SELF ASSESSMENT REPORT

UNDERGRADUATE ENGINEERING PROGRAMS (TIER-II)

FIRST TIME ACCREDITATION

LUKHDHIRJI ENGNEERING COLLEGE, MORBI

DEPARTMENT OF CHEMICAL ENGINEERING

PART A: Institutional Information

1. **Name and Address of the Institution:**

   LUKHDHIRJI ENGINEERING COLLEGE,

   SAMA KANTHE, MORBI -363642

2. **Name and Address of the Affiliating University:**

   GUJARAT TECHNOLOGICAL UNIVERSITY,

   Near Visat Three Roads,

   Nigam Nagar, Chandkheda,

   Ahmedabad, Gujarat 382424

3. Year of establishment of the Institution: 1951

4. Type of the Institution:

University	
Deemed University	
Government Aided	
Autonomous	
Affiliated	✓

5. Ownership Status:

Central Government	
State Government	✓
Government Aided	
Self-Financing	
Trust	
Society	
Section 25 Company	
Any Other (Please specify)	

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

Name of the Institution(s)	Year of Establishment	Programs of Study	Location
Not Applicable			

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

Sr. No.	Program Name	Name of The Department	Year of Start	Intake	Increase in intake if any	Year of increase	AICTE Approval	Accreditation Status
1	Chemical Engineering (BE)	Department of Chemical Engineering	2008	60	--	--	F.No. Central/ 1-9318788332/ 2021/EOA Dt: 25/06/2021	Applying first time
2	Civil Engineering (BE)	Department of Civil Engineering	1951	120	--	2008	F.No. Central/ 1-9318788332/ 2021/EOA Dt: 25/06/2021	Not eligible for accreditation
3	Electrical Engineering (BE)	Department of Electrical Engineering	1951	120	--	2008	F.No. Central/ 1-9318788332/ 2021/EOA Dt: 25/06/2021	Eligible but not applied
4	Information Technology Engineering (BE)	Department of Information Technology	1999	30	--	--	F.No. Central/ 1-9318788332/ 2021/EOA Dt: 25/06/2021	Not eligible for accreditation
5	Industrial Engineering (BE)	Department of Industrial Engineering	1983	30	--	--	F.No. Central/ 1-9318788332/ 2021/EOA Dt: 25/06/2021	Not eligible for accreditation
6	Production Engineering (BE)	Department of Production Engineering	1979	30	--	--	F.No. Central/ 1-9318788332/ 2021/EOA Dt:	Not eligible for accreditation
7	Power Electronics Engineering (BE)	Department of Power Electronics Engineering	1983	30	--	--	F.No. Central/ 1-9318788332/ 2021/EOA Dt: 25/06/2021	Not eligible for accreditation
8	Mechanical Engineering (BE)	Department of Mechanical Engineering	1951	60	--	--	F.No. Central/ 1-9318788332/ 2021/EOA Dt: 25/06/2021	Applying first time
9	Civil Engineering (ME- Water Recourse Management)	Department of Civil Engineering	2003	18	--	--	F.No. Central/ 1-9318788332/ 2021/EOA Dt: 25/06/2021	Not eligible for accreditation
10	Electrical Engineering (ME-Power System)	Department of Electrical Engineering	2011	18	--	--	F.No. Central/ 1-9318788332/ 2021/EOA Dt: 25/06/2021	Not eligible for accreditation
11	Power Electronics Engineering (ME- Power Electronics)	Department of Power Electronics Engineering	2010	18	--	--	F.No. Central/ 1-9318788332/ 2021/EOA Dt: 25/06/2021	Not eligible for accreditation

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

Sr. No.	Program Name
1	B.E. Chemical Engineering

9. Total number of employees in the institution:

A. Regular Employees (Faculty and Staff):

Items		CAY (2021-22)		CAY*m*1 (2020-21)		CAY*m*2 (2019-20)	
		Min	Max	Min	Max	Min	Max
Faculty in Engineering	M	60	63	59	61	57	59
	F	11	13	13	17	14	16
Faculty in Maths, Science & Humanities	M	8	9	8	9	8	8
	F	3	4	3	3	3	4
Non-teaching staff*	M	42	45	42	45	44	52
	F	1	2	2	2	2	2

B. Contractual Staff Employees (Faculty and Staff Not covered in above table):

Items		CAY (2021-22)		CAY*m*1 (2020-21)		CAY*m*2 (2019-20)	
		Min	Max	Min	Max	Min	Max
Faculty in Engineering	M	6	6	6	11	11	11
	F	1	1	1	2	2	2
Faculty in Maths, Science & Humanities	M	0	0	0	0	0	0
	F	0	0	0	0	0	0
Non-teaching staff	M	0	0	0	0	0	0
	F	0	0	0	0	0	0

10. Total number of Engineering Students:

UG Students

Item	CAY (2021-22)	CAY*m*1 (2020-21)	CAY*m*2 (2019-20)
Total no. of boys	1832	1493	1604
Total no. of girls	152	128	147
Total no. of students	1984	1621	1751

PG Students

Item	CAY (2021-22)	CAY*m*1 (2020-21)	CAY*m*2 (2019-20)
Total no. of boys	40	53	38
Total no. of girls	25	19	13
Total no. of students	65	72	51

11. Vision of the Institution:

To provide quality engineering education and transforming students into professionally competent and socially responsible human beings.

12. Mission of the Institution:

1. To provide a platform for basic and advanced engineering knowledge to meet global challenges.
2. To impart state-of-art know- how with managerial and technical skills.
3. To create a sustainable society through ethical and accountable engineering practices.

13. Contact Information of the Head of the Institution and NBA coordinator, if designated:

i. Name: Dr. Bhavik N. Suthar

Designation: I/C Principal and Professor (Electrical)
Mobile No: 9428695543
Email: principal@lecollege.ac.in

ii. NBA coordinator, if designated:

Name: Dr. N. M. Bhatt
Designation: Professor (Mechanical)
Mobile No: 9904406000
Email: lec.degree.nba@gmail.com

PART B: CRITERIA SUMMARY

Name of the program: Chemical Engineering

Criteria No.	Criteria	Mark/Weightage
	Program Level Criteria	
1.	Vision, Mission and Program Educational Objectives	60
2.	Program Curriculum and Teaching– Learning Processes	120
3.	Course Outcomes and Program Outcomes	120
4.	Students' Performance	150
5.	Faculty Information and Contributions	200
6.	Facilities and Technical Support	80
7.	Continuous Improvement	50
	Institute Level Criteria	
8.	First Year Academics	50
9.	Student Support Systems	50
10	Governance, Institutional Support and Financial Resources	120
	Total	1000

Program Level Criteria

Criterion 1: Vision, Mission and Program Educational Objectives (60)

1.1 State the Vision and Mission of the department and institute (05)

[A] Vision and Mission statements of the institute

Institute Vision:

To provide quality engineering education and transforming students into professionally competent and socially responsible human beings.

Institute Mission:

1) To provide platform for basic and advanced engineering knowledge to meet global challenges.
2) To impart state-of-art know-how with managerial and technical skills.
3) To create sustainable society through ethical and accountable engineering practices.

[B] Vision and Mission statements of the department

Department Vision:

To develop professionally competent & socially responsible chemical engineers by providing quality education.

Department Mission:

1) To provide sound basic engineering knowledge to have a successful career in a professional environment.
2) To develop skill sets among the students to make them professionally competent.
3) To cater ethically strong engineers who shall be able to improve the quality of life and to work for sustainable development of society.

1.2 State the Program Educational Objectives (PEOs) (05)

Chemical Engineering program aims to develop versatile professionals who can excel in a variety of career environments. Program Educational Objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve in 3 to 5 years after graduation. The Program Educational Objectives of B.E. (Chemical Engineering) program is:

PEO-1: To impart knowledge and skills in students to make them professionally competent in chemical process industries.

PEO-2: To motivate students for higher studies in technical and management fields.
PEO-3: To prepare students having soft skills along with leadership quality and management ability to make them successful entrepreneurs.
PEO-4: To implant the ethical principle and norms of engineering practices in terms of health, safety, and environmental context for the sustainable development of society.

1.3 Indicate where the Vision, Mission and PEOs are published and disseminated among stakeholders (10)

The vision and mission are published at various places as mentioned in Table 1.3.1

Table 1.3.1 dissemination details

Place of publication	Disseminated to stake-holders					
	Students	Faculty	Staff	Alumni	Parents	Industry
All class rooms	✓	✓	✓			
All Laboratories	✓	✓	✓			
Offices of faculty members	✓	✓		✓	✓	
Department Website	✓	✓	✓	✓	✓	✓
Department News Letter	✓	✓	✓	✓		✓

The Program Educational Objectives (PEOs) are published and disseminated at various places as mentioned below:

- Departmental page on the institute website:

http://www.lecm.cteguj.in/programs/detail/108

- Disseminated during student orientation program
- Published in newsletter of the department

https://www.lecollege.ac.in/department/view_news/22/5

1.4 State the process for defining the Vision and Mission of the department and PEOs of the program (25)

[A] Process of defining the Vision and Mission of the department and PEOs of the program

Step 1: The Vision and Mission of the department is defined in compliance with the Vision and Mission of the Institute. A brainstorming exercise is carried out in which various stakeholders namely faculties, student representatives, alumni, parents and experts from the industry has participated enthusiastically. By the participation of various stakeholders and the head of the department, SWOT analysis (Section 1.4.1) is composed and department Vision, Mission, and PEOs are drafted. The essential qualities and skill sets are expected from an engineer after his/her graduation is taken into consideration during the brainstorming session for framing the PEOs of the department.

Step 2: The Department Vision, Mission, and PEOs is dissipated amongst the stakeholders (Alumni, Students, Faculty, Industry/Employer, Peer Institute Faculty, and Parents) for their feedback about the appropriateness of the statements.

Step 3: The review of department Vision and Mission by Institute Academic committee is conducted for finalization.

Step 4: The review of department PEOs by department committee.

Step 5: The **Step 3** and **4 have been iterated** to determine the PEOs of the department.

Step 6: Finally, department Vision, Mission, and PEOs have been prepared after the approval from the Institute Academic Committee headed by the Principal of the Institute.

Above process shown in the form of flow diagram for defining the Vision and Mission of the department describe in Fig. 1.4.1 (a) and PEOs of the program illustrated in Fig. 1.4.1 (b).

1.4.1 SWOT Analysis

A detailed SWOT analysis have been conducted to complement the strategic planning activities which help in establishing the Vision, Mission, and PEOs of the department. A balanced approach has been adopted so that the views of all the stakeholders are included while carrying out the SWOT analysis shown in Table 1.4.1.

Table: 1.4.1

Strength (+)	Weaknesses (-)
• Sincere, dynamic, hardworking and dedicated staff members. • Creative staff dedicated to developing new strategic direction for the department. • Student cooperative staff. • Qualified faculty members. • Good laboratory experimental setup. • Sufficient basic infrastructure facilities.	• Remote location of institute • Limited ability to influence strategic decision due to Government College. • Not preferable location to attract brilliant/dynamic students and staff. • Insufficient regular teaching and non-teaching staff. • All faculty member overloads with engagement in non-academic activities apart from teaching. • Soft skills and communication skills of students need to improve.
Opportunities (+)	**Threat (-)**
• More interaction with surround industries. • To build the robust alumni association to participate in the progress of the department. • Opportunity for support to weak section of society by providing good education. • Being ceramic zone of the country, good job opportunity for students.	• Competition from self-finance colleges for better quality students. • Limited creativity in the organizational culture. • More work related to non-academic work. • Poor quality student's admission due to remote location. • Gap between industry and institution.

• Networking with other institution. • Increased demand of engineers in chemical industry.	• Budget constraints for regular maintenance work and new development on regular basis.

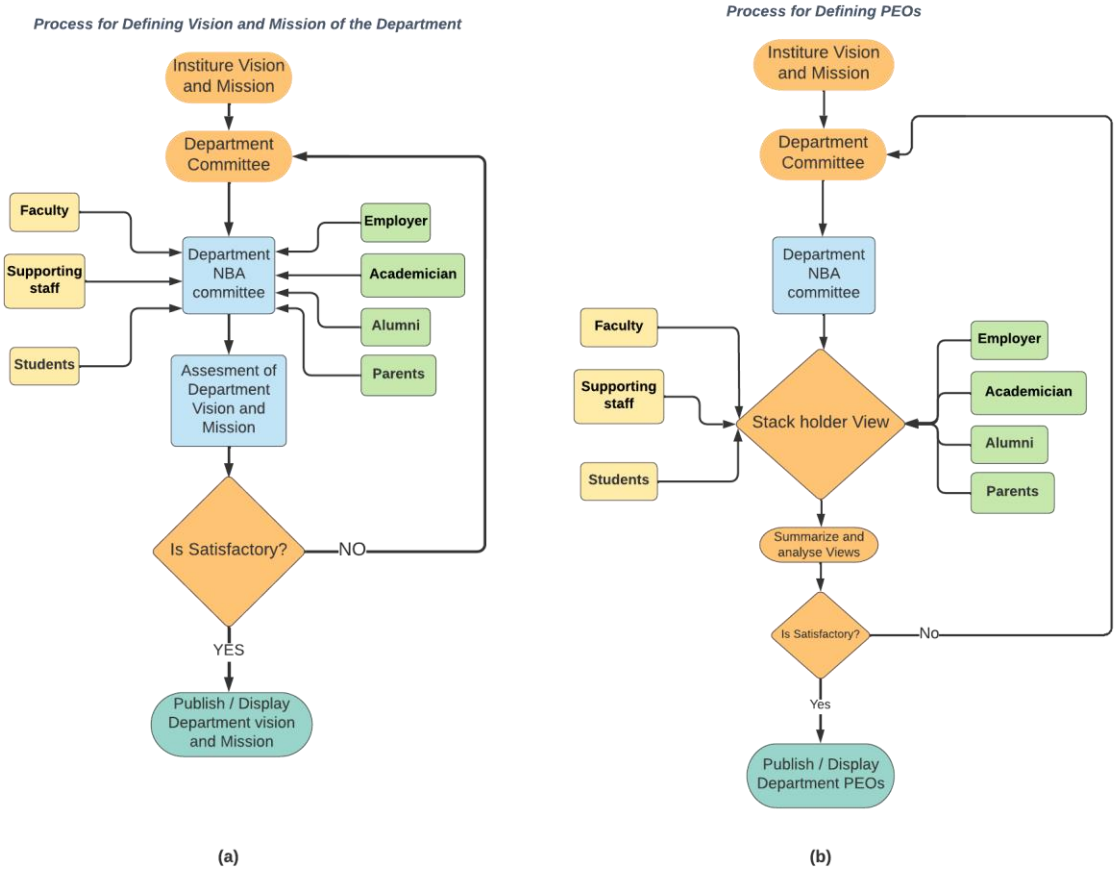

Fig. 1.4.1 Process for defining (a) Vision and Mission of the department, (b) PEOs

1.5 Establish consistency of PEOs with Mission of the department (15)

The Program Educational Objectives (PEO's) of the chemical engineering department is consistent with the Mission statements of the department. The contribution to the society through innovative, quality education, and community service, and also be responsive to global development to face the local challenges. The consistency of PEOs with Mission of the department is presented in Table 1.5.1 and justification of mapping of Mission of the department with PEOs is presented in Table 1.5.2.

Table 1.5.1 Mapping of PEOs with Mission Statements

	Mission Statement		
	To provide sound basic engineering knowledge to have successful career in professional environment.	To develop skill sets among the students so as to make them professionally competent.	To cater ethically strong engineers who shall be able to improve quality of life and to work for sustainable development of society.

	M1	M2	M3
PEO Statements			
To impart knowledge and skills in students to make them professionally competent in chemical process industries. **(Core Industry)**	3	3	1
To motivate students for higher studies in technical and management fields. **(Higher Studies)**	2	2	1
To prepare students having soft skills along with leadership quality and management ability to make them successful entrepreneurs. **(Entrepreneurship)**	2	3	2
To implant the ethical principle and norms of engineering practices in terms of health, safety, and environmental context for the sustainable development of society. **(Social Ethics)**	2	1	3

1: Slight (Low) 2: Moderate (Medium)3: Substantial (High)

Consistency/justification of correlation parameters for PEO1 and elements of mission statement.

The information of fundamental science and engineering is included wonderful essence of program education objective one (PEO1) of the department. The information of fundamental science and engineering nurture the ability in students and make them successful to get to the bottom of the problem/future challenges on scientific and engineering ground. To acquaint with such awesome essence, student of chemical engineering branch are studying thru topics of fundamental science and engineering in 1st and 2nd stage of program.

The mission statement one (M1) is focused with basic and advanced concepts of chemical engineering and can have correlation level 3 (high) with PEO1.

The mission statement two (M2) having the concern for imparting techno-managerial skill in chemical engineering students, for which the basic knowledge becomes the strong supportive base hence the correlation of M2 with PEO1 should be level 3 (high).

The third statement of mission (M3) of the department is to create moral graduate chemical engineers who can contribute to the sustainable development of a society where the essential domain-specific knowledge therefore should correlate with level 1 (low).

Consistency/justification of correlation parameters for PEO2 and elements of mission statement.

The second program education objective (PEO2) is emphasis on higher studies. The students of chemical engineering department gain technical and managerial skill though teaching and learning process.

The mission statement one (M1) having the concerned with concepts which is a base, however advanced domain needed further exploration hence correlation level 2 (medium) has been mapped.

The mission statement two (M2) focused on techno-managerial ability for development it is desirable and correlation level 2 (medium).

The mission statement three (M3) is linked with ethics and for development activity it is necessary for sustainable solution for the society therefore the correlation level 1 (low) is assigned.

