	Actual Expenses in CFY*m2* 2018-19	Budgeted in CFY*m*3 2017-18	Actual Expenses in CFY*m*3 2017-18	Budgeted in CFY*m4*2016-17	Actual Expenses in CFY*m*4 2016-17
Infrastructure Built-Up	73,00,000	26,33,157	33,00,000	24,83,782	58,00,000	72,09,345	65,00,000	41,01,306	53,00,000	54,47,754
Library	20,00,000	7,64,123	25,00,000	9,97,328	18,00,000	16,79,558	20,00,000	12,70,786	15,00,000	11,55,936
Laboratory equipment	50,00,000	33,04,261	50,00,000	40,68,120	70,00,000	1,32,87,623	1,90,00,000	1,41,44,652	1,50,00,000	1,48,98,509
Laboratory consumables	11,00,000	4,68,898	13,00,000	9,88,397	9,50,000	6,05,741	9,00,000	4,92,960	10,00,000	4,06,046
Teaching and non-teaching staff salary	7,30,00,000	6,92,35,722	7,00,00,000	6,90,41,382	6,60,00,000	6,22,88,447	5,65,00,000	5,59,59,487	4,35,00,000	3,94,70,119
Maintenance and spares	13,00,000	9,40,980	12,00,000	14,20,464	10,00,000	9,14,120	10,00,000	8,58,307	4,00,000	6,45,290
R&D	10,00,000	9,88,126	10,00,000	10,70,723	4,00,000	2,33,114	4,00,000	1,62,394	--	--
Training and Travel	7,00,000	2,14,805	6,00,000	2,09,581	5,00,000	2,71,853	3,00,000	1,60,480	1,00,000	72,240
Miscellaneous expenses *										
Electricity & Fuel Charges	20,00,000	11,11,335	22,00,000	16,98,795	20,00,000	16,96,637	19,00,000	16,82,546	13,00,000	14,39,838
System Networking, Internet & ERP	18,00,000	8,13,220	22,00,000	17,69,873	20,00,000	17,84,519	16,00,000	12,76,773	15,00,000	12,76,864
Administrative Expenses	14,00,000	9,91,175	13,00,000	13,09,037	9,50,000	11,48,698	12,00,000	9,12,304	10,00,000	8,40,117
Academic Fees, Affiliation	5,00,000	1,73,000	4,00,000	5,11,700	4,00,000	2,91,100	4,50,000	3,13,372	3,00,000	5,07,121
Student Development & Welfare	40,00,000	3,25,882	32,00,000	84,38,434	27,00,000	23,94,969	18,00,000	45,47,329	6,00,000	6,13,677

Campus Safety, Beautification & Dev. Expenses	25,00,000	6,63,809	25,00,000	9,80,525	28,00,000	19,42,422	22,00,000	20,82,996	2,00,000	3,75,129
Housekeeping	30,00,000	23,88,552	28,00,000	26,57,613	27,00,000	26,30,890	22,00,000	24,09,929	17,00,000	18,37,928
Security Expenses	7,00,000	6,57,388	12,00,000	9,48,679	10,00,000	9,66,083	10,00,000	9,71,329	6,00,000	6,52,498
Sports Expenses	3,00,000	0	4,00,000	1,62,663	6,00,000	4,95,226	3,00,000	65,597	1,00,000	99,543
Training & Placement	5,00,000	2,21,250	7,00,000	1,23,309	6,00,000	3,19,106	4,00,000	4,69,883	2,00,000	12,10,815
Property Tax & Water bill	45,00,000	38,95,687	45,00,000	38,88,997	42,00,000	39,36,555	17,00,000	40,80,393	5,00,000	3,88,632
College promotion & publicity	3,00,000	3,10,738			5,00,000	56,512				
Educational Charity	11,91,787	0	10,61,132	5,000	10,32,994	50,000	9,93,065			
Building usage (Supervision) Charges	1,19,17,871	1,22,47,108	1,06,11,326	1,04,59,875	1,03,29,946	1,03,29,946	99,30,655	99,30,655	72,18,500	72,22,625
Others, NBA , ISO certification	26,00,000	20,02,488	11,50,000	4,14,495						5,32,369
Surplus	76,74,907	0	32,05,149		30,41,233		11,35,313		9,154	
Total	**13,62,84,565**	**10,43,51,704**	**12,23,27,607**	**11,36,48,772**	**11,83,04,173**	**11,45,32,464**	**11,34,09,033**	**10,58,93,478**	**8,20,27,654**	**7,90,93,050**

10.2.1 Adequacy of budget allocation (10)

Institute Marks 10

(The institution needs to justify that the budget allocated during assessment years was adequate)

The budget allocated for every financial year to the department as well as at the Institute level is adequate and sufficient to meet recurring and non-recurring expenses of all the respective financial years.The main source of income of the Institute is fees collection of the students and the whole collection is allocated in budget for yearly expenses. It is adequate as more than 92% of the planned budget has been spent on all the essentials or optimum requirements as per the norms and is shown in Table B. 10.2.1.a: Adequacy of budget allocation