Consistency/justification of correlation parameters for PEO3 and elements of mission statement.

The third program education objective of the department aiming to develop leadership quality and management ability into the students. To inculcate in this direction apart from related regular courses prescribed by the University, seminar and projects as individual as well as in a team practice by the students during the program duration. The arranged industrial visits will help the same.

The engineering concepts concern with mission one (M1), which have a correlation of level 2 (medium) with PEO3 because professional quality needs basic background also.

The mission statement two (M2), is techno-managerial skill moderately enhance professional practices therefore correlation of third program education objective (PEO3) and mission element two (M2) is level 3 (high).

The mission statement three (M3) is to create ethical engineers who can contribute for sustainable development where the professional practices with ethics and social responsibility is associated with correlation level 2 (medium).

Consistency/justification of correlation parameters for PEO4 and elements of mission statement.

The professional practice with ethics, health, safety and social responsibility is the specific statement of fourth PEOs of the department aiming to develop professional approach into the students. To develop all these quality in students through course prescribed by the University, seminar and projects as individual as well as in a team practice by the students during the program duration.

The engineering concepts concern with mission statement one (M1) which have a correlation of level 2 (medium) with PEO4 because professional practices need basic background also.

The mission statement two (M2) is techno-managerial skill moderately enhance professional practices therefore correlation of fourth program education objective (PEO4) and mission element two (M2) is level 1 (low)

The mission statement three (M3) is to create ethical engineers who can contribute for sustainable development where the professional practices with ethics and social responsibility is strongly correlate at level 3 (high).

Table 1.5.2 Justification of Mapping of Mission of the Department with PEOs

PEO	Mission	Correlation	Justification
PEO1	M1	3	PEO1 built a correlation for core engineering knowledge and satisfying the need for the chemical process industry.
	M2	3	
	M3	1	
PEO2	M1	2	PEO2 shows correlation with the enhancement of essential knowledge for higher studies and research purpose.
	M2	2	
	M3	1	
PEO3	M1	2	PEO3 correlates the need of skill set to shape the successful entrepreneur.
	M2	3	
	M3	2	
PEO4	M1	2	PEO4 correlates towards social and ethical responsibility of chemical engineer.
	M2	1	
	M3	3	

Criterion 2: Program Curriculum and Teaching – Learning Processes (120)

2.1 Program Curriculum (20)

Chemical Engineering Department (L.E. College, Morbi) is affiliated to Gujarat Technological University (GTU), Ahmedabad. The Programme Curriculum of chemical engineering branch consists of Basic Sciences, Engineering Sciences, Humanities and Social Sciences and Professional Subjects. The modification as well as improvement in the program curriculum is carried out under the guidance of university Board of Studies (BOS) of chemical engineering. In order to mitigate the program curriculum, the high priority is given to the real needs of the modern industries.

Structure of the Curriculum:

The Programme curriculum structure for B.E. Chemical Engineering was revised in 2014-15 and it was revised again in the year 2018-19 for semester I and IV, whereas semester V to VIII in 2020-21. The revised structure for the same from the first year 2018-19 to final year 2021-22 is given in Table 2.1.1.

Table 2.1.1 Structure of the Curriculum from year 2018-19 to 2021-22

SEMESTER I & II						**w.e.f. Year 2018-19**				
Subject Code	**Subject Name**	**Teaching Scheme (Hours)**			**Total Credits (C)**	**Examination Scheme**				
						Theory Marks		**Tutorials/ Practical Marks**		**Total Marks**
		L	**T**	**P**		**End Sem Exam (ESE) (E)**	**Progressive Assessment (PA) (M)**	**Viva (V)**	**Progressive Assessment (PA) (I)**	
3110001	Chemistry	3	0	2	4	70	30	30	20	150
3110002	English	2	0	2	3	70	30	30	20	150
3110003	Programming for Problem Solving	3	0	2	4	70	30	30	20	150
3110004	Basic Civil Engineering	3	0	2	4	70	30	80	20	150
3110005	Basic Electrical Engineering	3	0	2	4	70	30	30	20	150
3110006	Basic Mechanical Engineering	3	0	2	4	70	30	30	20	150
3110007	Environmental Sciences	2	2	0	0	70	30	0	0	100
3110012	Workshop/ Manufacturing Practices	0	0	4	2	0	0	20	80	100

SEMESTER I & II		w.e.f. Year 2018-19								
Subject Code	**Subject Name**	**Teaching Scheme (Hours)**			**Total Credits (C)**	**Examination Scheme**				
						Theory Marks		**Tutorials/ Practical Marks**		**Total Marks**
		L	**T**	**P**		**End Sem Exam (ESE) (E)**	**Progressive Assessment (PA) (M)**	**Viva (V)**	**Progressive Assessment (PA) (I)**	
3110013	Engineering Graphics & Design	2	0	4	4	70	30	20	30	150
3110014	Mathematics - 1	3	2	0	5	70	30	0	0	100
3110015	Mathematics - 2	3	2	0	5	70	30	0	0	100
3110017	Induction Program	0	0	0	0	0	0	0	0	0

SEMESTER III		w.e.f. Year 2018-19								
Subject Code	**Subject Name**	**Teaching Scheme (Hours)**			**Total Credits (C)**	**Examination Scheme**				
						Theory Marks		**Tutorials/ Practical Marks**		**Total Marks**
		L	**T**	**P**		**End Sem Exam (ESE) (E)**	**L**	**T**	**P**	
3130004	Effective Technical Communication	2	0	2	3	70	30	20	30	150
3130007	Indian Constitution	2	0	0	0	50	0	0	0	50
3130008	Design Engineering - I A	0	0	2	1	0	0	20	80	100
3130502	Fluid Flow Operations	4	0	2	5	70	30	20	30	150
3130506	Applied Chemistry	3	0	4	5	70	30	20	30	150
3130507	Chemical Engineering Thermodynamics I	3	1	0	4	70	30	0	0	100
3130508	Material & Energy Balance Computation	4	1	0	5	70	30	0	0	100

SEMESTER IV		w.e.f. Year 2018-19								
Subject Code	**Subject Name**	**Teaching Scheme (Hours)**			**Total Credits (C)**	**Examination Scheme**				
						Theory Marks		**Tutorials/ Practical Marks**		**Total Marks**
		L	**T**	**P**		**End Sem Exam (ESE) (E)**	**L**	**T**	**P**	
3140005	Design Engineering 1 B	0	0	2	1	0	0	20	80	100
3140503	Heat Transfer	4	0	2	5	70	30	20	30	150
3140507	Chemical Engineering Thermodynamics II	3	1	0	4	70	30	0	0	100
3140508	Unit Processes & Chemical Technology	4	0	2	5	70	30	20	30	150
3140509	Pollution control & safety Management	3	0	2	4	70	30	20	30	150
3140510	Numerical Methods in Chemical Engineering	3	1	0	4	70	30	0	0	100

SEMESTER V		w.e.f. Year 2019-20								
Subject Code	**Subject Name**	**Teaching Scheme (Hours)**			**Total Credits (C)**	**Examination Scheme**				
						Theory Marks		**Tutorials/ Practical Marks**		**Total Marks**
		L	**T**	**P**		**End Sem Exam (ESE) (E)**	**L**	**T**	**P**	
3150001	Design Engineering - II A	0	0	2	1	0	0	20	80	100
3150004	Contributor Personality Development Program	2	0	0	2	70	30	20	30	150
3150005	Integrated Personality Development Course	2	0	0	2	70	30	20	30	150
3150501	Mass Transfer Operations I	4	0	2	5	70	30	20	30	150
3150502	Mechanical Operations	3	0	2	4	70	30	20	30	150
3150504	Instrumentation and Process Control	4	0	2	5	70	30	20	30	150

SEMESTER V						w.e.f. Year 2019-20				
Subject Code	**Subject Name**	**Teaching Scheme (Hours)**			**Total Credits (C)**	**Examination Scheme**				
						Theory Marks		**Tutorials/ Practical Marks**		**Total Marks**
		L	**T**	**P**		**End Sem Exam (ESE) (E)**	**L**	**T**	**P**	
3150505	Particle and Fluid Particle Processing	3	0	2	4	70	30	20	30	150
3150506	Chemical Process Plant Design & Economics	3	0	0	3	70	30	0	0	100
3150507	Energy Technology	3	0	0	3	70	30	0	0	100
3150508	Material Science and Engineering	3	0	0	3	70	30	0	0	100
3150509	Fuels and Combustion	3	0	0	3	70	30	0	0	100

SEMESTER VI		w.e.f. Year 2019-20								
Subject Code	**Subject Name**	**Teaching Scheme (Hours)**			**Total Credits (C)**	**Examination Scheme**				
						Theory Marks		**Tutorials/ Practical Marks**		**Total Marks**
		L	**T**	**P**		**End Sem Exam (ESE) (E)**	**L**	**T**	**P**	
3160001	Design Engineering II B	0	0	2	1	0	0	20	80	100
3160002	Contributor Personality Development Program	2	0	0	2	70	30	20	30	150
3160003	Integrated Personality Development Course	2	0	0	2	70	30	20	30	150
3160501	Mass Transfer Operations II	4	0	2	5	70	30	20	30	150
3160506	Chemical Reactions Engineering I	3	0	2	4	70	30	20	30	150
3160507	Advanced Separation Processes	3	0	2	4	70	30	20	30	150

SEMESTER VI		w.e.f. Year 2019-20								
Subject Code	**Subject Name**	**Teaching Scheme (Hours)**			**Total Credits (C)**	**Examination Scheme**				
						Theory Marks		**Tutorials/ Practical Marks**		**Total Marks**
		L	**T**	**P**		**End Sem Exam (ESE) (E)**	**L**	**T**	**P**	
3160510	Petroleum Refining and Petrochemicals	3	0	2	4	70	30	20	30	150
3160511	Polymer Science and Technology	3	0	2	4	70	30	20	30	150
3160512	Biochemical Engineering	3	0	2	4	70	30	20	30	150
3160513	Waste Water Engineering	3	0	0	3	70	30	0	0	100
3160514	Green Technology and sustainable Development	3	0	0	3	70	30	0	0	100
3160515	Solid waste Management	3	0	0	3	70	30’	0	0	100

SEMESTER VII		w.e.f. Year 2020-21								
Subject Code	**Subject Name**	**Teaching Scheme (Hours)**			**Total Credits (C)**	**Examination Scheme**				
						Theory Marks		**Tutorials/ Practical Marks**		**Total Marks**
		L	**T**	**P**		**End Sem Exam (ESE) (E)**	**L**	**T**	**P**	
3170001	Summer Internship	0	0	0	2	0	0	20	80	100
3170501	Chemical Reactions Engineering II	3	0	2	4	70	30	20	30	150
3170502	Process Equipment Design	4	0	2	5	70	30	20	30	150
3170507	Computer Aided Process Synthesis	3	0	2	4	70	30	20	30	150
3170509	Nan science and Technology	3	0	0	3	70	30	0	0	100
3170510	Process Intensification	3	0	0	3	70	30	0	0	100

SEMESTER VII		w.e.f. Year 2020-21								
Subject Code	**Subject Name**	**Teaching Scheme (Hours)**			**Total Credits (C)**	**Examination Scheme**				
						Theory Marks		**Tutorials/ Practical Marks**		**Total Marks**
		L	**T**	**P**		**End Sem Exam (ESE) (E)**	**L**	**T**	**P**	
3170511	Transport Phenomena	3	0	0	3	70	30	0	0	100
3170512	Introduction to Computational Fluid Dynamics	3	0	0	3	70	30	0	0	100
3170513	Process Modeling, Simulation and Optimization	3	0	2	4	70	30	20	30	150
3170514	Mechanical Design of Process equipment	2	0	2	3	70	30	20	30	150
3170515	Piping Design	2	0	2	3	70	30	20	30	150
3170516	Process Auxiliaries and utilities	3	0	0	3	70	30	0	0	100

SEMESTER VIII		w.e.f. Year 2020-21								
Subject Code	**Subject Name**	**Teaching Scheme (Hours)**			**Total Credits (C)**	**Examination Scheme**				
						Theory Marks		**Tutorials/ Practical Marks**		**Total Marks**
		L	**T**	**P**		**End Sem Exam (ESE) (E)**	**L**	**T**	**P**	
3180501	Internship/ Project	0	0	24	12	0	0	100	100	200

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 Annexure I. Also mention the identified curricular gaps, if any (10)

Lukhdhirji Engineering College, Morbi is affiliated to Gujarat Technological University (GTU), Gandhinagar and hence the curriculum prescribed by the university is as follows:

The GTU curriculum contains core and elective courses. The curriculum is formulated and reviewed once in 4 years, with the help of the board of studies. For the continuous up-gradation of curriculum, GTU has formed the Board of Studies. It consists of the following members:

1. Two senior teachers who have specialized knowledge of the subject nominated by the Vice-Chancellor
2. Two experts from the relevant industry/research organization nominated by the Vice Chancellor
3. Two experts (senior teacher/ technologist/ researcher) having special knowledge (may be appointed if needed)

The board of studies takes care of the engineering attributes and hence POs also while forming and refining the curriculum. BOS and MOM for the year 2021-22 are available in Annexure 2.1.1. The continuous up-gradation of curriculum carried out by the university identifies the extent of compliance of the university curriculum for attaining the POs and PSOs. Refer the same in Annexure I.

From the academic year 2018-19, Gujarat Technological University has started revising the curriculum of Bachelor of Engineering in line with the recommendations of AICTE. GTU follows the same structure as specified by AICTE for all branches of Bachelor of Engineering with minor modifications. The university has introduced an Induction Program in the first year. A student has to undergo this Induction Program for the duration of three weeks before the commencement of regular classes. The Induction Program includes creative arts, universal human values, literacy and proficiency modules and physical activities. It is executed in the form of interactive sessions as well as activity sessions.

The course curriculum is provided by the university mentioning the course title with course code, teaching and examination scheme, content, percentage weightage of each topic, distribution of marks etc. The university grading for each course offered in the department is based on the four components which are as follows:

1. Progressive Assessment (includes Mid Semester Examination) (PA)(M)
2. Internal, Practical Viva & Lab Sessions continuous assessment (I)
3. External Practical Viva (V)
4. End Semester Examination (ESE)

The evaluation of the components (1) and (2) is completely under the purview of the department. The evaluation of the component (3) is completely under the purview of the department up to semester-IV. A continuous evaluation mechanism is adopted by the department for the assessment of the components that are under the purview of the department. The evaluation of the component (4) for all the semesters and that of the component (3) for the Semesters V to VIII is done by the university. Evaluation of all the components leads to the accomplishment of the course outcomes and further to the attainment of the POs and PSOs. Department faculty members have done thorough brainstorming exercise and define the course outcomes (CO) for each subject. The MOM for defining the CO for respective subjects are mentioned in criteria 3. CO- PO- PSO Matrix for the year 2020-21 is available in Annexure 2.1.2.

All the courses in the curriculum are classified into core courses, interdisciplinary courses, science and humanities courses, communications and project/design engineering etc., which are then mapped with relevant PO and PSO so as to identify the curriculum gaps. All POs and PSOs are mapped with all the subjects mentioned curriculum available in Annexure 2.1.2, it indicates all POs and PSOs are attained. However, few topics which are considered important and not covered under GTU curriculum are identified as curriculum gaps. Details of curriculum gaps are discussed in 2.1.3. Along with this, we have also compared the AICTE model curriculum and curriculum implemented by GTU with Implemented from Year 2018-19 in Table 2.1.1.1, which shows all the subject curriculum is as per the AICTE model curriculum

Table 2.1.1.1 Proposed AICTE model curriculum 2018 and curriculum implemented by GTU with effect from Year 2018-19

Category	**Suggested Breakup of Credits (Total 160) AICTE**	**Suggested Breakup of Credits (Total 165) GTU**	**POs**	**PSOs**
Humanities and Social Sciences including Management courses	12	12	PO1,PO2,PO3,PO4, PO5, PO6, PO7, PO9, PO10, PO11,PO12	---
Basic Science courses	25	24	PO1,PO2,PO3,PO4, PO5, PO6, PO7, PO9, PO10, PO11,PO12	---
Engineering Science courses including workshop, drawing, basics of electrical/Chemical/computer etc	24	26	PO1,PO2,PO3,PO4, PO5, PO7	---
Professional core courses	48	50	PO1,PO2,PO3,PO4, PO5,PO6,PO7,PO8,PO9, P10,PO11, PO12	PSO1, PSO2
Professional Elective courses relevant to chosen specialization/branch	18	24	PO1,PO2,PO3,PO4, PO5,PO6,PO7,PO8,PO9, P10,PO11, PO12	PSO1, PSO2
Open subjects – Electives from other technical and /or emerging	18	15	PO1,PO2,PO3,PO4, PO5	---

Category	Suggested Breakup of Credits (Total 160) AICTE	Suggested Breakup of Credits (Total 165) GTU	POs	PSOs
subjects				
Project work, seminar and internship in industry or elsewhere	15	14	PO1,PO2,PO3,PO4,PO5, PO6,PO7,PO8,PO9,P10, PO11, PO12	PSO1, PSO2
Mandatory Courses [Environmental Sciences, Induction training, Indian Constitution, Essence of Indian Traditional Knowledge	No credit	No credit	---	---

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

All POs & PSO are mapped with various courses. However, curriculum gaps for specific topics of various courses are identified for year 2019-20 and 2020-21. Identified curriculum gaps are given in Table 2.1.2.1. The letter has been written to GTU for curriculum gap identification at various subjects which is available in Annexure 2.1.3.