Table B. 10.2.1.a: Adequacy of budget allocation

SR. NO.	Assessment Year	Budget Allocated (Rs)	Actual Expenditure (Rs.)	Adequate / Non-adequate
1	CFY (2020-21)	13,62,84,565/-	10,43,51,704/-	Adequate
2	CFYm1 (2019-20)	12,23,27,607/-	11,36,48,772/-	Adequate
3	CFYm2 (2018-19)	11,83,04,173/-	11,45,32,464/-	Adequate
4	CFYm3 (2017-18)	11,34,09,033/-	10,58,93,478/-	Adequate
5	CFYm4 (2016-17)	8,20,27,654/-	7,90,93,050/-	Adequate

10.2.2 Utilization of allocated funds (15)

Institute Marks 13

(The institution needs to state how the budget was utilized during assessment years)

Sanctioned budget of financial year is properly utilized throughout financial year as per requirements. Purchase procedure as justification for purchase, calling quotations, comparative statement, negotiations and purchase order is followed for all purchases. Average utilization of budget in last 4 financial years is shown in Table B. 10.2.2.a: Utilization of allocated funds

Table B. 10.2.2.a: Utilization of allocated funds

SR. NO.	Assessment Year	Budget Allocated (Rs)	Actual Expenditure (Rs.)	Percentage of utilization (%)
1	CFY (2020-21)	13,62,84,565/-	10,43,51,704/-	76.56
2	CFYm1 (2019-20)	12,23,27,607/-	11,36,48,772/-	92.91
3	CFYm2 (2018-19)	11,83,04,173/-	11,45,32,464/-	96.81
4	CFYm3 (2017-18)	11,34,09,033/-	10,58,93,478/-	93.37
5	CFYm4 (2016-17)	8,20,27,654/-	7,90,93,050/-	96.42

10.2.3 Availability of the audited statements on the institute's website (5) **Institute Marks 5**

(The institution needs to make audited statements available on its website)

The institute follows regular practice of getting the expenses audited by C.A.

The audited statements are available on the Institution website **http://pccoer.com/account.php**

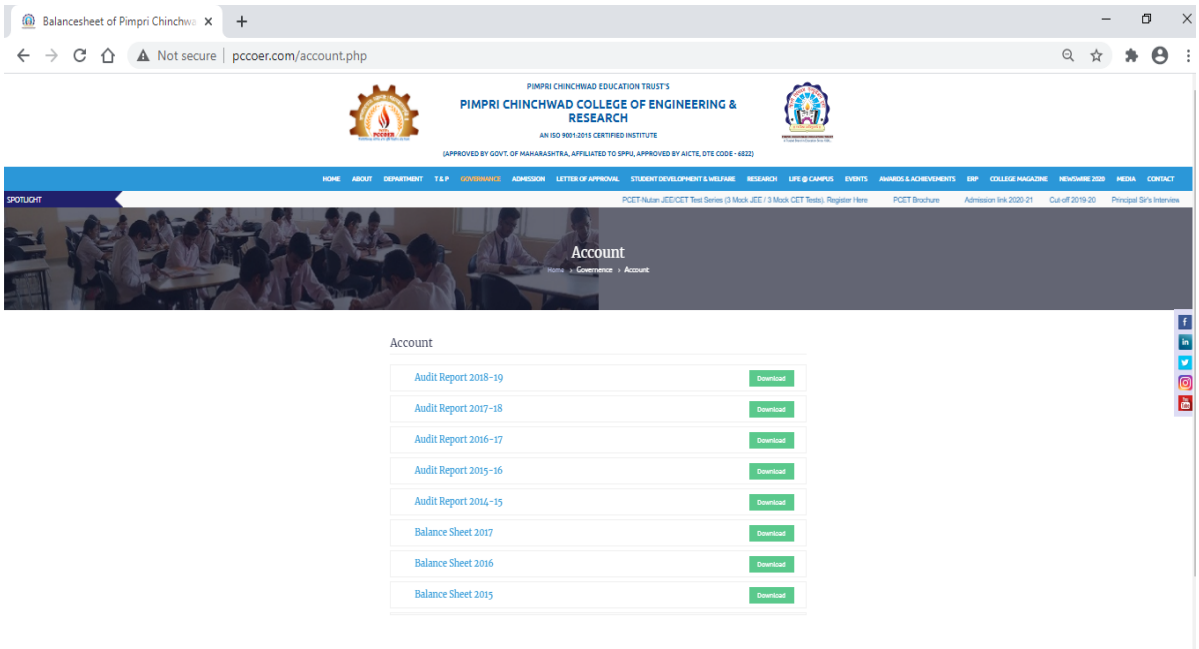


Figure B. 10.2.3.a: Screenshot of Institution Website

10.3 Program specific Budget Allocation, Utilization (30)

Institute Marks 28

Department of Electronics and Telecommunication Engineering

Total Budget at program level: For CFY 2020-21, CFYm1, CFYm2, CFYm3 & CFYm4
CFY: Current Financial Year, CFYm1 (Current Financial Year minus 1), CFYm2 (Current Financial Year minus 2), CFYm3 (Current Financial Year minus 3) and CFYm4 (Current Financial Year minus 4).