Table 2.1.2.1 List of curriculum gaps identified along with POs and PSOs

Sr. No.	Subject Code	Name of Subjects	Semester	Curriculum Gap Description	POs	PSOs
Year 2019-20						
1	2160503	Process Equipment Design – I	6	Design of cooling tower	1,2,3,8,9,12	1,2
2	2160506	Chemical Reaction Engineering – I	6	Overview of use of software for reactor simulations	1,2,5	1
3	2170501	Chemical Reaction Engineering – II	7	Overview of biocatalysts and biochemical reactions and its industrial importance	1,2	1
4	2170502	Process Equipment Design – II	7	Overview of furnace design	1,2,3,8,9,12	1,2
Year 2020-21						
1	3130502	Fluid Flow Operations	3	Overview about CFD	1,2,3,4,5	1,2
2	3130508	Material and Energy Balance Competitions	3	Stoichiometry and Unit Operations: Distillation, Absorption and Stripping etc.	1,2,3,5,9,10,12	1,2
3	3140507	Chemical Engineering Thermodynamics _ II	4	Molecular basis of thermodynamics	1,2,5,9,12	1,2

Sr. No.	Subject Code	Name of Subjects	Semester	Curriculum Gap Description	POs	PSOs
4	3140510	Numerical Methods in Chemical Engineering	4	Partial Differential Equations: Parabolic, Hyperbolic, Applications in Chemical Engineering	1,2,3,9,10	1,2
5	3150501	Mass Transfer Operations – I	5	Concept of Knudsen Diffusivity, its significance and industrial applications.	1,2,3,4	1,2
6	3150504	Instrumentation and Process Control	5	Signal flow graph control practical using mat lab, scilab	1,2,3,5,8,9,12	1,2
8	2160506	Chemical Reaction Engineering – I	6	Overview of use of software for reactor simulations	1,2,5	1
9	2170501	Chemical Reaction Engineering – II	7	Overview of biocatalysts and biochemical reactions and its industrial importance	1,2	1
10	2170502	Process Equipment Design – II	7	Overview of furnace design	1,2,3,8,9,12	1,2
11	2170507	Computer Added Process Synthesis	7	Overview of commercial software available for process synthesis	1,2,3,8,9,12	1,2
12	2180503	Process Modeling Simulation and Optimization	8	Overview of flow sheet and flow sheet code available for process simulations	1,2,3,5,8,9,12	1,2

The identified list of curriculum gaps is sent to Gujarat Technological University. Hence the same can be modified in the revised syllabus. Actions are taken to mitigate the identified curriculum gaps which are given in Table 2.1.2.2. Please note as there is no gap relevance to this subject as syllabus is designed by GTU. But for the betterment of the students, we have added few more points which will help the students for to enhance their knowledge hence relevance to POs and PSOs are not mentioned in the below mentioned Table 2.1.2.2

Table 2.1.2.2 Identified curriculum gaps and mitigates actions

Sr. No.	Subject Code	Name of Subjects	Semester	Curriculum Gap Description	Action taken	Date-Month-Year	Resource Person with designation	% of students
1	3130502	Fluid Flow Operations	3	Overview about CFD	Taken Lecture FFO	14.10.2020	Prof. A.D. Kalariya	70
2	3130508	Material and Energy Balance Competitions	3	Stoichiometry and Unit operations:	Taken Lecture MEBC	06.10.2020	Prof. S. A. Amin	70

Sr. No.	Subject Code	Name of Subjects	Semester	Curriculum Gap Description	Action taken	Date-Month-Year	Resource Person with designation	% of students
				Distillation, Absorption				
3	3140507	Chemical Engineering Thermodynamics _ II	4	Molecular basis of thermodynamics	Taken Lecture CET-II	01.10.2020	Prof. B.B. Kariya	70
4	3140510	Numerical Methods in Chemical Engineering	4	Partial Differential Equations: Parabolic, Hyperbolic, Applications in Chemical Engineering	Taken Lecture NMCE	19.03.2021	Prof. S. A. Amin	65
5	3150501	Mass Transfer Operations – I	5	Concept of Knudsen Diffusivity, its significance and industrial applications.	Taken lecture on this topic	6.10.2020	Prof. D. K. Mehta	62
6	3150504	Instrumentation and Process Control	5	Signal flow graph control practical using mat lab, scilab	Taken Lecture IPC	07.09.2020	Prof. S. S. Patel	67
7	2160503	Process Equipment Design – I	6	Design of cooling tower	Taken Lecture PED - I	10.02.2020	Prof. S. S. Patel	69
8	2160506	Chemical Reaction Engineering – I	6	Overview of use of software for reactor simulations	Taken Lecture CRE - I	20.04.2021	Dr. R.K. Mewada	55
9	2170501	Chemical Reaction Engineering – II	7	Overview of biocatalysts and biochemical reactions and its industrial importance	Taken Lecture CRE - II	12.10.2020	Dr. R.K. Mewada	72
10	2170502	Process Equipment Design – II	7	Overview of furnace design.	Taken Lecture PED - II	09.09.2020	Prof. S. S. Patel	62
11	2170507	Computer Added Process Synthesis	7	Overview of commercial software available for process	Taken Lecture CAPS	28.09.2020	Prof. G.D. Vegad	70

Sr. No.	Subject Code	Name of Subjects	Semester	Curriculum Gap Description	Action taken	Date-Month-Year	Resource Person with designation	% of students
				synthesis				
12	2180503	Process Modelling Simulation and Optimization	8	Overview of flow sheet and flow sheet code available for process simulations	Taken Lecture PMSO	16.03.2021	Prof. G. D. Vegad	70

2.2. Teaching-Learning Processes (100)

2.2.1. Describe processes followed to improve quality of teaching & learning (25)

A. Adherence to academic calendar:

The university publishes an academic calendar for each semester. The institute prepares an academic calendar in accordance with the university academic calendar, including all activities to be performed during the semester. All academic and other events are conducted by the departments per the academic calendar. The details of academic calendar of GTU & College for the year 2021-22 are available in Annexure 2.2.1.

B. Use of various instructional methods and pedagogical initiatives:

- Each course coordinator, in association with the other course sharing teachers, prepares a course file which contains all academic documents such as university syllabus, course evaluation plan, lesson plan, list of experiments, lab manual, syllabus, teaching materials, assignments, attendance sheets and mark sheets. During laboratory sessions, the experiments are conducted as per the course curriculum scheme keeping in mind the available equipment and resources. Laboratory manuals explaining the details of the experiment are available with the course coordinator and are given to students during the semester. The lists of laboratories are shown on department website (http://www.lecm.cteguj.in/programs/detail/108).
- The faculty members of the department adopt various innovative teaching learning methods to create the best learning environment for the students. These methods include traditional chalk & talk methods, presentations, and video lectures.
- Industrial visits and expert lectures are conducted to bridge the gap between industry and academia.
- Mentoring is done during all the stages of the programme.
- Students are encouraged to become good human beings; to create social awareness about the role of an engineer in a society; to know the implications of new technology and recent developments.

- With an aim to develop a design-based learning system, GTU has introduced a very new innovative subject called Design Engineering for the students of Semesters – III to VI. To inculcate design thinking among the students, various aspects of the same are explained during the four semesters. During each semester, a group of students take up a small project to understand the aspects of design thinking. During the final semester students take-up an internship for the period of 6 months.

C. Different innovative practices are adopted by the department:

- Use of ICT and Multimedia

Along with chalk-board teaching, the faculty members use the illustrative teaching through multimedia projector whenever necessary. They are also using online mode like the Microsoft team & Google classroom. NPTEL video lectures delivered by different subject experts for different courses.

- Industry/Field Visits

The students must be exposed to various industries to verify and to apply the theories learned in various courses. Visits to different industries are therefore arranged regularly for the students of various semesters.

- Expert Lectures/Workshop/Seminar

The experts from the chemical field are invited to deliver lectures on different advanced topics to make students aware of the present trends in chemical engineering.

- Elective Subject Selection

To encourage the students to learn multi-disciplinary subjects, the department allows them to select an elective subject, from available electives in the curriculum, according to their interest. The students are informed to submit their choices to the department before the commencement of the term and are allotted the subjects accordingly.

- Enhancement of Communication Skills

The institute has an infrastructural facility for language enhancement. A separate language lab is available for the students, where they can learn and practice listening, speaking, writing and other verbal and non-verbal communication skills.

- 100 Point Activity

The university has declared a 100 Point Activity initiative from the academic year 2015-16. It is a mandatory requirement for earning a degree certificate. The students of the programme have to participate in different co-curricular and extra-curricular activities under some defined categories and earn points. Verification of such participation is carried out by internal as well as external examiners on

a yearly basis. At the end of the programme, the students have to earn a minimum 100 points in order to get their degree.

- Soft Skill Classes for Personality Development (Finishing School)

Understanding the need of one's personality that enables an individual to act more genuinely and effectively in a team environment, the students are encouraged to deliver presentations in the class which help them to develop the ability to gather information, make decisions and interact with others. For this, Finishing School and Personality Development Sessions are conducted at the institute by the experts of the concerned area. The soft skills development classes are arranged to empower the students with confidence, assertiveness and expressiveness etc. This is an attempt in the direction of the students' overall personality development.

D. Methodologies to support weak students and encourage bright students

- Identification of weak students (slow learners) and post identification actions
    - The department gives special attention to monitoring, guiding and assisting slow learners. Each class is assigned a class mentor. The class mentor is responsible to keep track of the overall progress of each student. Due care is taken by the mentors. The academically weak students are identified initially based on their exam results and their involvement in other activities, etc.
    - Counselling is done to the slow learners. Students are explained for their weak points and suggested to strengthen their weak points. Their progress is observed continuously and guided as per requirements.
    - The department provides a free learning atmosphere by motivating students to contact respective faculty members personally for additional guidance and extra learning, if they desire. Even introverted students can benefit and perform well.
    - Considering the end semester exam result, the students who have not passed the course are identified and additional mentoring is given to them.
    - Weak students are advised to take help from bright students to clear their doubts and understand difficult topics.
- Identification of bright students and motivational actions
    - The bright students are identified based on their overall performance and orientation towards academics and other activities. They are encouraged in the following manner:
    - The Department of Chemical Engineering has the tradition of encouraging bright students by providing them necessary guidance and moral support.
    - The department encourages the students to attend Expert Session/ Webinars/ Workshops/ Technical Event organized by their institute as well as by the other prime institutions.

- The department promotes them to take up innovative projects and take advantage of the provision for funding up to 2 lacks through SSIP programme.
- The department motivates them to participate in various competitions.
- The bright students having a high academic track record are encouraged to appear in competitive examinations like GATE, GRE etc.
- Bright students help weak students to clear their doubts and understand difficult topics.

E. Quality of Class-room Teaching (Observation in a class)

- In the beginning of the semester, the students are informed. The department also remains in touch with the students through social media group, to inform them about the academic matters if and when needed.
- Each classroom is spacious with a multimedia projector facility and a black board to create better ambience for an effective teaching learning process.
- The faculty members try to keep the students engaged during the lectures by reviewing and asking questions about the topic of the previous lecture and interactively deliver the lecture.
- At the end of the lectures, the students are encouraged to summarize the topic and clarify their doubts from the content taught.
- The quality of classroom teaching of every teacher for every course is assessed by the Internal Quality Assurance Committee through feedback having various parameters from students.
- The classroom teaching process is continuously monitored by the higher authority through CCTV cameras.
- The department motivates and sends the faculty members for pedagogical and subject oriented training. As a result, they are motivated to improve the classroom ambience using the best academic practices.

F. Conduct of Experiments (Observation in Lab)

- The experiments are conducted as per the university curriculum in each course.
- The laboratory manuals include introduction and step by step procedure to conduct the experiments on different setups.
- Most of the laboratories are equipped with adequate equipment.
- The observations and calculations are recorded by the students in laboratory files which are maintained and evaluated regularly.

G. Continuous Assessment in the Laboratory

- A continuous assessment system is followed for assessment of laboratory work of the students.
- The assessment is done on the basis of participation in performing the experiment, proactiveness, sincerity, timely submission of the laboratory manuals and assignments.
- Sample copies of continuously evaluated term work are available with the respective faculty members.

H. Student feedback of teaching learning process and actions taken

- Informal Feedback:
  - We are taking informal feedback at the time of the lecture from the students about the teaching learning process and trying to improve accordingly.
- Formal Feedback:
  - At the end of the semester, the feedback form is given to the students of each semester.
  - All the students are required to fill in the feedback about the faculties and facilities.
  - Faculties give constructive comments to improve the quality of the teaching learning process.
  - Faculty and Facility feedback taken from the students for the year 2021-22 is available in Annexure 2.2.2 & Annexure 2.2.3.

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

Question paper is set in such a way that it will test the skill of applying the acquired knowledge and thinking ability in addition to testing the memory and skills acquired. Evaluation system for degree engineering (B.E.) is simple and straightforward. Marks will be converted to grade and then to grade point as shown in Table 2.2.2.1.

Table 2.2.2.1 Evaluation system for degree engineering

Sr. No.	Marks	Grade	Grade Point
1	85 to 100	AA	10
2	75 to 84	AB	9
3	65 to 74	BB	8
4	55 to 64	BC	7
5	45 to 54	CC	6
6	40 to 44	CD	5
7	35 to 39	DD	4
8	Less than 35	FF (Fail)	0

The result is declared with SPI and CPI where SPI is Semester Performance Index, C is the credit of a particular subject and G is the grade point obtained by the student. Credit of the subject is multiplied with grade point and then SPI is calculated.

A. Internal exams

- Internal Exams are conducted periodically. Internal exams are conducted by the institute in the following manner for each branch of engineering:
- Declaration of syllabus for Internal Exams to students in class and as well as, on the notice board of the department.
- Mid semester is conducted out of 30 marks and passing marks are 12.
- Duration for Internal Exams Paper is for 60/90 minutes.
- Faculties of respective subjects are appointed as a paper setter and paper is set considering the COs & bloom taxonomy. Mid Semester question paper along with bloom taxonomy and CO Mapping for the year 2021-22 is available in Annexure 2.2.4.

B. Evaluation of mid semester exams

- Mid semester exam papers are assessed by respective subject faculties within a week.
- Results of mid semester exams are declared on the notice board.

C. Quality of assignment and its relevance to COs

Assignments are prepared by the subject teacher such that COs of particular subjects are fulfilled. During the assignment solving, students have to refer to contents from diverse sources.

As per university guidelines, active learning assignments are given to the students based on the syllabus content. Students have to submit these assignments by referring to other resources apart from standard textbooks. This activity ensures the self-learning of students and fulfilment of PO's and CO's are achieved.

Assignments in a course can be any of the following types:

1. Problem-solving
2. Preparation of charts
3. Case studies
4. Design assignment
5. Preparation of presentation on various current topic related to the course

2.2.3. Quality of student projects (25)

The programme aims at providing an all-round exposure to chemical engineering for students including practical solutions and finding solutions to real world engineering problems. Project work provides several opportunities to students to learn several aspects of importance to an engineer that cannot be taught in a classroom or laboratory. To become a full-fledged engineer, one should have the following experiences:

Capability to work independently – to think, to conceptualize, to design, to operationalize, to diagnose failures and to innovate.

Learn to work as a team – sharing work amongst a group, learning human behavior, etc.

Learn leadership qualities.

Learn to solve a problem through all its stages by understanding and applying project management skills.

Learn about issues and problems in prototyping and applications of technologies.

Learn communication skills.

Learn report writing skills.

The project course work allows the students to choose a specific area of interest and thereafter have a better understanding in that area, and find solution to a real-world problem in that area utilizing the technical knowledge that they gained in class room.

Project coursework makes students capable of working with deadlines and improves their presentation and communication skills. Project work is spread over a period of two semesters. Students select an area of their choice and do extensive literature survey, then formulate a problem and come up with some novel, sustainable and original idea as a solution to that problem. Regular reviewing is done and students are assigned guides to help them in their research.

Along with institutional goals as standards of excellence, research in engineering education shows that an integral part of the process is providing undergraduates with opportunities to develop individual characteristics and skills that will positively impact the students' future career.

While lab work may help a student in learning some of the aspects mentioned above, it is the project work that provides opportunities to learn several qualities needed by an engineer in practice. Most students do not become technology generators or users throughout their life. Most become project managers after some years of experience. While technology inputs are important, project management skills and capabilities cannot be ignored in our curriculum. Project work of students can be used as a vehicle to learn and apply problem solving and project management capabilities in recent times.

Identification of projects:

- The problems for the projects are identified by the students and discussed with mentors and based on those problems are finalized the project problems.
- Research problem identified by the faculties, or an idea of students on which research could be carried out which ultimately benefits the informal sectors, government organization and society at large.

Monitoring of projects

Evaluation of projects:

During the semester three project reviews are carried out and at the end of semester a project fair is arranged for the project progress and evaluate the project work done by the students. The process to assess individual and team performance. The projects are primarily group projects, wherein each project group or team comprises mostly four to six students. The Final Presentations of the projects basically distinguishes each member of the group based on the quantum of meaningful work carried out during the semester, the knowledge gained during the project phase and logical outcomes projected in the projects. The assessment technique aims to distinguish the contribution of an individual team member, as the main factor considered for assessing the quantum of work is based on knowledge gained during the project as well as basic fundamentals strengthened during the course of project implementation. In the process of project evaluation, the contribution of each team or group member is evaluated based on factors including initiatives taken during the project, regularity of the students in terms of interaction with the faculty guides, quality of presentations and response during question-and-answer sessions.