Summary of the budget and the actual expenditures incurred in the CFY 2020-21, CFYm1 2019-20, CFYm2 (2018-19), CFYm3 (2017-18),CFYm4 (2016-17) (exclusively for this program in the department) is shown in Table B.10.3a, Table B.10.3b, Table B.10.3c, Table B.10.3d, Table B.10.3e and Table B.10.3f shows overall budget and expenditure of E&TC department for last five years.

Table B.10.3a : For CFY 2020-21

Total Budget: 28,70,000/-		**Actual expenditure: 19,34,190/-**		**Total No. of students:231**
Non recurring	**Recurring**	**Non Recurring**	**Recurring**	**Expenditure per student**
12,20,000	16,50,000	10,31,910	90,22,80	8373.12

Table B.10.3b:For CFYm1 2019-20

Total Budget:2725000		**Actual expenditure :2450569**		**Total No. of students:219**
Non recurring	**Recurring**	**Non Recurring**	**Recurring**	**Expenditure per student**
1200000	1525000	1021294	1429275	11189.81

Table B.10.3c: For CFYm2 2018-19

Total Budget:2100000		**Actual expenditure :1828733**		**Total No. of students:218**
Non recurring	**Recurring**	**Non Recurring**	**Recurring**	**Expenditure per student**
1250000	850000	1171912	656821	8388.68

Table B.10.3d: For CFYm3 2017-18

Total Budget:4750000		Actual expenditure :4128136		Total No. of students:198
Non recurring	Recurring	Non Recurring	Recurring	Expenditure per student
4100000	650000	3500693	627443	20849.17

Table B.10.3e: For CFYm4 2016-17

Total Budget:3710000		Actual expenditure :3527727		Total No. of students:123
Non recurring	Recurring	Non Recurring	Recurring	Expenditure per student
3500000	210000	3340330	187397	28680.71

Table B.10.3f :Budget and expenses of E&TC department

Items	Budgeted in CFY 2020-21	Actual Expenses in CFY 2020-21	Budgeted in CFYm1 (2019-20)	Actual expenses in CFYm1 (2019-20)	Budgeted in CFY*m*2 (2018-19)	Actual Expenses in CFY*m*2 (2018-19)	Budgeted in CFY*m*3 (2017-18)	Actual Expenses in CFY*m*3 (2017-18)	Budgeted in CFY*m*4 (2016-17)	Actual Expenses in CFY*m*4 (2016-17)
Laboratory equipment	1170000	1028335	200000	105298	500000	437792	3,400,000	2881547	3400000	3340330
Software	50000	3575	1000000	915996	750000	734120	700000	619146	100000	-
Laboratory consumable	150000	82812	50000	-	150000	64796	50000	44282	70000	58093
Maintenance and spares	200000	124837	100000	85,425	50000	25554	50000	16,240	10000	1940
R & D	600000	547303	475000	520664	50000	37350	50000	42478	-	-
Training and Travel	200000	41626	150000	61000	100000	63228	50000	15590	30000	23343
Miscellaneous expenses * (Student Development)	500000	105702	750000	762186	500000	465894	450000	508853	100000	104021
Total	**2870000**	**1934190**	**2725000**	**2450569**	**2100000**	**1828733**	**4750000**	**4128136**	**3710000**	**3527727**

10.3.1 Adequacy of budget allocation (10)

Institute Marks 10

A. Quantum of budget allocation for five years (05)

Institute Marks 5

- The budget amount is based on purchase planning of the next year, syllabus revision if any, students' requirement and laboratory enhancement plan.
- Annual budget for the department is prepared by Head of the department after taking inputs from faculty in-charge for fulfillment of academic requirements including laboratories
- Head of the department, after discussion with the Principal, finalizes budget and submit it to the Principal.
- After approving proposed budget in CDC, account section issues approved budget to the department.
- After receiving approved budget, department initiates purchase process as per requirements.

B. Justification of budget allocated for five years (05)

Institute Marks 5

The planning and expenditure of the department budget is shown in below table.

Table B 10.3.1 a: Justification of budget

Sr. No.	Assessment Year	Budget Allocated (Rs)	Actual Expenditure (Rs)	Adequate / Non-adequate
1	CFY 2020-21	2870000	1934190	Adequate
2	CFYm1 (2019-20)	2725000	2450569	Adequate
3	CFYm2 (2018-19)	2100000	1828733	Adequate
4	CFYm3 (2017-18)	4750000	4128136	Adequate
5	CFYm4 (2016-17)	3710000	3527727	Adequate

10.3.2 Utilization of allocated funds (20) **Institute Marks 18**

A. Budget utilization for five years

Allotted Budget is properly utilized in the respective financial years as per department's requirement. Utilization of budget is as shown in below table.

Table B 10.3.2 b: Utilization of budget

Sr. No.	Assessment Year	Budget Allocated (Rs)	Actual Expenditure (Rs)	Percentage of utilization (%)
1	CFY 2020-21	2870000	1934190	67.39
2	CFYm1 (2019-20)	2725000	2450569	89.93
3	CFYm2 (2018-19)	2100000	1828733	87.08
4	CFYm3 (2017-18)	4750000	4128136	86.91
5	CFYm4 (2016-17)	3710000	3527727	95.09

10.4 Library & Internet (20) **Institute Marks 17**

10.4.1 Quality of Learning Resources (hard/soft) (10) **Institute Marks 8**

The library at PCCOE&R is a source of information and a gateway to Knowledge. The library plays a leadership role in today's distributed information environment, creation, organization, dissemination and preservation of facts in building affiliations with students and faculty members. The Library and Information Centre at PCCOE&R was established in the year 2014. It is well equipped with textbooks, reference books, general books, magazines, Journals, CD ROM, Video lectures, online resources and other valuable reading material. The library plays a vital role in enhancing the mission of the college through a treasure of knowledge which is maintained, organized and managed to serve the needs related to information. The library is fully computerized with an ERP system. Any student can access information from any place, at any time with effective use of his ERP account. Books are classified according to the Dewey Decimal Classification Scheme and open access allows users direct access to the library collection.

Library Collection: The relevance of available learning resources including e-resources (Table B 10.4.1.a, Table B 10.4.1.b and Table B 10.4.1.c):

Department-wise Book Collection:-

Table B 10.4.1.a: Department-wise book collection in library

Sr.No.	Department	Titles	Volumes
1	Mechanical Engineering	479	3025
2	Computer Engineering	390	1984
3	Electronics & Communication Engineering	451	1919
4	Civil Engineering	386	2073
5	Humanities & Science	195	1267
6	General Collection	170	214
	Total	**2071**	**10482**
7	Gratis Material	234	276

Table B 10.4.1.b: Number of Books Purchased in Library in the Last 7 years

A.Y.	Titles	Volumes
2014-15	505	2809
2015-16	216	1287
2016-17	285	1774
2017-18	292	1572
2018-19	394	1576
2019-20	56	577
2020-21	73	637
2021-22	250	250
Total=	**2071**	**10482**

Table B 10.4.1.c: Specific Collection of Books

Sr.No.	Title	Number of Books
1	Books on IPR(Intellectual Property Rights)	14
2	Competitive Exam Books (MPSC,UPSC,GATE,GRE)	211
3	English Communication & Soft Skills Books	65
4	Rare Books	29
5	Motivational Books, Biographies, Novels	46
6	Marathi & Hindi Novels	100
7	Gratis Material	276
8	CD's	482
9	BE Project Reports (e-copy)	106
10	Bound Volumes of Journals	161
	Total=	**1490**

All prescribe books are available to students & faculties for issuing. Students are allowed to borrow 3 books for a period of 10 days. Book reservation facility is given to students. Students can borrow one book over-night on Saturday from reference section. Table B 10.4.1.d shows Print Journals subscribed in the Library for A.Y. 2020-21.

Table B 10.4.1.d: Print Journals subscribed in the Library for A.Y. 2020-21

CIVIL DEPARTMENT					
Sr. No.	**Title of the Journal**	**Copies**	**Publisher**	**National/ International**	**Price**
1	Civil Engineering & Construction Review	12	Trend-set Engineering Pvt. Ltd.	National	2280.00
2	Indian Geotechnical Journal	6	Springer Nature India Pvt. Ltd.	National	4524.00
3	International Journal of Civil Engineering & Technology Research	2	Research India Publications	National	3500.00
4	Journal of Structural Engineering (Madras)	6	Structural Engineering Centre Chennai	National	2200.00
5	The Indian Concrete Journal (UGC)	12	The Associated Cement Cos. Ltd.	National	1800.00
6	Journal of Civil Struct.	4	Institute of	National	7189.00