Quality of completed projects/working prototypes:

Some teams have already completed quality projects/working prototypes having social and industrial relevance including industrial live problems as a part of their project work. Some projects are inclined towards societal relevance such as wastewater treatment, waste minimization, and resource conservation. Students also have been involved in process development, recovery of material, optimization of process conditions, design and fabrication of equipment, modelling and simulation of chemical processes. The Design Engineering Project (2021-22), In plant training project (2021-22), projects (2020-21) & Summer Internship (2022-23) are available in the annexure 2.2.5, annexure 2.2.6, annexure 2.2.7 & annexure 2.2.8 respectively.

The impact/outcome of project work includes generation of some innovative ideas while execution of student projects.

Improvement in the skills and abilities of the students.

Development of project management skills and an ability to work in a team.

Improvement in technical writing and communication skills.

2.2.4. Initiatives related to industry interaction (15)

Industry supported laboratories

For industry supported laboratories, the department is discussion with various industries.

Initiatives are taken related to industry interaction:

Department is approached various industry HR person and organized industrial visit as well as expert lecture for the same as shown in Table 2.2.4.1 and 2.2.4.2

Table 2.2.4.1 Details of Industrial visit

Sr. No.	Date	Name of visited company	Resource person
1	08-04-2022	Millennium Ceramic	HR Person
2	30-03-2022	Maps Laboratories	HR Person
3	08-04-2022	Millennium Paper	HR Person

Table 2.2.4.2 Interaction with Industrial Person

Sr. No.	Date	Topic of Expert Lecture	Expert Person's name with designation
1	17-02-2021	How to become good production engineer	Mr. Barasara (Director – M/s. Bizotic Life Science)
2.	30-09-2020	Scope of environmental audit in chemical industries	Prof. Piyush Nakum Assistant Professor FETR Bardoli
3	13-10-2020	Recent trends in chemical industries	Mr. Shashank Mapara Sr. Engineer, Quanta Process Solution Pvt. Ltd.
4	26-10-2020	Gate Examination Preparation	Miss Navdha Mankodi Applications Engineer at Oracle
5	04-11-2020	How to Prepare for Gate Examination	Mr. Hemang Bhatt Application Development Engineer KLA face at tsmc-Taiwan,Samsung-Korea

Impact analysis of industry institute interaction

Through the in-person oral interaction with the industry experts during the Open House Events, the students get an idea about the actual applicability of their projects in industries with certain modifications.

The students enhanced the skill of problem identification and formulation, data collection and interpretation, analysis and convergence to solution, communication.

The students inculcated the inclination towards entrepreneurship.

The students get a clear idea about the workplace and work profiles of various designations in industries and to decide their own future working domain.

From the feedback of the students, it is found that the industrial interactions help them familiarize themselves with the advanced technology and software. This encourages the students to implement the fundamental theories in industrial processes. This makes the students technically competent and responsible engineers.

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

Industrial training/tours for students.

As per the new syllabus of GTU in Semester 6th students are going for summer internship for the period of 2 weeks and in the 8th semester students are going for the in-plant training for the period of 12 weeks.

Impact analysis of industrial training Provides the opportunity to implement the subject knowledge practically. Improves the versatility of the students and helps them in enhancing their career. Also boosts the confidence once students have the skills about the particular subject, they have got training in. And developed the communication, work in team and enhance leadership quality.

Criterion 3: Course Outcomes and Program Outcomes (120)

The graduate attributes expected from the students at the end of program are described as Program Outcomes (POs) and the specific qualities a particular department wants to imbibe in the students are described as Program Specific Outcomes (PSOs). POs and PSOs are qualitative measures. An attempt has been made to quantify them and the methodology for the same is demonstrated.

Twelve POs as defined by NBA have been adopted depending upon the expected qualities of any engineering graduate student. Two PSOs have been defined for chemical engineering program. These PSOs describe the specific qualities to be developed in students of our department.

The POs and PSOs are qualitative statements. The overall mechanism to quantify POs and PSOs has been described in the module. The attainment of the POs and PSOs is done using direct and indirect methods.

In the direct method the POs/PSOs attainment is quantified through course attainment level which in turn is measured via various assessment components such as

End Semester Theory Exam (ESE-T)

End Semester Practical/Viva Exam (ESE-V)

Progressive Assessment for Practical (PA-I)

Progressive Assessment for Theory (PA-M) (Mid Semester Examination/Assignment/Class Interaction/Open ended projects/Quiz/Tutorials/Attendance)

The indirect attainment level of the POs/PSOs is determined based on the students' exit survey, parents' survey, employers' survey and alumni survey. The procedure of course outcomes (COs) and POs/PSOs attainment process is explained in sections 3.2 and 3.3, respectively.

3.1 Establish the correlation between the courses and the Program Outcomes (POs) and Program Specific Outcomes (PSOs) (20)

The POs are prescribed by NBA. Whereas, the PSOs have been arrived at after deliberations with various stake holders. Subsequently, PSOs were discussed and approved by department level quality assurance cell (DQAC) and Institute level quality assurance cell (IQAC). The POs and PSOs of B.E (Chemical Engineering) Program are listed below:

Program Outcomes:

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

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.

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.

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.

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.

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.

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.

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

Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

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.

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.

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 (PSOs):

PSO1: Apply the knowledge of chemical engineering to accomplish the contemporary need of chemical & Allied Industries.

PSO2: To execute the chemical engineering principle and modern engineering tools to design system by considering safety, cost, health, legal, cultural and environmental aspects.

3.1.1 Course Outcomes (COs) (05)

Course outcomes of one course from each semester of study have been listed through Tables 3.1.1.1 to 3.1.1.6. Course outcomes for all subjects (Semester 3 to 8) are available in Annexure 3.1 for A.Y. 2019-2020, A. Y. 2020-2021 and A. Y. 2021-2022.

Course Name: Chemical Engineering Thermodynamics I

University Code: 3130507

Course code: C235

Semester: 3

Table 3.1.1.1 Course outcomes of C235 for A. Y. 2020-2021

Course Outcome	Statement After successful completion of the course, student will be able to
C235.1	develop fundamental understanding of the basic principles of thermodynamics and related calculations.
C235.2	demonstrate the use and applications of the first and second laws of thermodynamics.
C235.3	evaluate heat effects and changes in different thermodynamic properties for fluids.
C235.4	apply thermodynamic principles to the analysis of chemical processes and equipment.

Course Name: Chemical Engineering Thermodynamics - II

University Code: 3140507

Course code: C243

Semester: 4

Table 3.1.1.2 Course outcomes of C243 for A. Y. 2020-2021

Course Outcome	Statement After successful completion of the course, student will be able to
C243.1	explain fundamentals of solution thermodynamics, phase equilibria and reaction equilibria.
C243.2	evaluate the thermodynamic properties (Such as Partial molar properties, Fugacity coefficients, activity coefficients etc.) of pure fluid and fluid mixtures
C243.3	analyze the equilibrium composition of mixtures under phase and chemical-reaction equilibria.
C243.4	determine equilibrium conversions of reaction systems and its dependence on various operating parameters

Course Name: Chemical Process Plant Design & Economics

University Code: 3150506

Course code: C356

Semester: 5

Table 3.1.1.3 Course outcomes of C356 for A. Y. 2020-2021

Course Outcome	Statement After successful completion of the course, student will be able to
C356.1	learn basic economic concept, to understand and apply these concepts in the project works undertaken and to chemical engineering situation.
C356.2	carry out the primary techno-economic feasibility of project.
C356.3	evaluate the project cost including capital investment, product cost, breakeven point, depreciation cost for equipment and the total project cost.
C356.4	control and schedule of the project using CPM/PERT technique.

Course Name: Chemical Reaction Engineering I

University Code: 3160506

Course code: C364

Semester: 6

Table 3.1.1.4 Course outcomes of C364 for A. Y. 2020-2021

Course Outcome	Statement After successful completion of the course, student will be able to
C364.1	classify type of reaction, develop mechanism and rate expression of single and multiple homogeneous reactions
C364.2	select and design suitable ideal reactor for single and multiple homogeneous reactions
C364.3	analyze the effect of change in reaction parameters on the rate of desired product formation
C364.4	identify non-ideality present and predict its effects on performance of reactor

Course Name: Chemical Reaction Engineering -II

University Code: 2170501

Course code: C472

Semester: 7

Table 3.1.1.5 Course outcomes of C472 for A. Y. 2020-2021

Course Outcome	Statement After successful completion of the course, student will be able to
C472.1	identify non-ideality present and predict its effects on performance of reactor
C472.2	understand the behavior of various types of contacting patterns and phases involved in the reaction.
C472.3	develop rate expression, select and design suitable reactor for heterogeneous reaction.
C472.4	prepare and characterize various supported catalysts and understand the nature and mechanism of catalytic reactions

Course Name: Multi Component Distillation

University Code: 2180505

Course code: C484

Semester: 8

Table 3.1.1.6 Course outcomes of C484 for A. Y. 2020-2021

Course Outcome	Statement After successful completion of the course, student will be able to
C484.1	understand and select key components, various types towers and their internals.
C484.2	calculate number of theoretical and actual stages, tower diameter and pressure.
C484.3	apply knowledge of various methods to break azeotrope.
C484.4	analyze various design options for energy conservation in distillation column.

3.1.2 CO-PO matrices of courses selected in 3.1.1 (six matrices to be mentioned; one per semester from 3rd to 8th semester) (05)

Course Articulation Matrix

Course Articulation Matrix signifies the degree each CO of the course realizes corresponding PO. Course Articulation Matrix for one subject from each semester is presented through Tables 3.1.2.1 – 3.1.2.6. The last row of course articulation matrix indicates mapping of course with POs /PSOs. Course articulation matrix for all subjects are available in Annexure 3.2 for A.Y. 2019-2020, A. Y. 2020-2021 and A. Y. 2021-2022.

Course Name: Chemical Engineering Thermodynamics I

University Code: 3130507

Course code: C235

Semester: 3

Table 3.1.2.1 Course articulation matrix of C235 for A.Y. 2020-2021

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
C235.1	2	2	-	-	-	-	-	2	2	-	-	-	3	-
C235.2	1	1	3	2	-	-	-	1	1	-	-	3	2	-
C235.3	3	3	-	3	-	-	-	3	3	-	-	-	3	3
C235.4	2	2	3	2	-	-	-	2	2	-	-	3	2	3
C235	2	2	3	2.33	-	-	-	2	2	-	-	3	2.5	3
1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)														

Course Name: Chemical Engineering Thermodynamics - II

University Code: 3140507

Course code: C243

Semester: 4

Table 3.1.2.2 Course articulation matrix of C243 for A.Y. 2020-2021

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
C243.1	2	2	2	-	-	-	-	-	-	-	-	2	3	3

C243.2	2	2	2	-	-	-	-	-	-	-	-	2	2	2
C243.3	3	3	3	3	-	-	-	-	-	-	-	3	3	3
C243.4	2	2	2	-	-	-	-	-	-	-	-	2	2	2
C243	2.25	2.25	2.25	3	-	-	-	-	-	-	-	2.25	2.5	2.5
1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)														

Course Name: Chemical Process Plant Design & Economics

University Code: 3150506

Course code: C356

Semester: 5

Table 3.1.2.3 Course articulation matrix of C356 for A.Y. 2020-2021

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
C356.1	1	1	-	-	-	-	-	-	1	-	1	1	1	-
C356.2	3	3	-	-	-	3	3	-	3	-	3	3	3	-
C356.3	3	3	-	-	-	3	-	-	3	-	3	3	3	-
C356.4	1	1	-	3	-	-	-	-	1	-	1	1	1	-
C356	2	2	-	3	-	3	3	-	2	-	2	2	2	-
1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)														

Course Name: Chemical Reaction Engineering I

University Code: 3160506

Course code: C364

Semester: 6

Table 3.1.2.4 Course articulation matrix of C364 for A.Y. 2020-2021

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
C364.1	3	3	3	-	-	-	-	3	3	-	-	3	3	3
C364.2	2	2	-	-	-	-	-	3	2	-	-	2	3	
C364.3	2	2	3	3	3	-	-	-	2	-	-	2	2	3
C364.4	2	2	-	-	-	-	-	2	2	3	-	2	2	
C364	2.25	2.25	3.0	3.0	3.0	-	-	2.67	2.25	3.0	-	2.25	2.5	3
1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)														

Course Name: Chemical Reaction Engineering -II

University Code: 2170501

Course code: C472

Semester: 7

Table 3.1.2.5 Course articulation matrix of C472 for A.Y. 2020-2021

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
C472.1	2	2	3	-	-	-	-	3	2	-	-	2	2	3
C472.2	2	2	-	-	-	-	-	3	2	-	-	2	3	-
C472.3	3	3	3	3	3	-	-	-	3	-	-	3	2	3
C472.4	2	2	-	-	-	-	-	2	2	3	-	2	3	-
C472	2.25	2.25	3	3	3	-	-	2.67	2.25	3	-	2.25	2.5	3
1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)														

Course Name: Multi Component Distillation

University Code: 2180505

Course code: C484

Semester: 8

Table 3.1.2.6 Course articulation matrix of C484 for A.Y. 2020-2021

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
C484.1	2	2	2	2	-	-	-	2	2	-	-	-	2	2
C484.2	3	3	3	3	-	-	-	3	3	-	-	-	3	3
C484.3	1	1	1	1	-	-	3	1	1	-	-	-	1	1
C484.4	2	2	2	2	-	3	3	2	2	-	-	-	2	2
C484	2	2	2	2	-	3	3	2	2	-	-	-	2	2
1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)														

3.1.3 Program level CO-PO matrix of all courses INCLUDING first year courses (10)

There are certain characteristics the students ought to have in order to make their impact on development of the industry, academics and society. The characteristics, in nut and shell, are framed into graduate attributes and Program Outcomes. The syllabi are designed so that the required characteristics can be cultivated.

The basic courses are designed and expected to impart engineering knowledge in respective domain. These courses also contribute slight/moderate/substantial to impart ability for problem analysis and ability to design/develop solutions. Looking at the course contents and the extent it helps to attain respective POs, i.e. PO1, PO2, PO3, the courses are mapped substantial-3, moderate-2, and slight-1.

Moreover, the laboratory sessions for many courses are also planned in such a way that the students make usage of modern tools individually or in group. Through the laboratory sessions, the theoretical

concepts learnt in the classroom are strengthened which leads to lifelong learning. Looking at the course content and the extent it helps to attain respective POs, i.e. PO5, PO9, PO12, the courses are mapped accordingly.

The courses help them to conduct investigations of complex problems (PO4) and make them aware towards societal (PO6) and environmental problems (PO7), which in turn sensitize the students to find out sustainable solutions. The extents these courses help to attain respective POs, i.e. PO4, PO6, PO7, the courses are mapped slight/moderate/substantial. Design Engineering courses are offered to imbibe characteristics like ethics, communication skill and project management and finance capability.

All the courses offered by the department also contribute to achieve Program Specific Outcomes. Hence all the courses are also mapped accordingly (PSO1/PSO2). Moreover, many subjects help the students to work as a professional or as an entrepreneur by applying principles and management practices moderately/strongly and hence they are mapped accordingly.

The faculty members sharing the course/s map the courses with POs keeping in mind the overall perspective and relevance of the course. After deliberation in the committee consisting of senior faculty members and respective course coordinators, the Program Articulation Matrix (Table 3.1.3.1) and Course Articulation Matrix (Table 3.1.2.1 – 3.1.2.6) are prepared.

Program Articulation Matrix

The program articulation matrix indicates the extent each course helps to attain program outcomes. Program level CO-PO matrix and CO-PSO matrix of all courses is reported as Table 3.1.3.1 and Table 3.1.3.2. Program articulation matrix for all subjects is available in Annexure 3.3 for A.Y. 2019-2020 and A. Y. 2021-2022.