	Engg. (Journal of the institution of engineers		Engineers, India		
7	Journal of Indian Institute of Science	4	Springer Nature India Pvt. Ltd.	National	7718.00
COMPUTER DEPARTMENT					
8	International Journal of Artificial Intelligence (CESER)	2	CESER Publications	International	30000.00
9	International Journal of Engineering and Advanced Technology	3	Enriched Information Services	International	3500.00
10	Journal of Cloud Computing and Data Base Management	3	Enriched publications	National	3000.00
11	Journal of Computer Science and Engineering((IASET)	2	International Academey of Sci.Engg & Technology	National	3000.00
12	Journal of Information Security Research	4	Digital Information Research Foundation	National	4000.00
13	Journal on image & video processing	4	ICTACT	National	5000.00
MECHANICAL DEPARTMENT					
14	Indian Journal of Engineering and material science	6	NISCAIR	National	1600.00
15	International journal of Advanced in Thermal Sciences and Engineering-7480	2	Serial Publications	National	3000.00
16	International Journal of Mechanical Engineering and Technology	6	International Ass. For Engg. & Management education	National	12000.00
17	International Journal of Mechanical Engineering and Robotics research	2	Academic Research Journals	National	3000.00
18	Journal of Scientific and Industrial research	12	NISCAIR	National	3600.00
19	Machine Design	12	Penton Media Inc.	International	15283.00
E&TC DEPARTMENT					
20	Far east Journal of Electronics and	2	Vijaya Books & Journals	National	6000.00

	Communication				
21	International journal of Control theory and Applications	2	International Science Press	National	3000.00
22	International journal of Engineering Research and technology	2	International journal of Engineering Research and technology	National	5500.00
23	International Journal of Recent Technology and Engineering	3	Enriched Information services	International	3500.00
24	Journal of Energy Storage & Conversion	2	Research Science Press	National	3000.00
25	International journal of power Engineering & green Technology	2	International journal of power Engineering & green Technology	National	3000.00
FIRST YEAR ENGINEERING					
26	Defence Science Journal	6		National	1600.00
				Total	**141794**

Table B 10.4.1.e: List of Magazines subscribed in the Library for A.Y. 2020-21

Sr.No.	Title of the Magazine	Department	Frequency	Price
1	Civil Engg.& Construction Review	Civil	12	2280.00
2	Construction Works	Civil	12	2400.00
3	Digit	Computer	12	1899.00
4	Express Compute	Computer	12	830.00
5	Electronics for You	E&TC	12	960.00
6	Open Source for You	E&TC	12	1150.00
7	Chemical News	FE	12	1650.00
8	Corporate Citizen	General	24	1200.00
9	Readers Digest	General	12	999.00
10	Foreign Affairs	General	6	8690.00
11	Nisargopachar Varta	General	12	300.00
12	Steel 360 India	General	12	5750.00
13	Civil Services Chronicle -English	Higher Studies Committee	12	1200.00
14	Competition Wizard- English	Higher Studies	12	1650.00

		Committee		
15	Competition Success Review-English	Higher Studies Committee	12	990.00
16	Engineering Success Review	Higher Studies Committee	12	1188.00
17	Kurukshetra	Higher Studies Committee	12	650.00
18	Pratiyogia Darpan	Higher Studies Committee	12	1000.00
19	Spardha Pariksha Tayari	Higher Studies Committee	12	650.00
20	Industrial Automation	Mechanical	12	1800.00
21	Autocar India	Mechanical	12	1800.00
				39036.00

E-Resources:-

Science Direct: - Elsevier Science Direct e-journals database is covered all stream Journals. Total 296 Journals are available in this database. Science Direct e-research contents are useful for research writing papers, project reports, presentations to students. Science Direct subscribed in PCCOE&R Library in A.Y. 2014-15, A.Y. 2017-18 & A.Y. 2018-19. Training session on Science Direct was also organized for student's .Details about all the features of this database, basic & advanced search of contents, Identification of subscribed Journals & open access Journals this information is given to all students.

J-Gate Engineering & technology: - J-Gate is the most comprehensive database & gateway to access research information from **9,312** Journals from Engineering & Technology subjects. In A.Y. 2014-15, A.Y. 2015-16, A.Y. 2016-17, A.Y. 2020-21 J-Gate databases was subscribed in Library.

E-Books: - 252 e-books of Tata McGraw Hill Publications are made available to students from A.Y. 2019-20 to 2020-21.

Accessibility to students:-

- Open Access system is adopted in the Library. Any student can direct access any section

from stack.

- **WEB-OPAC** facility is provided to students & staff to check availability of books in the Library.
- Remote Access facility is provided through "**KNIMBUS Remote access with Mobile Application**" to all students.
- **QR code** are displayed on notice board for quick access of Library Services, Department wise List of Books, List of books on Competitive exams, IPR Books, Marathi Novels, Print Journals & Magazines , list of e-books available in Library.
- **Access of e-resources like e-books, e-Journals, NPTEL videos & lectures, National Digital Library, Syllabus, Question papers, BE project Report are given through Digital Library.**
- The **Current Content Services** is used to send new arrivals of books, Journals & Magazines information to faculties by mail.
- **New arrivals titles** are displayed on New arrival section on regular basis.
- **Scanner facility** is provided to students & staff to scan important reading material .
- **Journals and Magazines** are provided to students on their I card for reading.
- Specious **Reading Room** with Wi_Fi connectivity facility is provided to students. Students can bring their Laptop & access study material here.
- Department wise Library is also available to students to access learning resources at respective departments.
- On college Website Library information like collection, Library services, Access given to e-Resources, SPPU question papers, NPTEL Local Chapter in given. Link **http://pccoer.com/library/library.php**
- **Membership of Different National Libraries**: IIT Mumbai Library membership, Automotive Research Association of India (ARAI, Pune), Jayakar Library (SPPU Pune).

Library Facility During COVID19

In COVID 19 period PCCOE&R Library has provided access for learning resources through "Knimbus mLibrary Mobile Application " to all students & faculties. Login ID & password were provided to all users, hence they can 24/7 access from any online computer, laptop or Mobile.

Link for Knimbus: - **https://pccoer.new.knimbus.com**
Following are the resources made available to user from Knimbus mLibrary Mobile Application (**Table B 10.4.1.f)**.

Table B 10.4.1.f: **Resources available to user from Knimbus mLibrary Mobile Application**.

Journals:-	1 J-Gate Engineering & Technology 2 Springer Journals(106) 3 Taylor & Francis Journals(11) 4 Knimbus Open Access Journals(9,593)
e-Books:-	1 Knimbus e-books collection (10,316) 2 Tata McGrawHiil e-books collection (252)
PCCOER Library OPAC(Online Public Access Catalogue)	It allows checking availability of books in PCCOER Library.
NPTEL Videos:-	Free Videos Lectures are available from Professors of IIT's And IISC
NPTEL Online Certification courses	Get Certified from MHRD & IITS.
National Digital Library	All types of resources Books, Audio Books/Lectures, Video Lectures, Lecture presentations/ Notes, Simulations, GATE exam Material etc. are available
SPPU Question Papers & Syllabus	All department Question Papers & syllabus are Available
Research Papers	Research Papers of In-house faculties of all department
BE Project Reports	PDF copy of Project reports of BE students
Research Help Desk	Information about expert databases VIDWAN, IRINS, ORCID ID, Research ID, Shodhganga

Webinar organized During COVID19

Library webinar on '**Research Writing Skills & Publication Ethics**" on 4th May 2020 at. 11.00a.m. Resource Person was Ms. Sunita Barve (Senior Technical Officer,NCL,Pune)

Contents Delivered in Webinar:-

- Details about how to write research paper from research title, abstract, Literature Review, Research methodology, data collection etc.
- What is a Citation? Also explained citation Analysis tools.
- How to write citation at the end of the paper?
- Information about h-Index.
- Plagiarism checking. UGC rules.
- Factors while selecting Journals for publishing paper. UGC care List.
- Importance of ORCID ID.

1. Webinar on "**Knimbus mLibrary Training Session** " on 5th may 2020 at 11.00 a.m. Resource Person was Mr. Rajendra Hiwale (Dupty Regional Manager-West, GIST)

   Contents Delivered in Webinar:-

   - Details about all the features of Knimbus Mobile Application.
   - Learning resources available & how to search information in this application.

2. Webinar on '**Knimbus –Access of e-Resources**" on 4th Feb 2021at 4.00p.m.

   Contents Delivered in Webinar:-

   Librarian has delivered this session on Research help desk websites which are recently added in Knimbus Mobile Application.

Digital Library:-

- This section is provided for use of Electronic Information sources like e-books, e-journals, videos, lectures on internet. A well-equipped Digital Library having 08 **nodes** with scanning facility is provided. As the access facility to e-journals is IP address-based, any student can access e-resources from any computer within the campus.
- Remote Access facility is provided through "**KNIMBUS Remote access with Mobile Application**" to all students & staff. Login Id & password is provided to every student. All e-Journals, e-books, Project Reports, NPTEL videos & Lectures they can access from home also.

Link for Knimbus: - **https://pccoer.new.knimbus.com**

- **Institutional Repository**: - Institutional Repository is the best platform & innovative channel of scholarly communication. Research work of college faculties are made available to all students. Access is provided to students & faculties through Knimbus Software.
- Savitribai Phule Pune University's question papers and syllabus, BE Project Reports are also made available to students.

Support to students for self-learning activities:-

- **Students can access NPTEL Videos & lectures in Digital Library.**
- **Access of National Digital Library is also made available to students.** Students can access all this reading material which are available in various format like Books, Articles, thesis Manuscript, Technical Reports, Monographs, Album, Law Judgment, Audio Lecture, Video lecture.
- **Swayam Online certification courses** are made available to students through NPTEL Local Chapter**.** Total **295** candidates has got certificate till date. Among them **8** candidates has shown their best performance & ranked on Topper in all India level in different subjects.
- **Research Help Desk is provided to students.** Link for this is :-
  http://pccoer.com/library/e-resources.php
  Information about Databases of Expert , Scientists /researchers such as **VIDWAN,IRINS** is given. To create academic identity for research work ORCID ID, Research ID. Funding agency like **MENDELY.**
- To improve the student's research knowledge & skill, Library has arranged Library orientations, workshops & training for students. This sessions motivated students to increase reading habits, provides information on how to write research papers, Electronic resources & searching strategies from various databases .
- **Plagiarism Checker Turnitin** Software is available to students & staff also.
- **Institutional membership :-**
  1 ARAI(Knowledge centre of Automotive Research Association of India ,Pune)
  2 IIT Mumbai Library
  3 Jayakar Library(SPPU)