Table 3.1.3.1 Program level CO-PO matrix of all courses (Program Articulation Matrix)

Sr. No.	Sem	Course Code	Course Name	CO-PO Matrix for AY 2020-2021											
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	1	C121	Chemistry	1.00	1.00	-	-	3.00	1.00	-	-	1.00	-	-	1.00
2	2	C122	English	-	-	-	-		2.00	-	-	3.00	3.00	-	2.00
3	1	C123	Programming for Problem Solving	2.40	-	1.50	-	1.00	-	-	-	1.50	1.00	-	-
4	2	C124	Basic Civil Engineering	2.00	2.50	-	2.50	2.00	2.00	3.00	-	2.00	2.00	-	2.00
5	1	C125	Basic Electrical Engineering	3.00	3.00	3.00	-	-	1.00	-	-	-	-	-	-
6	1	C126	Basic Mechanical Engineering	2.00	2.00	-	-	-	-	-	-	-	-	-	-
7	2	C127	Environmental Sciences	1.00	1.00	1.00	-	-	1.33	1.25	-	-	-	-	1.67
8	2	C129	Workshop/ Manufacturing Practices	2.00	1.00	1.00	1.00	1.00	-	-	-	1.00	-	1.00	1.00

Sr. No.	Sem	Course Code	Course Name	CO-PO Matrix for AY 2020-2021											
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
9	2	C130	Engineering Graphics & Design	2.00	1.33			1.00	-	-	-	-	1.00	-	-
10	1	C131	Mathematics - 1	1.40	1.40	1.40	1.40	1.40	-	-	-	-	-	-	-
11	2	C132	Mathematics - 2	2.00	2.00	2.00	2.00	2.00	-	-	-	-	-	-	-
12	3	C231	Effective Technical Communication	-	-	-	-	-	-	-	3.00	2.00	2.00	-	2.00
13	3	C232	Design Engineering - I A	2.33	2.67	1.50	1.33	1.00	1.50	1.67	1.50	1.75	3.00	1.50	1.25
14	3	C233	Fluid Flow Operations	2.50	2.50	2.50	3.00	-	3.00	3.00	2.50	2.50	-	-	2.50
15	3	C234	Applied Chemistry	1.00	1.00	0.00	0.00	3.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00
16	3	C235	Chemical Engineering Thermodynamics I	2.00	2.00	3.00	2.33	-	-	-	2.00	2.00	-	-	3.00
17	3	C236	Material & Energy Balance Computation	2.50	2.50	2.50	3.00	3.00	-	-		2.50	3.00	-	3.00
18	4	C241	Design Engineering 1 B	2.33	2.67	1.50	1.33	1.00	1.50	1.67	1.50	1.75	3.00	1.50	1.25
19	4	C242	Heat Transfer	2.50	2.50	3.00	3.00	-	-	-	2.50	2.50	-	-	2.50
20	4	C243	Chemical Engineering Thermodynamics II	2.25	2.25	2.25	3.00	-	-	-	-	-	-	-	2.25
21	4	C244	Unit Processes & Chemical Technology	1.60	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
22	4	C245	Pollution control & safety Management	2.00	2.00	3.00	3.00	-	2.00	2.00	2.00	2.00	-	-	2.67
23	4	C246	Numerical Methods in Chemical Engineering	2.50	2.50	2.50	3.00	3.00	-	-	-	2.50	3.00	-	3.00
24	5	C351	Design Engineering - II A	2.33	2.67	1.50	1.33	1.00	1.50	1.67	1.50	1.75	3.00	1.50	1.25
25	5	C352	Contributor Personality Development Program	-	-	-	-	-	3.00	-	3.00	3.00	2.00	-	-
26	5	C353	Mass Transfer Operations I	2.25	2.25	2.25	2.25		3.00	3.00	2.25	2.25			2.25
27	5	C354	Mechanical Operations	2.75	2.75	3.00	2.67	3.00	-	-	3.00	3.00	3.00	-	3.00
28	5	C355	Instrumentation and Process Control	2.25	2.25	3.00	-	3.00	-	-	2.25	2.25	-	-	2.25

Sr. No.	Sem	Course Code	Course Name	CO-PO Matrix for AY 2020-2021											
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
29	5	C356	Chemical Process Plant Design & Economics	2.00	2.00	-	3.00		3.00	3.00		2.00	-	2.00	2.00
30	5	C357	Energy Technology	2.00	2.00	3.00	3.00	3.00			2.50	2.00	2.50	-	2.67
31	6	C361	Design Engineering II A	2.33	2.67	1.50	1.33	1.00	1.50	1.67	1.50	1.75	3.00	1.50	1.25
32	6	C362	Contributor Personality Development Program	-	-	2.00	2.00	-	2.00	2.00	2.00	2.00	2.00	-	2.00
33	6	C363	Mass Transfer Operations II	2.25	2.25	2.25	2.25	-	3.00	3.00	2.25	2.25		-	2.25
34	6	C364	Chemical Reactions Engineering I	2.25	2.25	3.00	3.00	3.00	-	-	2.67	2.25	3.00	-	2.25
35	6	C365	Advanced Separation Processes	2.50	2.50	-	-	3.00	-	-	2.50	2.50	-	-	-
36	6	C366	Petroleum Refining and Petrochemicals	2.25	2.25	3.00	2.25	3.00	-	3.00		2.25	3.00	-	-
37	6	C367	Waste Water Engineering	2.25	2.33	3.00	3.00	3.00	2.25	2.33	3.00	3.00	3.00	3.00	3.00
38	6	C368	Solid Waste Management	2.50	2.67	3.00	2.50	2.67	3.00	2.50	3.00	3.00	2.67	3.00	3.00
39	7	C471	Project - I	2.33	2.67	1.50	1.33	1.00	1.50	1.67	1.50	1.75	3.00	1.50	1.25
40	7	C472	Chemical Reaction Engineering - II	2.25	2.25	3.00	3.00	3.00	-	-	2.67	2.25	3.00	-	2.25
41	7	C473	Process Equipment Design -II	2.00	2.33	3.00	-	-	-	-	2.00	2.00	-	-	2.33
42	7	C474	Plant Design & Project Engineering	2.25	2.25	-	3.00	-	3.00	3.00		2.25	-	2.25	2.25
43	7	C475	Energy Technology	3.00	2.67	3.00	2.50	3.00	-	2.25	3.00	2.67	2.67	3.00	3.00
44	7	C476	Computer Aided Process Synthesis	2.25	2.25	3.00	3.00	3.00	-	3.00	3.00	3.00	3.00	-	3.00
45	8	C481	Petroleum Refining & Petrochemicals	2.25	2.25	3.00	2.25	3.00	-	3.00	-	2.67	3.00	-	-
46	8	C482	Process Modeling, Simulation & Optimization	2.50	2.50	3.00	-	3.00	-	-	2.50	2.50	-	-	2.50
47	8	C483	Project – II	2.33	2.67	1.50	1.33	1.00	1.50	1.67	1.50	1.75	3.00	1.50	1.25
48	8	C484	Multi Component Distillation	2.00	2.00	2.00	2.00	-	3.00	3.00	2.00	2.00	-	-	-
49	8	C485	Transport Phenomena	2.67	3.00	-	-	-	-	-	-	-	-	-	-

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Table 3.1.3.2 Program level CO-PSO matrix of all courses (Program Articulation Matrix)

Sr. No.	Sem	Course Code	Course Name	CO-PO Matrix for AY 2020-2021	
				PSO1	PSO2
1	1	C121	Chemistry	-	-
6	2	C122	English	-	-
2	1	C123	Programming for Problem Solving	-	
7	2	C124	Basic Civil Engineering	-	-
3	1	C125	Basic Electrical Engineering	-	-
4	1	C126	Basic Mechanical Engineering	-	-
8	2	C127	Environmental Sciences	-	-
9	2	C129	Workshop/ Manufacturing Practices	-	-
10	2	C130	Engineering Graphics & Design	-	-
5	1	C131	Mathematics - 1	-	-
11	2	C132	Mathematics - 2	-	-
12	3	C231	Effective Technical Communication	-	-
13	3	C232	Design Engineering - I A	2.00	1.50
14	3	C233	Fluid Flow Operations	2.50	2.50
15	3	C234	Applied Chemistry	-	-
16	3	C235	Chemical Engineering Thermodynamics I	2.50	3.00
17	3	C236	Material & Energy Balance Computation	2.50	2.50
18	4	C241	Design Engineering 1 B	2.00	1.50
19	4	C242	Heat Transfer	2.25	3.00
20	4	C243	Chemical Engineering Thermodynamics II	2.50	2.50
21	4	C244	Unit Processes & Chemical Technology	-	-
22	4	C245	Pollution control & safety Management	2.25	3.00
23	4	C246	Numerical Methods in Chemical Engineering	2.50	2.50
24	5	C351	Design Engineering - II A	2.00	1.50
25	5	C352	Contributor Personality Development Program	-	-
26	5	C353	Mass Transfer Operations I	2.50	2.50
27	5	C354	Mechanical Operations	2.67	3.00
28	5	C355	Instrumentation and Process Control	2.00	3.00
29	5	C356	Chemical Process Plant Design & Economics	2.00	-
30	5	C357	Energy Technology	2.00	3.00
31	6	C361	Design Engineering II A	2.00	1.50
32	6	C362	Contributor Personality Development Program	-	-
33	6	C363	Mass Transfer Operations II	2.25	2.25
34	6	C364	Chemical Reactions Engineering I	2.5	3
35	6	C365	Advanced Separation Processes	2.25	3.00
36	6	C366	Petroleum Refining and Petrochemicals	3.00	3.00
37	6	C367	Waste Water Engineering	2.00	3.00
38	6	C368	Solid Waste Management	3.00	-
39	7	C471	Project - I	2.00	1.50
40	7	C472	Chemical Reaction Engineering - II	2.50	3.00
41	7	C473	Process Equipment Design -II	2.00	3.00

42	7	C474	Plant Design & Project Engineering	2.50	-
43	7	C475	Energy Technology	3.00	3.00
44	7	C476	Computer Aided Process Synthesis	2.25	3.00
45	8	C481	Petroleum Refining & Petrochemicals	-	-
46	8	C482	Process Modeling, Simulation & Optimization	2.25	3.00
47	8	C483	Project – II	2.00	1.50
48	8	C484	Multi Component Distillation	2.00	2.00
49	8	C485	Transport Phenomena	2.00	-

3.2 Attainment of Course Outcomes (50)

The various assessment components and processes used together the data for the evaluation of Course Outcome are shown in Fig. 3.2.1. The maximum marks and the weightage of each assessment component in the final grade are also summarized in the Table 3.2.1.1.

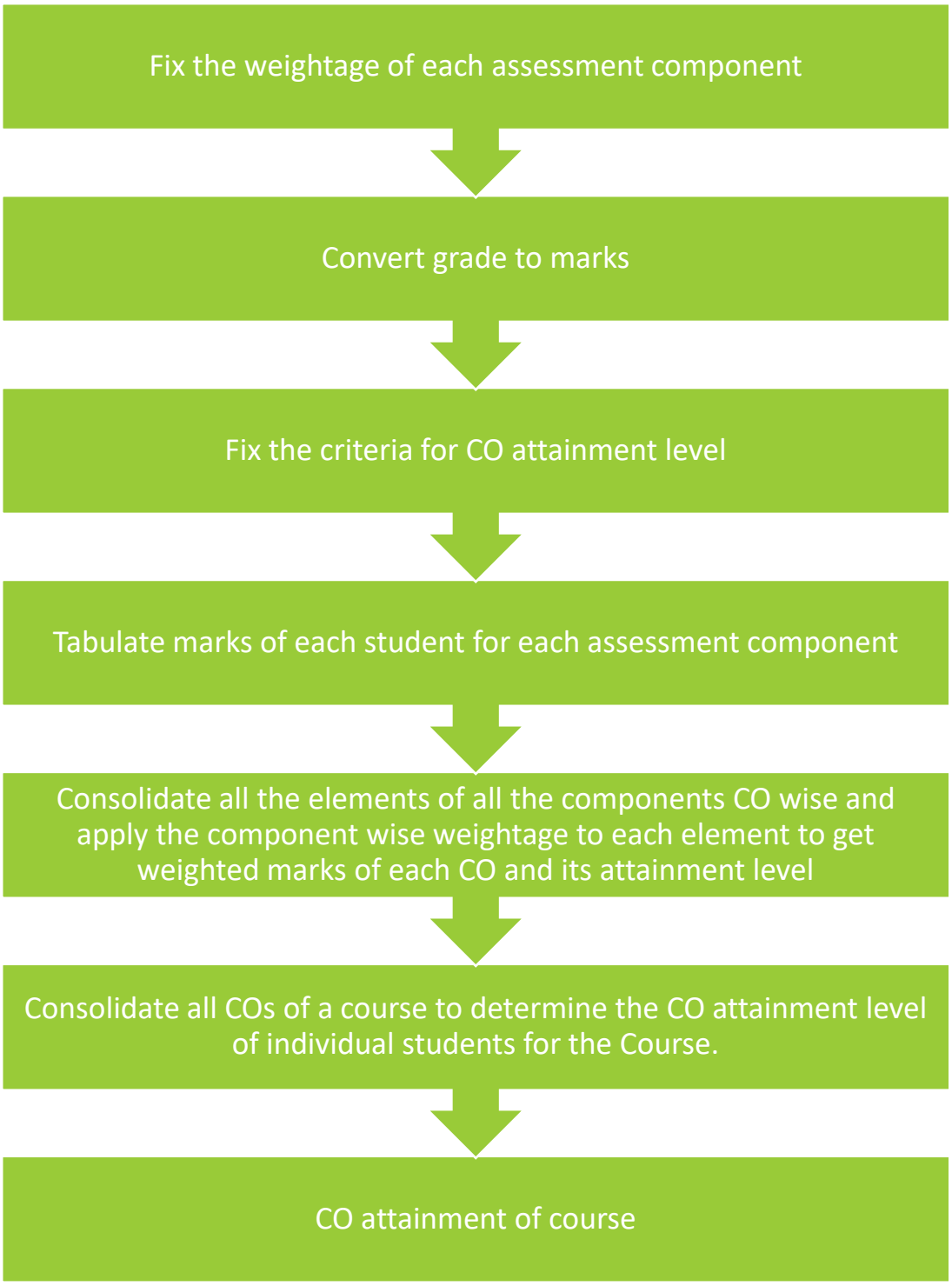

Fig. 3.2.1 CO attainment Calculation Process

3.2.1 Describe the assessment processes used to gather the data upon which the evaluation of Course Outcome is based (10)

Step 1:

Fix the weightage of each assessment component prescribed by GTU for the courses offered in the program

Our institute is affiliated to Gujarat Technological University (GTU). There are four major (Maximum) components defined by the University for evaluating the performance of the students. The number of components for the subject varies from 2 to 4. The component wise distribution of marks is as shown in Table 3.2.1.1.

Table 3.2.1.1 Assessment components and processes used for the evaluation of Course Outcome

Sr. No	Component Name	Exam Conducted by	Marks	Remarks	Relevance of assessment process
1	End Semester Exam-Theory (ESE-T)	University	70	Results are given in form of Grades	ESE-T is intended for making a comprehensive assessment of the ability of students to remember/understand / apply / analyze / evaluate/ create the various aspects of the respective course based on the entire syllabus.
2	End Semester Practical Exam (ESE-V)	University /Department	30/80*	Results are given in form of Grades	The comprehensive assessment associated with the practical aspects of the course is carried out at the end of the semester through viva voice.
3	Mid Semester Exam (PA-M)	Department	30	It includes continuous evaluations at department level which includes Quizzes, Mid Semester Exam, Assignments, Class Participation etc.	The Mid Semester Exam/Quizzes are conducted to assess the ability of students to remember/ understand / apply / analyze / evaluate/ create the various aspects of the respective course. Assignments evaluate the ability of the students to apply the knowledge gained during the course for solving various subject domain problems.
4	Internal (PA-I)	Department	20	It is based on Practical Performance/ Assignments/, Term Work Submission etc.	Assesses the ability of students to apply the theoretical aspects in practice as an individual task or as team work. It also helps to reinforce the concepts gained through class room learning. The assessment is carried out at the end of each experiment conducted and is based on the inferences drawn, data collected, analyzed & presented and knowledge of equipment / modern tools used during performance.

* The assessment of final year project/design engineering project works

Based on the Component-wise marks we fix the weightage to each component as shown in Table 3.2.1.2. On similar lines we fix the weightages for subjects with 2 and 3 assessment components.

Table 3.2.1.2 Component-wise Weightage

Component	Marks	% Weight
ESE-T	70	46.67
PA-M	30	20
PA-I	20	13.33
ESE-V	30/80	20
Total	150/100	100

Step 2:

Convert grade to marks

The grades are given on the basis of their mark range. Grades can be converted into marks as shown in Table 3.2.1.4.

Table 3.2.1.4 Grade to marks conversion

Grade	Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks
	Marks out of 70 (ESE-T)		Marks out of 30 (PA-M)		Marks out of 30 (ESE-P)		Marks out of 80 (Design engineering & Project) External		Marks out of 20 (PA-I)	
AA	70	63	30	26	30	26	80	68	20	17
AB	62	56	25	23	25	23	67	60	16	15
BB	55	49	22	20	22	20	59	52	14	13
BC	48	42	19	17	19	17	51	44	12	11
CC	41	35	16	14	16	15	43	40	10	10
CD	34	28	13	12						
DD	27	23								
FF	22	0	11	0	14	0	39	0	9	0

Step 3:

Fix the criteria for CO attainment level

Attainment of CO for individual student is based on students getting marks in each CO. For A.Y. 2019-2020, 2020-2021 and 2021-2022 target marks are ≥50%, ≥55% and ≥60%, respectively for attainment level of 2. Overall attainment of CO is based on percentage of students getting target marks. To achieve overall attainment level of 2 in each CO, ≥50% students' needs to get these target marks in each CO. Progressively we have increased target marks for attainment of CO, so PO attainment level is 2 for all three academic years.

Table 3.2.1.3 Criteria for attainment of COs

CO Attainment Level	Criteria for overall attainment of CO	Criteria for Individual student		
		A.Y. 2019-2020	A.Y. 2020-2021	A.Y. 2021-2022
3	% of students >= 70%	Marks >= 65%	Marks >= 70%	Marks >= 75%
2	70% > % of students >= 50%	65% > Marks >= 50%	70% > Marks >= 55%	75% > Marks >= 60%
1	50% > % of students >=	50% >Marks >= 40%	55% >Marks >= 45%	60% >Marks >= 50%

	40%			
0	% of students% < 40%	Marks < 40%	Marks < 45%	Marks < 50%

Step 4:

Tabulate marks of each student for each assessment component

Assessment component for evaluation of course outcomes are as given in Table 3.2.1.1. Tabular form of PA-M and ESE-T component is shown in Table 3.2.1.5 and for PA-I and ESE-V component is shown in Table 3.2.1.6.