Carpet Area of Library in (m2)	400 sqm
Reading Space in (m2)	162 sqm
Number of seats in reading space	150
Number of user (issue book) per day	70-75
Timing :	
On working Days	8.50 am - 5.30 pm
On Holidays	No working
During Examination	8.50 am – 8.00 pm
During Vacation	8.50 am – 5.30 pm
Number of Library Staff	03
Number of Library Staff with degree	02
Management Computerization for Search, Indexing, Issue/Return records- Bar coding used	Yes (ERP System)
Bar Coding	Yes
Library Additional Services	Wi-Fi facility, Reference Service, User Orientation, Current Content Service, Journals, Technical Magazines , Conference Proceedings, CDs, e-Books, e-Journals (Science Direct)
Digital Library Services	Yes
Number of eBooks	252
Availability of Exclusive Server	Yes
Availability of intranet/ Internet	Yes
Digital Library is provided in the Central Library where students can access all kinds of e-journals, e-books.	https://jgateplus.com/home/ https://ndl.iitkgp.ac.in/ https://nptel.ac.in/
Students can access eBooks/journals using internet in the Library	Separate Digital Library section located in main Library having 9 nodes with scanning facility is provided. Specious, ventilated, having Wi-Fi Connectivity in reading hall is available for students & staff.
Video course online	NPTEL, National Digital Library

Subscription details of e-Journals (Table B 10.4.1.g):-

Table B 10.4.1.g: Subscription of e-Journals and usage report

Academic Year	Details of memberships	Details of subscriptions	Name of service subscribed to	No of e-resources with full text access	Validity period	Usage report from the service provider
2014-15	1 Elsevier-Science Direct	Rs. 3,52,580 /- DD. No. 369246 ,Dt. 28.04.2014	Elsevier's Science Direct- 275 E-Journals Engineering+ Computer Science	275	9 Months (1st April 2014 -31st Dec. 2014	31,324
	2 ASTM Digital Library	Rs. 72, 160/- DD.No. 369247 Dt. 28/04/2014	ASTM Digital Library On Line Version	63,500	1 year (1st Jan - 31st Dec.2014	-
	3 IEEE	Rs. 2,41,680 /- RTGS (IOBAH 14137023396)	IEEE All-Society Periodicals Package (ASPP)	146	8 Months (1st May 2014 - 31st Dec. 2014	-
	4 J-gate Engineering & Technology	Rs. 67,416 RTGS No-14137023018 Dt. 17/05/2014	Informatics Pub.Ltd.	4150	-	1573
2015-16	1 ASTM Digital Library	Rs. 72, 160/- RTGS (IOBAN 15049036133) Dt. 18/02/2015	ASTM Digital Library On Line Version	63,500	1 Year (1st Jan.2015-31st Dec.2015	-
	2 J-Gate Engineering & Technology	Rs. 67,416/- Ch.No.048679 Dt. 30/05/2015	Informatics Pub.Ltd.	4300	1 Year (30th May 2015-30th April 2016	904
2016-17	1 J-Gate Engineering & Technology	Rs. 69000 Ch.No.058538 Dt. 20/07/2016	Informatics Pub.Ltd.	4500	1 Year (20th July 2016-19th June 2017)	2,719
	2 National Digital Library	Registration No-INMHNC46JZJWDVH	MHRD, Govt. of India	68 Lakh +	Life Time	-
2017-18	1 Elsevier-Science Direct	Rs. 3,18,921/- RTGS No-	Elsevier's Science	275		14,030

		17171421804	Direct- 275 E-Journals Engineering+ Computer Science			
	2 Membership of ARAI Library	Rs. 3540/- Ch. No 723245 Dt.06/01/18	Knowledge Centre Institutional Membership	73,000+	1 year	-
	3 e-ShodhSindhu	Open Source	MHRD, Govt. of India	More than 10,000 core	Life Time	-
2018-19	**1 Elsevier-Science Direct**	Rs. 4,79,081/- IOBAR 52019032000688450 Dt. 20/03/2019	Elsevier's Science Direct- 275 E-Journals Engineering+ Computer Science	275	9 months	11,452
	2 DELNET	Rs. 16,500/- Ch. No. 726880 Dt. 27/06/2018	Institutional Membership	e-Journals-400 e-books-2000	1 Year	-
	3 IESTC E- Journals	Rs. 60,500/- Ch. No. 726880 Dt. 27/06/2018	Gale InfoTrac Engg.Science & Technology collection	1378	1 Year	58
	4 Proquest Engg/Tech. Collection	Rs. 57,826/- Ch. No. 726880 Dt. 27/06/2018	Delnet Engg/Tech. scholarly Journals & Dissertations	e-Journals - 105	1 Year	288
	5 Membership of ARAI Library		Knowledge Centre Institutional Membership	73,000+		-
2019-20	**MGH e-Books**	Rs. 2,54,594/- Ch.No. 183277, Dt. 24/08/2020	Tata McGraw Hill Publication e-books	252 e-Books	1 Year	239
2020-21	**1 J-Gate Engineering & Technology**	Rs. 73,660/-	Informatics Pub.Ltd.	9000 e-Journals	1 Year	805
	2 Membership of IIT Mumbai Library	Rs. 36,580 Ch. No. 180015 Dt. 21/09/2020	IIT Mumbai	2,40,101	1 Year	-
	3 Membership of	Rs. 6000/-	SPPU	4,82,000	1 year	-

	Jayakar Library(SPPU)	Ch. No. 682493 Dt. 22/09/2020				

10.4.2 Internet (10)

Institute Marks 9

Table B 10.4.2.a: Details of Internet facility

Name of the Internet provider:	Limras Telecommunication
	Tata Teleservices
Wi Fi availability:	Yes 1. Campus is Wi-Fi enabled. 2. About 17 access points are available in the campus (including hostel). 3. This facility is maintained and managed by System Analyst. The facility is made available by setting and installing the Wi-Fi zones at various locations such as Reading halls, Hostels, Department corridors. The institute has currently state-of-art RUCKUS Wi-Fi access points to provide the Wi-Fi internet access through Wi-Fi zones. The institute is planning to extend this further to create and establish a Wi-Fi enabled campus.
Internet access in labs, classrooms, library and offices of all Departments	1. Faculty members have provided with the computer and Internet connection at their respective locations. All the Computer laboratories and facilities are connected with the Internet and are made available to the faculties and students for their academic needs in their respective departments. 2. Central computing facility with 70 Intel core i5 computers with 100 Mbps speed Internet connectivity is available for research & development. For uninterrupted computing, UPS is available in all computer laboratories. 3. LAN facility: 2 - Layer Switching (Distributed and Access) network is available for the entire campus. Distributed Switching for departments where 100/1000 Mbps (Gigabit Switches) are installed.
Security arrangements	Yes
Description	Sophos Firewall Authentication

Access Point Name and Technical Specification (Table B 10.4.2.b):

Table B 10.4.2.b: Access point specifications

Access Point name	R510
Data rate	it supports data rates up to 1.2Gbps
bandwidth	802.11ac: 6.5 to 867Mbps
Range	2 meter distance
Wi-Fi Standards	IEEE 802.11a/b/g/n/ac Wave 2
Wi-Fi Bands	2.4 GHz, 5 GHz
Encryption Algorithm	AES, WPA2, WPA-PSK
Operating Temperature	0°C (32°F) to 50°C (122°F)
Operating Humidity	Up to 95%, non-condensing
capacity :	1. Concurrent stations: 512 2. Simultaneous VoIP clients: 30

PIMPRI-CHINCHWAD EDUCATION TRUST'S
PIMPRI CHINCHWAD COLLEGE OF ENGINEERING & RESEARCH
(An ISO 9001 :2015 Certified Institute)
Approved by AICTE, Govt of Mahrashtra & DTE Mumbai
Affiliated to Savitribai Phule Pune University
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Shri.Dnyaneshwar Landge — Chairman
Smt.Padmatai Bhosale — Vice Chairperson
Shri.Vitthalrao Kalbhor — Secretary
Shri.Shantaram Garade — Treasurer
Prof.Harish Tiwari — Principal

Ref No. : PCCOER/NBA/2021-22/329 Date : 12/09/2021

DECLARATION

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 institution 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 Institution 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.

Signature & Name

Date: 12-9-2021

Place: Pune

Prof.Dr.H.U.Tiwari

Head of the Institution with seal

Principal
Pimpri-Chinchwad College of Engineering & Research
Laxminagar, Ravet, Pune - 412 101

Pimpri Chinchwad Education Trust's

Pimpri Chinchwad College of Engineering & Research, Ravet, Pune

Program Outcomes and Program Specific Outcomes

Program Outcomes:

a) **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization for the solution of complex engineering problems.

b) **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

c) **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 public health and safety, and cultural, societal, and environmental considerations.

d) **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

e) **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.

f) **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.

g) **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.

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

i) **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

j) **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.

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

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

Program Specific Outcomes (PSO's)-

a) Graduate will able to identify, design, prototype and test electronics and communication systems using software and hardware tools for real life problems.

b) Graduate will able to develop and support systems based on embedded, automation, microwave, signal and image processing.