Table 3.2.1.5 Mid semester and external theory exam marks for course C364 (Chemical Reaction Engg.-I)

	Assessment Tool	Mid Sem Exam (PA-M)					External Exam (ESE-T)				
	Max Marks	6.5	9.166	9.166	5.166	30	17.5	17.5	17.5	17.5	70
	Related CO	CO1	CO2	CO3	CO4		CO1	CO2	CO3	CO4	
Sr. No.	ENROLMENT NO	Obtained Marks				Total	Obtained Marks				Total
1	180310105001	6.50	9.17	9.17	5.17	24	13.75	13.75	13.75	13.75	55
2	180310105002	5.08	7.33	7.75	3.33	22	13.75	13.75	13.75	13.75	55
3	180310105003	6.00	6.00	6.67	3.33	20	13.75	13.75	13.75	13.75	55
4	180310105004	5.25	5.92	5.92	2.58	21	12	12	12	12	48
5	180310105005	6.00	6.00	6.00	2.67	25	15.5	15.5	15.5	15.5	62
6	180310105006	6.00	6.00	8.00	4.67	24	13.75	13.75	13.75	13.75	55
.											
.											
59	190313105005	4.50	4.50	4.50	3.00	19	12	12	12	12	48
60	190313105007	4.25	6.25	6.25	3.00	25	13.75	13.75	13.75	13.75	55
61	190313105008	4.50	5.00	6.00	3.50	15	10.25	10.25	10.25	10.25	41

Table 3.2.1.6 Internal and external practical exam marks for course C364 (Chemical Reaction Engg. - I)

	Assessment Tool	Internal Viva Exam (PA-I)					External Viva Exam (ESE-P)				
	Max Marks	4	3	11	2	20	7.5	7.5	7.5	7.5	30
	Related CO	CO1	CO2	CO3	CO4		CO1	CO2	CO3	CO4	
Sr. No.	ENROLMENT NO	Obtained Marks				Total	Obtained Marks				Total
1	180310105001	2.24	1.68	6.16	1.12	11	4.75	4.75	4.75	4.75	19
2	180310105002	2.2	1.65	6.05	1.1	11	4.25	4.25	4.25	4.25	17
3	180310105003	1.6	1.2	4.4	0.8	8	3.75	3.75	3.75	3.75	15
4	180310105004	1.8	1.35	4.95	0.9	9	5.75	5.75	5.75	5.75	23
5	180310105005	2.2	1.65	6.05	1.1	11	5.25	5.25	5.25	5.25	21
6	180310105006	2.16	1.62	5.94	1.08	10.8	5.5	5.5	5.5	5.5	22
7	180310105007	2	1.5	5.5	1	10	4.5	4.5	4.5	4.5	18
8	180310105008	2.24	1.68	6.16	1.12	11.2	4.5	4.5	4.5	4.5	18
.											

59	190313105005	2.24	1.68	6.16	1.12	11.2	5.25	5.25	5.25	5.25	21
60	190313105007	2.24	1.68	6.16	1.12	11.2	5.75	5.75	5.75	5.75	23
61	190313105008	2	1.5	5.5	1	10	3.75	3.75	3.75	3.75	15

Step 5:

Consolidate all the elements of all the components CO wise and apply the component wise weight to each element to get weighted marks of each CO.

Table 3.2.1.7 Overall marks based on internal and external evaluation for course C364 (Chemical Reaction Engineering-I)

	Assessment Tool	Overall Marks based on Internal and External Evaluation					CO Attainment based on Internal and External Evaluation maximum 100 marks				
	Question No.						3	2	1	0	
	Max Marks	35.5	37.16	45.16	32.16	150	23.67	24.78	30.11	21.44	100
	Related CO	CO1	CO2	CO3	CO4		CO1	CO2	CO3	CO4	
Sr. No.	ENROLMENT NO					Total					Total
1	180310105001	27.24	29.35	33.83	24.79	109	18.16	19.57	22.55	16.52	76.8
2	180310105002	25.28	26.98	31.80	22.43	105	16.86	17.99	21.2	14.95	71
3	180310105003	25.10	24.70	28.57	21.63	98	16.74	16.47	19.04	14.42	66.67
4	180310105004	24.80	25.02	28.62	21.23	101	16.54	16.68	19.08	14.15	66.45
5	180310105005	28.95	28.40	32.80	24.52	119	19.3	18.94	21.87	16.34	76.45
6	180310105006	27.41	26.87	33.19	25.00	111.8	18.28	17.91	22.13	16.66	74.98
7	180310105007	26.00	26.83	31.50	23.00	106	17.34	17.89	21	15.33	71.56
8	180310105008	26.49	26.60	31.08	22.70	109.2	17.66	17.73	20.72	15.13	71.24
.											
59	190313105005	24.24	23.68	28.16	23.12	99.2	16	15.62	18.61	14.24	64.47
60	190313105007	27.99	27.43	31.91	26.87	114.2	17.33	18.29	21.27	15.74	72.63
61	190313105008	19.75	19.25	23.25	18.75	81	13.67	13.67	17	12.33	56.67

Step 6:

Consolidate all COs of a course to determine the CO attainment level of individual students for the Course.

For A. Y. 2020-2021, if the percentage weighted marks secured by the student is 70 and above, the level of CO attainment is 3; if the percentage weighted marks secured by the student is 55 and above but less than 70, the level of CO attainment is 2; if the percentage weighted marks secured by the student is 45 and above but less than 55, level of CO attainment is 1 and if the percentage weighted marks secured by the student is less than 45, the level of CO attainment is 0.

A consolidation of all COs of course C364 – Chemical Reaction Engineering-I is shown in Table 3.2.1.8.

Table 3.2.1.8 CO attainment of individual students for course C364 (Chemical Reaction Engineering – I)

	Assessment Tool	%Marks obtained based on Internal and External Evaluation					CO Attainment based on Internal and External Evaluation				
	Question No.	3	2	1	0		3	2	1	0	
	Max Marks	23.67	24.78	30.11	21.44	100	>70%	>55%	>45%	<45%	
	Related CO	CO1	CO2	CO3	CO4		CO1	CO2	CO3	CO4	
Sr. No.	ENROLMENT NO					Total					Total
1	180310105001	76.72	78.97	74.89	77.05	77	3	3	3	3	3
2	180310105002	71.23	72.6	70.41	69.73	71	3	3	3	2	3
3	180310105003	70.72	66.46	63.23	67.26	67	3	2	2	2	2
4	180310105004	69.88	67.31	63.37	66	67	2	2	2	2	2
5	180310105005	81.54	76.43	72.63	76.21	77	3	3	3	3	3
6	180310105006	77.23	72.28	73.5	77.71	75	3	3	3	3	3
7	180310105007	73.26	72.2	69.74	71.5	72	3	3	2	3	3
8	180310105008	74.61	71.55	68.81	70.57	71	3	3	2	3	3
9	180310105010	76.72	78.97	74.89	77.05	77	3	3	3	3	3
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59											
60	190313105007	73.22	73.81	70.64	73.41	73	3	3	3	3	3
61	190313105008	57.75	55.17	56.46	57.51	57	2	2	2	2	2

Step 7:

CO Attainment of course

The class attainment level for a particular CO is also calculated using the methodology explained in step-3 and step-6. The overall course attainment level is calculated for each student as well as for the entire class considering the weightage contribution of each CO for the course as shown in the Table 3.2.1.9 for the course C364. The percentage of students whose Course attainment level is 2 or more is also calculated.

Table 3.2.1.9 Overall CO Attainment of course C364 (Chemical Reaction Engineering – I)

	CO1	CO2	CO3	CO4
Total students	61	61	61	61
Number of students attained target Level 0	4	5	5	6
Number of students attained target Level 1	5	7	7	6
Number of students attained target Level 2	23	25	29	23
Number of students attained target Level 3	29	24	20	26
Total students	61	61	61	61
Number of students attained target Level >=2	52	49	49	49
% of Students getting marks >= target marks (>50%)	85.25	80.33	80.33	80.33
Attainment Level for CO	3	3	3	3
Target attainment Level	2	2	2	2
Attainment (Y/N)	Y	Y	Y	Y

3.2.2 Record the attainment of Course Outcomes of all courses with respect to set attainment level (40)

Attainment of Course Outcomes and attainment level of all the courses have been worked out as per the procedure described in section 3.2.1 and the same has been summarized in Table 3.2.2.1. Student performance is indicating the attainment of the course outcomes expected from the corresponding course. It is observed that approximately 97.61% COs (205 out of 210) could be attained as per the set target i. e. more than 55% student attained level 2. CO attainment for all subjects is available in Annexure 3.4 for A.Y. 2019-2020 and A. Y. 2021-2022.

Table 3.2.2.1 Course Outcomes of all courses for A.Y. 2020-2021

Sr. No.	Semester	Course Code	Course Name	CO1	CO2	CO3	CO4	CO5	CO6
1	1	C121	Chemistry	2	2	3	2	3	2
2	1	C123	Programming for Problem Solving	2	2	2	2	2	
3	1	C125	Basic Electrical Engineering	3	3	3	3		
4	1	C126	Basic Mechanical Engineering	2	2	3	2	2	
5	1	C131	Mathematics - 1	1	0	2	1	1	
6	2	C122	English	3	3	3	3	3	3
7	2	C124	Basic Civil Engineering	2	2	2	3	3	
8	2	C127	Environmental Sciences	3	3	3	3		
9	2	C129	Workshop/ Manufacturing Practices	3	3	3	3	3	
10	2	C130	Engineering Graphics & Design	3	3	3	3		
11	2	C132	Mathematics - 2	3	3	3	3	3	
12	3	C231	Effective Technical Communication	3	3	3	3	3	3
13	3	C232	Design Engineering - I A	3	3	3	3		
14	3	C233	Fluid Flow Operations	2	3	2	3		
15	3	C234	Applied Chemistry	3	3	3	3	3	3
16	3	C235	Chemical Engineering Thermodynamics I	3	3	2	2		
17	3	C236	Material & Energy Balance Computation	2	2	2	2		
18	4	C241	Design Engineering 1 B	3	3	3	3		

Sr. No.	Semester	Course Code	Course Name	CO1	CO2	CO3	CO4	CO5	CO6
19	4	C242	Heat Transfer	3	3	3	3		
20	4	C243	Chemical Engineering Thermodynamics II	3	3	3	3		
21	4	C244	Unit Processes & Chemical Technology	3	3	3	3	3	
22	4	C245	Pollution control & safety Management	3	3	3	3		
23	4	C246	Numerical Methods in Chemical Engineering	3	3	3	3		
24	5	C351	Design Engineering - II A	3	3	3	3		
25	5	C352	Contributor Personality Development Program	3	3	3	3		
26	5	C353	Mass Transfer Operations I	3	2	3	2		
27	5	C354	Mechanical Operations	3	3	3	3		
28	5	C355	Instrumentation and Process Control	3	3	3	3		
29	5	C356	Chemical Process Plant Design & Economics	3	3	3	3		
30	6	C357	Energy Technology	3	3	3	3		
31	6	C361	Design Engineering II A	3	3	3	3		
32	6	C362	Contributor Personality Development Program	3	3	3	3		
33	6	C363	Mass Transfer Operations II	3	3	3	2		
34	6	C364	Chemical Reactions Engineering I	3	3	3	3		
35	6	C365	Advanced Separation Processes	3	3	3	3		
36	6	C366	Petroleum Refining and Petrochemicals	3	3	3	3		
37	6	C367	Waste Water Engineering	3	3	3	3		
38	6	C368	Solid Waste Management	3	3	3	3		
39	7	C471	Project - I	3	3	3	3		
40	7	C472	Chemical Reaction Engineering - II	1	2	2	3		
41	7	C473	Process Equipment Design -II	3	3	3	3		
42	7	C474	Plant Design & Project Engineering	3	3	3	3		
43	7	C475	Energy Technology	3	3	3	3		
44	7	C476	Computer Aided Process Synthesis	2	3	3	3		
45	8	C481	Petroleum Refining & Petrochemicals	3	3	3	3		
46	8	C482	Process Modeling, Simulation & Optimization	3	3	3	3		
47	8	C483	Project – II	3	3	3	3		
48	8	C484	Multi Component Distillation	3	3	3	3		
49	8	C485	Transport Phenomena	3	3	3			

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

3.3.1 Describe assessment tools and processes used for measuring the attainment of each of the Program Outcomes and Program Specific Outcomes (10)

The POs/PSOs are achieved through the various methods of course delivery as described in Table 3.3.1.1 and their attainments are measured through various assessment components such as Mid Semester Exam (MSE), End semester exam (ESE), end semester practical/viva exam, assignments,

Design engineering projects, final year projects as described in Section 3.2. The procedure of POs/PSOs attainment process is as shown in Figure 3.3.1.1.

Table 3.3.1.1 Methods (components) for achieving direct attainment of POs/PSOs

Sr. No.	Course delivery	Attainment of		Remarks
		POs	PSOs	
1	Class room teaching	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	1, 2	Faculty members of the department effectively deliver the course contents of the subject through online/offline class room sessions. They communicate related information, background, theories, analogies, applications, etc. to give them clear concepts.
2	Experimental and laboratory work	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	1, 2	Laboratory work enhances the ability of students to interpret the results and usage of modern tools thereby strengthening the theory learnt in the class room.
3	Final year and design engineering projects	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	1, 2	Group tasks like projects, assignments, term paper, presentation on technical/societal topic encourages to work in a team, dispensing individual responsibility, doing the work faster by work distribution. It also helps to enhance creativity, presentation skill and lifelong learning.
4	Tutorials	1, 2, 3, 4, 5, 9, 10	1, 2	A special session where students solve difficult engineering problems in presence of a facilitator.
5	In-plant training	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	1, 2	To enhance employability skills of the students, In-plant Training is needed. It provides practical exposure in a field of chemical engineering and help to reinforce theoretical knowledge gained in different courses to solve real life challenges. The students are given exposure to explore the new technology and developments, which can lead them to self-employment or even employment generation.
6	Summer Internship	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	1, 2	Students get exposure to visit industry, and aware of current trends of industrial practice and utilize their theoretical knowledge for industrial problems solutions.

The indirect attainment level of the POs/PSOs is determined based on the students' exit survey, parents' survey, employers' survey and alumni survey. Overall attainment of POs/PSOs are based on 80% weightage from direct and 20% from indirect attainment.

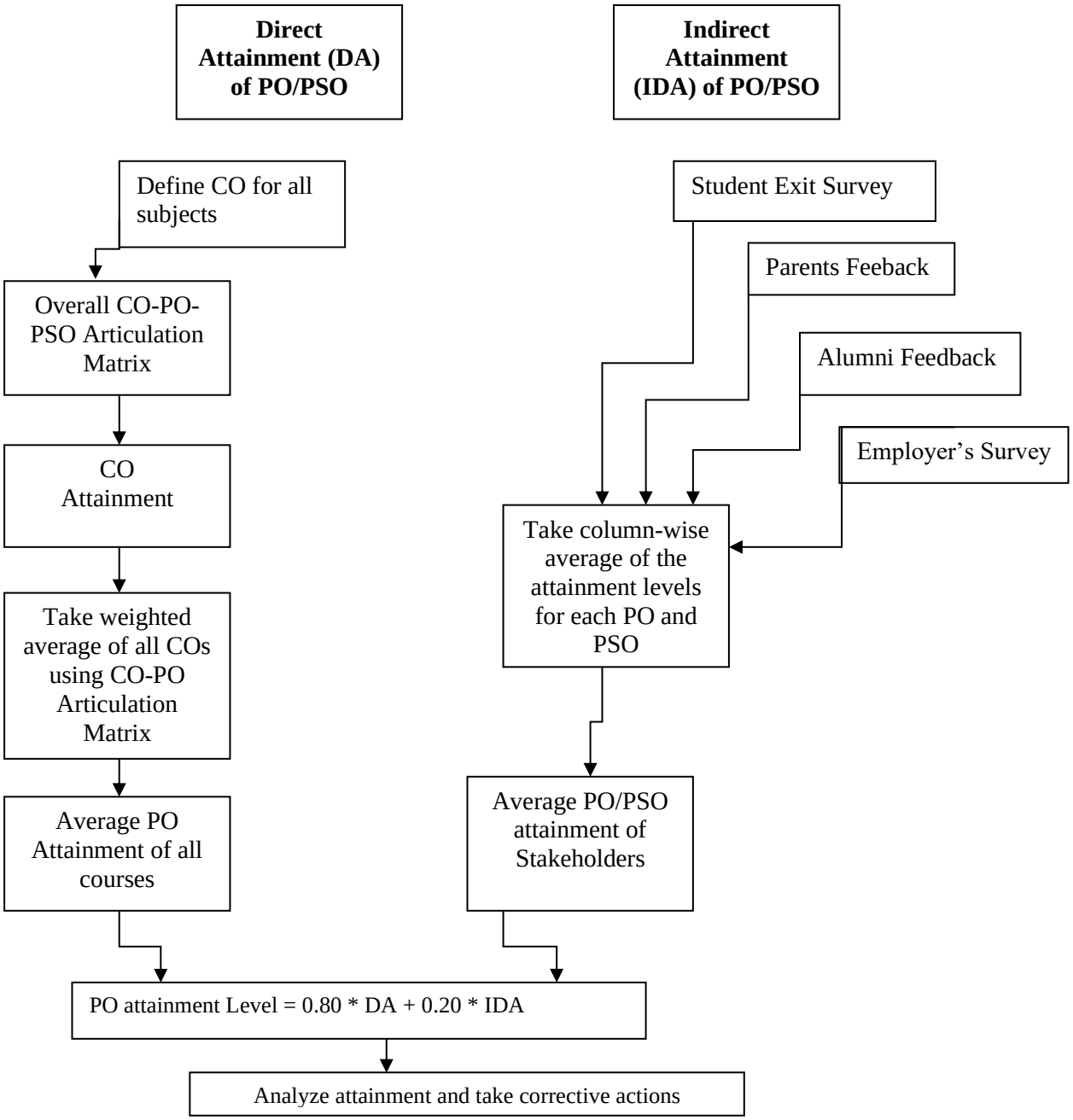


Fig. 3.3.1.1 POs/PSOs attainment Calculation Process

3.3.2 Provide results of evaluation of each PO & PSO (40)

Direct method

Course attainment level directly addresses the attainment level of PO/PSO. Hence PO/PSO attainment can be obtained using the course attainment level being worked out in Section 3.2. The course attainment levels for all the courses are summarized in Table 3.2.2.1 as discussed in Section 3.2.1. The weighted average of all the course attainment levels addressing the particular PO/PSO is the attainment level of the corresponding PO/PSO. The overall direct attainment level of PO/PSO is determined by taking weighted average across all the courses addressing that PO/PSO. Equation 1 used to calculate PO/PSO attainment level.

$$POAL = \frac{\sum CAL \times MCPO}{\sum MCPO} \qquad \text{-- (1)}$$

Where POAL represents PO Attainment Level, CAL represents Course Attainment Level, MCPO represents mapping of Course to PO.

In direct method of PO attainment, the POs/PSOs are attained through respective courses as described in Section 3.3.1. The strongly mapped (i.e. mapped as 3) PO represents its higher weightage to attain the PO. Slightly mapped (i.e. mapped as 1) PO represents its lower weightage to attain the PO. Hence, to ensure that the POs are attained the way they are mapped or expected, attainment level of POs/PSOs is worked out using the Equation 1 in Section 3.3.1. Direct attainment of all POs and PSOs as per all assessment components available in Table 3.3.1.1 are given in Table 3.3.2.1 and Table 3.3.2.2, respectively. Direct attainment of POs and PSOs for all subjects are available in Annexure 3.5 for A.Y. 2019-2020 and A. Y. 2021-2022.

Table 3.3.2.1 Direct PO attainment of all course for A. Y. 2020-2021

Sr. No.	Sem	Course Code	Course Name	CO-PO Matrix for AY 2020-2021											
				PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
1	1	C121	Chemistry	2.40	2.00	-	-	2.00	3.00	-	-	2.50	-	-	2.33
2	2	C122	English	-	-		-		3.00	-	-	3.00	3.00		3.00
3	1	C123	Programming for Problem Solving	2.00	-	2.00	-	2.00	-	-	-	2.00	2.00	-	-
4	2	C124	Basic Civil Engineering	2.40	2.30	-	2.60	3.00	2.40	2.50	-	2.40	3.00	-	2.40
5	1	C125	Basic Electrical Engineering	3.00	3.00	3.00	-	-	3.00		-			-	
6	1	C126	Basic Mechanical Engineering	2.00	2.00		-	-	-	-	-	-	-	-	-
7	2	C127	Environmental Sciences	3.00	3.00	3.00	-	-	3.00	3.00	-	-	-	-	3.00

Sr. No.	Sem	Course Code	Course Name	CO-PO Matrix for AY 2020-2021											
				PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
8	2	C129	Workshop/ Manufacturing Practices	3.00	3.00	3.00	3.00	3.00	-	-	-	3.00	-	3.00	3.00
19	2	C130	Engineering Graphics & Design	3.00	3.00			3.00	-	-	-	-	3.00	-	-
10	1	C131	Mathematics - 1	1.14	1.14	1.14	1.14	1.14	-	-	-	-	-	-	-
11	2	C132	Mathematics - 2	3.00	3.00	3.00	3.00	3.00	-	-	-	-	-	-	-
12	3	C231	Effective Technical Communication	-	-	-	-	-	-	-	3.00	3.00	3.00	-	3.00
13	3	C232	Design Engineering - I A	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
14	3	C233	Fluid Flow Operations	2.50	2.50	2.50	3.00		3.00	3.00	2.50	2.50	-	-	2.50
15	3	C234	Applied Chemistry	3.00	3.00	-	-	3.00	3.00	-	-	3.00	-	-	-
16	3	C235	Chemical Engineering Thermodynamics I	2.38	2.38	2.50	2.29	-	-	-	2.38	2.38	-	-	2.50
17	3	C236	Material & Energy Balance Computation	2.00	2.00	2.00	-	-	-	2.00	2.00	2.00	-	-	2.00
18	4	C241	Design Engineering 1 B	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
19	4	C242	Heat Transfer	3.00	3.00	3.00	3.00	-	-	-	3.00	3.00	-	-	3.00
20	4	C243	Chemical Engineering Thermodynamics II	3.00	3.00	3.00	3.00	-	-	-	-	-	-	-	3.00
21	4	C244	Unit Processes & Chemical Technology	3.00	3.00	3.00		-	3.00	3.00		3.00	-	-	3.00
22	4	C245	Pollution control & safety Management	3.00	3.00	3.00	3.00		3.00	3.00	3.00	3.00			3.00
23	4	C246	Numerical Methods in Chemical Engineering	3.00	3.00	3.00	3.00	3.00	-	-	-	3.00	3.00	-	3.00
24	5	C351	Design Engineering - II A	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
25	5	C352	Contributor Personality Development Program	-	-	-	-	-	3.00	-	3.00	3.00	3.00	-	-
26	5	C353	Mass Transfer Operations I	2.56	2.56	2.56	2.56		3.00	2.50	2.56	2.56	-	-	2.56

Sr. No.	Sem	Course Code	Course Name	CO-PO Matrix for AY 2020-2021											
				PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
27	5	C354	Mechanical Operations	3.00	3.00	3.00	3.00	3.00	-	-	3.00	3.00	3.00		3.00
28	5	C355	Instrumentation and Process Control	3.00	3.00	3.00		3.00	-	-	3.00	3.00	-	-	3.00
29	5	C356	Chemical Process Plant Design & Economics	3.00	3.00	-	3.00	-	3.00	3.00		3.00	-	3.00	3.00
30	5	C357	Energy Technology	3.00	3.00	3.00	3.00	3.00			3.00	3.00	3.00		3.00
31	6	C361	Design Engineering II A	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
32	6	C362	Contributor Personality Development Program	-	-	3.00	3.00		3.00	3.00	3.00	3.00	3.00	-	3.00
33	6	C363	Mass Transfer Operations II	2.89	2.89	2.89	2.89		2.00	3.00	2.89	2.89	-	-	2.89
34	6	C364	Chemical Reactions Engineering I	3.00	3.00	3.00	3.00	3.00	-	-	3.00	3.00	3.00	-	3.00
35	6	C365	Advanced Separation Processes	3.00	3.00	-	-	3.00	-	-	3.00	3.00	-	-	-
36	6	C366	Petroleum Refining and Petrochemicals	3.00	3.00	3.00	3.00	-	3.00	3.00	3.00	3.00	-	-	3.00
37	6	C367	Waste Water Engineering	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
38	6	C368	Solid Waste Management	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
39	7	C471	Project - I	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
40	7	C472	Chemical Reaction Engineering - II	2.00	2.00	1.50	2.00	2.00	-	-	1.88	2.00	3.00	-	2.00
41	7	C473	Process Equipment Design -II	3.00	3.00	3.00	-	-	-	-	3.00	3.00	-	-	3.00
42	7	C474	Plant Design & Project Engineering	3.00	3.00	-	3.00	-	3.00	3.00	-	3.00	-	3.00	3.00

Sr. No.	Sem	Course Code	Course Name	CO-PO Matrix for AY 2020-2021											
				PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
43	7	C475	Energy Technology	3.00	3.00	3.00	3.00	3.00	3.00	-	3.00	3.00	3.00	3.00	3.00
44	7	C476	Computer Aided Process Synthesis	2.67	2.67	3.00	3.00	2.67	-	2.67	2.00	3.00	3.00	-	3.00
45	8	C481	Petroleum Refining & Petrochemicals	3.00	3.00	3.00	3.00	3.00	-	3.00	-	3.00	3.00	-	-
46	8	C482	Process Modeling, Simulation & Optimization	3.00	3.00	3.00	-	3.00	-	-	3.00	3.00	-	-	3.00
47	8	C483	Project – II	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
48	8	C484	Multi Component Distillation	3.00	3.00	3.00	3.00	-	3.00	3.00	3.00	3.00	-	-	-
49	8	C485	Transport Phenomena	3.00	3.00	-	-	-	-	-	-	-	-	-	-

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Table 3.3.2.2 Direct PSO attainment of all course for A. Y. 2020-2021

Sr. No.	Sem	Course Code	Course Name	CO-PO Matrix for AY 2020-2021	
				PSO1	PSO2
1	1	C121	Chemistry	-	-
2	2	C122	English	-	-
3	1	C123	Programming for Problem Solving	-	-
4	2	C124	Basic Civil Engineering	-	-
5	1	C125	Basic Electrical Engineering	-	-
6	1	C126	Basic Mechanical Engineering	-	-
7	2	C127	Environmental Sciences	-	-
8	2	C129	Workshop/ Manufacturing Practices	-	-
9	2	C130	Engineering Graphics & Design	-	-
10	1	C131	Mathematics - 1	-	-
11	2	C132	Mathematics - 2	-	-
12	3	C231	Effective Technical Communication	-	-
13	3	C232	Design Engineering - I A	3.00	3.00
14	3	C233	Fluid Flow Operations	2.50	2.50
15	3	C234	Applied Chemistry	-	-
16	3	C235	Chemical Engineering Thermodynamics I	2.50	2.00
17	3	C236	Material & Energy Balance Computation	2.00	-
18	4	C241	Design Engineering 1 B	3.00	3.00
19	4	C242	Heat Transfer	3.00	3.00

Sr. No.	Sem	Course Code	Course Name	CO-PO Matrix for AY 2020-2021	
				PSO1	PSO2
20	4	C243	Chemical Engineering Thermodynamics II	3.00	3.00
21	4	C244	Unit Processes & Chemical Technology	-	-
22	4	C245	Pollution control & safety Management	3.00	3.00
23	4	C246	Numerical Methods in Chemical Engineering	3.00	3.00
24	5	C351	Design Engineering - II A	3.00	3.00
25	5	C352	Contributor Personality Development Program	-	-
26	5	C353	Mass Transfer Operations I	2.50	2.50
27	5	C354	Mechanical Operations	3.00	3.00
28	5	C355	Instrumentation and Process Control	3.00	3.00
29	5	C356	Chemical Process Plant Design & Economics	3.00	-
30	5	C357	Energy Technology	3.00	3.00
31	6	C361	Design Engineering II A	3.00	3.00
32	6	C362	Contributor Personality Development Program	-	-
33	6	C363	Mass Transfer Operations II	2.89	2.89
34	6	C364	Chemical Reactions Engineering I	3.00	3.00
35	6	C365	Advanced Separation Processes	3.00	3.00
36	6	C366	Petroleum Refining and Petrochemicals	3.00	3.00
37	6	C367	Waste Water Engineering	3.00	3.00
38	6	C368	Solid Waste Management	3.00	-
39	7	C471	Project - I	3.00	3.00
40	7	C472	Chemical Reaction Engineering - II	2.10	1.50
41	7	C473	Process Equipment Design -II	3.00	3.00
42	7	C474	Plant Design & Project Engineering	3.00	-
43	7	C475	Energy Technology	3.00	3.00
44	7	C476	Computer Aided Process Synthesis	2.78	2.50
45	8	C481	Petroleum Refining & Petrochemicals	-	-
46	8	C482	Process Modeling, Simulation & Optimization	3.00	3.00
47	8	C483	Project – II	3.00	3.00
48	8	C484	Multi Component Distillation	3.00	3.00
49	8	C485	Transport Phenomena	3.00	-

Indirect attainment (IDA) method

Indirect attainment level of a PO/PSO is determined based on the student exit surveys, employer surveys, Alumni Feedback and parent surveys. Format for these indirect attainment feedback forms is available in Annexure 3.6. Inputs for exit survey are given by graduating students (just before the completion of B.E. 8^{th} semester). Results obtained from various surveys (exit surveys, employer surveys, Alumni survey feedback, parent survey feedback) are summarized to work out PO/PSO attainment by indirect method is tabulated in Table 3.3.2.3. Indirect attainment of POs and PSOs for all subjects are available in Annexure 3.7 for A.Y. 2019-2020 and A. Y. 2021-2022.

Table 3.3.2.3 Summary of attainment level of each PO/PSO by Indirect method (AY 2020-21)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Graduate Survey Feedback	2.71	2.71	2.60	2.54	2.69	2.60	2.54	2.77	2.60	2.49	2.69	2.60	2.43	2.71
Alumni Survey Feedback	2.54	2.64	2.68	2.46	2.64	2.68	2.64	2.61	2.64	2.61	2.68	2.61	2.54	2.54
Employer's Feedback	1.93	2.13	1.93	1.93	1.93	2.00	2.00	2.20	2.00	2.00	2.00	2.13	1.93	2.20
Parents Survey Feedback	2.88	2.88	2.82	2.82	2.88	2.76	2.65	2.76	2.65	2.65	2.76	2.76	2.88	2.88
Indirect Attainment (Average)	2.52	2.59	2.51	2.44	2.54	2.51	2.46	2.59	2.47	2.43	2.53	2.53	2.44	2.58

Overall attainment of POs/PSOs

Final attainment of POs/PSOs is worked out as weighted average of direct attainment (80% weightage) and indirect attainment (20% weightage) as shown in Table 3.3.2.4 and Table 3.3.2.5. Overall attainment of POs and PSOs for all subjects are available in Annexure 3.8 for A.Y. 2019-2020 and A. Y. 2021-2022 and in Fig 3.3.1.

Table 3.3.2.4 Overall PO attainment of all course for A. Y. 2020-2021

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Direct Attainment	2.80	2.80	2.80	2.85	2.79	2.94	2.90	2.83	2.86	2.95	3.00	2.86
Indirect Attainment	2.52	2.59	2.51	2.44	2.54	2.51	2.46	2.59	2.47	2.43	2.53	2.53
Overall Attainment	2.75	2.76	2.74	2.77	2.74	2.85	2.81	2.78	2.78	2.85	2.91	2.80

Table 3.3.2.5 Overall PSO attainment of all course for A. Y. 2020-2021

Course	PSO1	PSO2
Direct Attainment	2.88	2.84
Indirect Attainment	2.44	2.58

Overall Attainment	2.79	2.79

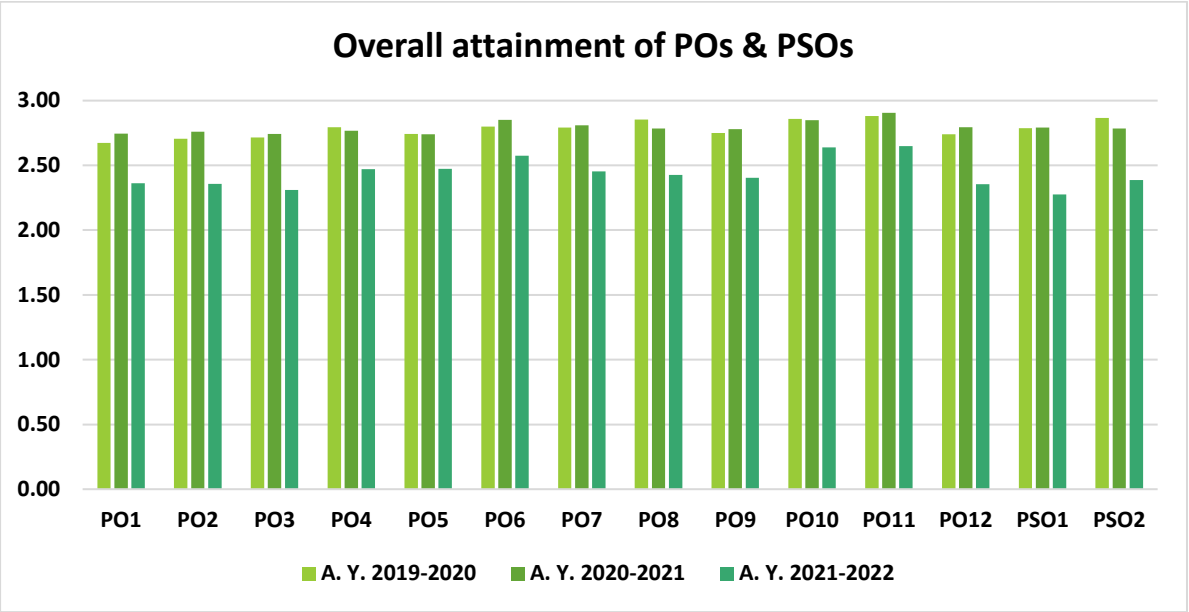


Fig. 3.3.1 PO and PSO attainment

Criterion 4: Students' Performance (150)

Table 4.1 Students Intake

Item (Information to be provided cumulatively for all the shifts with explicit headings, wherever applicable)	**CAY**	**CAYm1**	**CAYm2**	**CAYm3**	**CAYm4**	**CAYm5**	**CAYm6**
	2021-22	**2020-21**	**2019-20**	**2018-19**	**2017-18**	**2016-17**	**2015-16**
Sanctioned intake of 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 program (N1)	63	65	73	58	50	53	60
Number of students admitted in 2nd year in the same batch via lateral entry (N2)	0	11	10	7	9	14	14
Separate division students, if applicable (N3)	0	0	0	0	0	0	0
Total number of students admitted in program (N1+N2+N3)	63	76	83	65	59	67	74

CAY – Current Academic Year, CAYm1- Current Academic Year minus 1,
CAYm2 - Current Academic Year minus2, CAYm3 - Current Academic Year minus 3,
CAYm4 - Current Academic Year minus 4, CAYm4 - Current Academic Year minus 4,
CAYm5 - Current Academic Year minus 5, CAYm6 - Current Academic Year minus 6

Table 4.2 Number of students who have successfully graduated without backlogs

Year of entry	**(N1+N2+N3)**	**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)**			
		1st year	**2nd year**	**3rd year**	**4th year**
CAY 2021-22	63 (63 + 0 + 0)				
CAYm1 2020-21	76 (65 + 11 + 0)	33 (33 + 0)			
CAYm2 2019-20	83 (73 + 10 + 0)	38 (38 + 0)	39 (31 + 8)		
CAYm3 2018-19	65 (58 + 7 + 0)	14 (14 + 0)	17 (14 + 3)	16 (13 + 3)	
LYG 2017-18	59 (50 + 9 + 0)	24 (24 + 0)	18 (17 + 1)	17 (16 + 1)	15 (14 + 1)
LYGm1 2016-17	67 (53 + 14 + 0)	33 (33 + 0)	29 (29 + 0)	26 (26 + 0)	24 (24 + 0)
LYGm2 2015-16	74 (60 + 14 + 0)	22 (22 + 0)	21 (18 + 3)	20 (17 + 3)	17 (16 + 1)

LYG – Last Year Graduate, LYGm1 – Last Year Graduate minus 1,
LYGm2 – Last Year Graduate minus 2

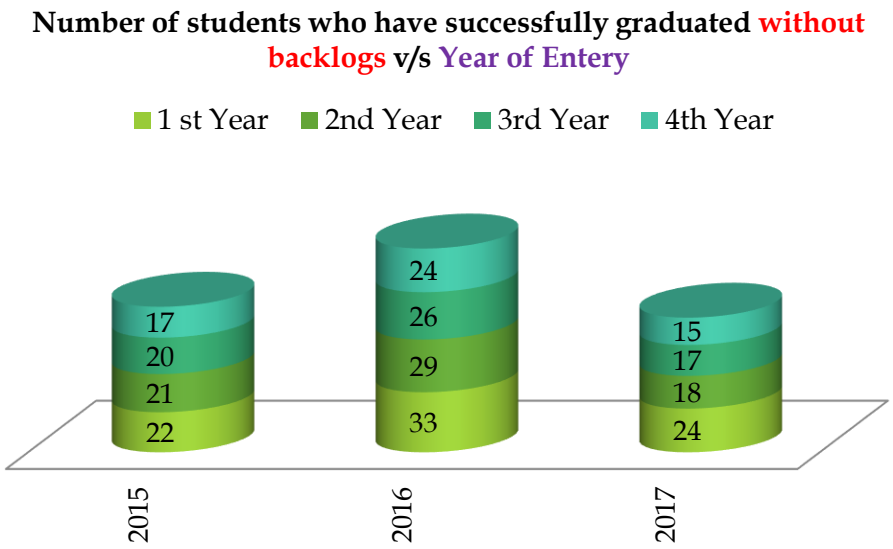


Fig. 4.1 Number of students who have successfully graduated without backlog

Table 4.3 Number of students who have successfully graduated with backlogs

Year of entry	(N1+N2+N3)	Number of students who have successfully graduated in stipulated period of study) [Total of with Backlog + without Backlog]			
		1st year	2nd year	3rd year	4th year
CAY 2021-22	63 (63 + 0 + 0)				
CAYm1 2020-21	76 (65 + 11 + 0)	64 (64 + 0)			
CAYm2 2019-20	83 (73 + 10 + 0)	73 (73 + 0)	82 (72 + 10)		
CAYm3 2018-19	65 (58 + 7 + 0)	56 (56 + 0)	59 (52 + 7)	59 (52 + 7)	
LYG 2017-18	59 (50 + 9 + 0)	47 (47 + 0)	55 (46 + 9)	53 (44 + 9)	50 (42 + 8)
LYGm1 2016-17	67 (53 + 14 + 0)	52 (52 + 0)	62 (50 + 12)	62 (50 + 12)	62 (50 + 12)
LYGm2 2015-16	74 (60 + 14 + 0)	60 (60 + 0)	70 (57 + 13)	68 (56 + 12)	53 (46 + 7)

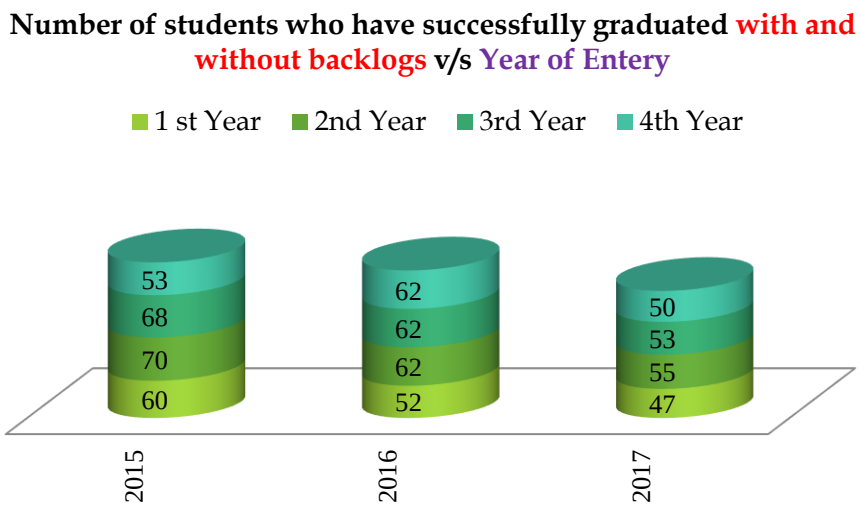


Fig. 4.2 Number of students who have successfully graduated with and without backlog

4.1 Enrolment Ratio (20)

Enrolment Ratio=N1/N

Table 4.1.1 Enrolment Ratio

Year of Entry	N (From Table 4.1)	N1 (From Table 4.1)	Enrollment Ratio [(N1/N)*100]
CAY (2021-22)	60	63	105.00
CAYm1 (2020-21)	60	65	108.33
CAYm2 (2019-20)	60	73	121.67

Average [(ER1 + ER2 + ER3)/3]: 111.67

Assessment: 20.00

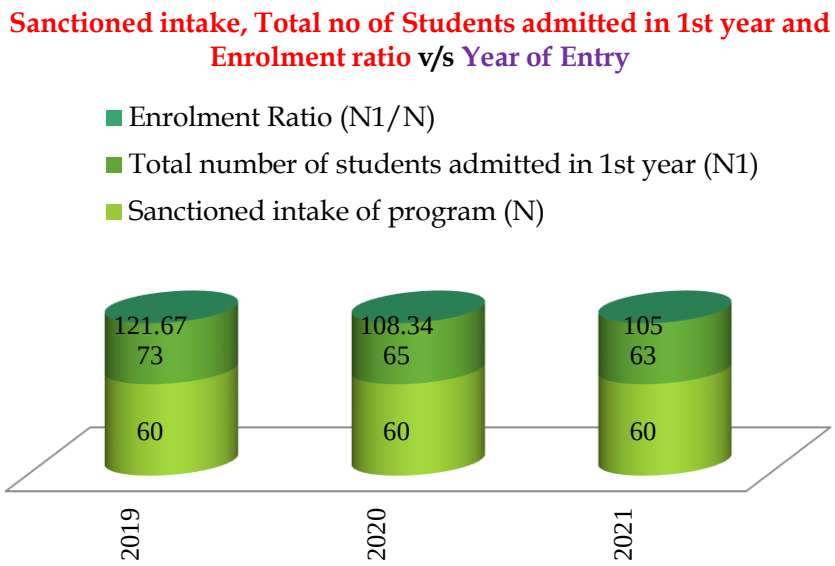


Fig. 4.1.1 Enrollment Ratio

Table 4.1.2 Marks Distribution Enrolment Ratio

Item **(Students enrolled at the First Year Level on average basis during the previous three academic years starting from current academic year)**	**Marks**
>=90% students enrolled	20
>=80% students enrolled	18
>=70% students enrolled	16
>=60% students enrolled	14
>=50% students enrolled	12
Otherwise	0

4.2 Success Rate in the stipulated period of the program (40)

4.2.1 Success rate without backlogs in any semester/year of study (25)

SI = (Number of students who have graduated from the program without backlog) / (Number of students admitted in the first year of that batch and admitted in 2nd year via lateral entry and separate division, if applicable)

Average SI = Mean of Success Index (SI) for past three batches

Success rate without backlogs in any year of study = 25 × Average SI

Table 4.2.1.1 Success rate without backlogs in stipulated time

Item	**Latest Year of Graduation, LYG (2017-18)**	**Latest Year of Graduation minus 1, LYGm1 (2016-17)**	**Latest Year of Graduation minus 2 LYGm2 (2015-16)**
X = Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry and separate division, if applicable	59.00	67.00	74.00
Y = Number of students who have graduated without backlogs in the stipulated period	15.00	24.00	17.00
Success Index (SI = Y/X)	0.25	0.36	0.23

Average SI [(SI1 + SI2 + SI3) / 3]: 0.28

Assessment [25*Average SI]: 7.00

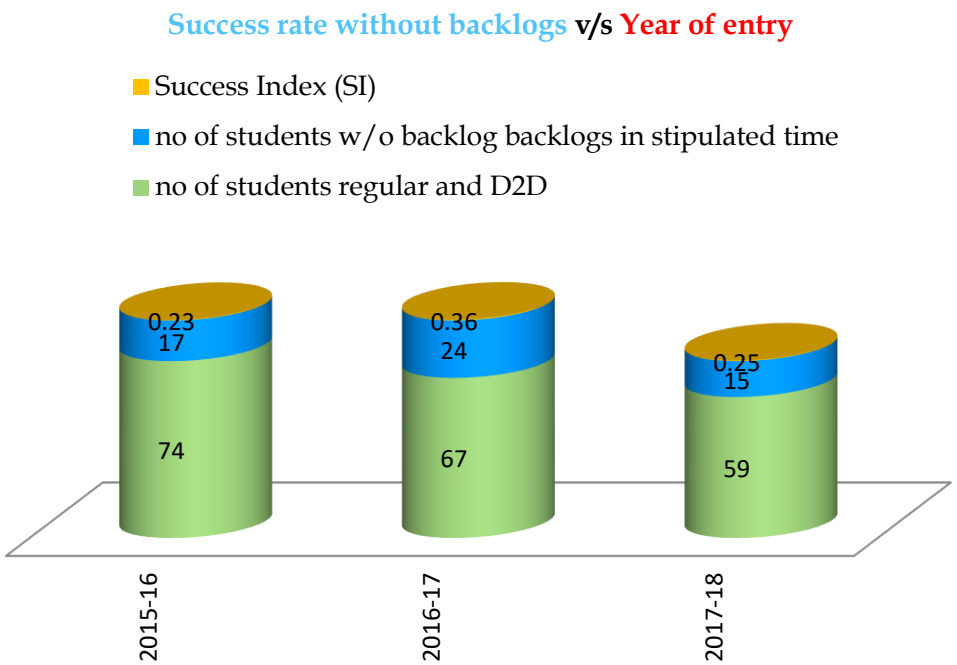


Fig. 4.2.1.1 Success rate without backlogs in stipulated time

4.2.2 Success rate with backlog in stipulated period of study (15)

SI = (Number of students who graduated from the program in the stipulated period of course duration) / (Number of students admitted in the first year of that batch and admitted in 2nd year via lateral entry and separated division, if applicable)

Average SI = mean of Success Index (SI) for past three batches

Success rate = 15 × Average SI

Table 4.2.2.1 Success rate with backlogs in stipulated time

Item	Latest Year of Graduation, LYG (2017-18)	Latest Year of Graduation minus 1, LYGm1 (2016-17)	Latest Year of Graduation minus 2 LYGm2 (2015-16)
X = Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry and separate division, if applicable	59.00	67.00	74.00
Y = Number of students who have graduated in the stipulated period	50.00	62.00	53.00
Success Index (SI = Y/X)	0.85	0.93	0.72

Average SI [(SI1 + SI2 + SI3) / 3]: 0.83

Assessment [15*Average SI]: 12.45

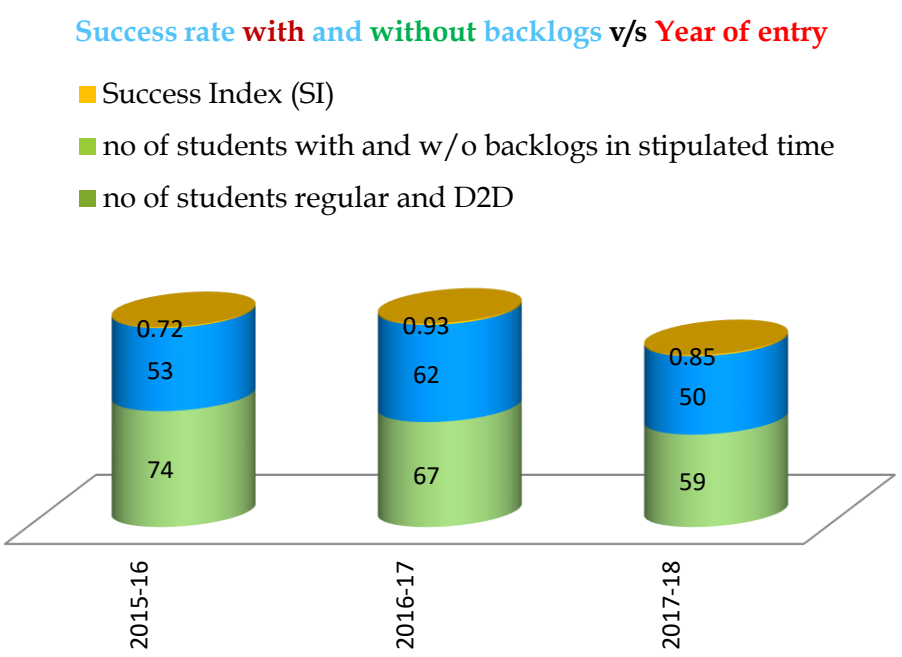


Fig. 4.2.2.1 Success rate with backlogs in stipulated time

Note: If 100% students clear without any backlog then also total marks scored will be 40 as both 4.2.1 & 4.2.2 will be applicable simultaneously.

4.3 Academic Performance in 3rd Year (15)

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

API = ((Mean of 3rd Year Grade Point Average of all successful Students on a 10 point scale) or (Mean of the percentage of marks of all successful students in Third Year / 10)) x (number of successful students / number of students appeared in the examination)

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

Table 4.3.1 Academic Performance in Third Year

Academic Performance	**CAYm3 (2018-19)**	**LYG (2017-18)**	**LYGm1 (2016-17)**
Mean of CGPA or Mean Percentage of all successful students (X)	7.63	7.19	7.08
Total no. of successful students (Y)	59.00	53.00	62.00
Total no. of students appeared in the examination (Z)	59.00	55.00	62.00
API = X* (Y/Z)	7.63	6.93	7.08

Average API [(AP1 + AP2 + AP3) / 3]: 7.21

Assessment [1.5*Average API]: 10.82

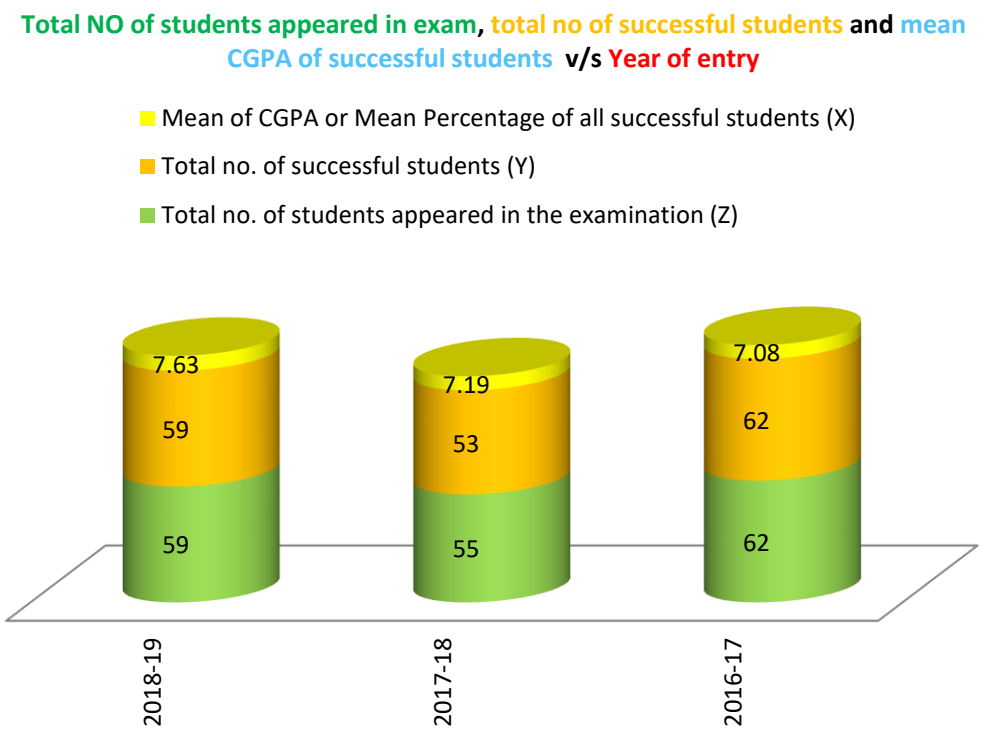


Fig. 4.3.1 Academic Performance in Third Year

4.4 Academic Performance in 2rd Year (15)

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

API = ((Mean of 2rd Year Grade Point Average of all successful Students on a 10-point scale) or (Mean of the percentage of marks of all successful students in Second Year / 10)) x (number of successful students / number of students appeared in the examination)

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

Table 4.4.1 Academic Performance in Second Year

Academic Performance	**CAYm2 (2019-20)**	**CAYm3 (2018-19)**	**LYG (2017-18)**
Mean of CGPA or Mean Percentage of all successful students (X)	7.30	6.59	6.48
Total no. of successful students (Y)	82.00	59.00	55.00
Total no. of students appeared in the examination (Z)	83.00	63.00	56.00
API = X* (Y/Z)	7.21	6.17	6.37

Average API [(AP1 + AP2 + AP3) / 3]: 6.58

Assessment [1.5*Average API]: 9.87

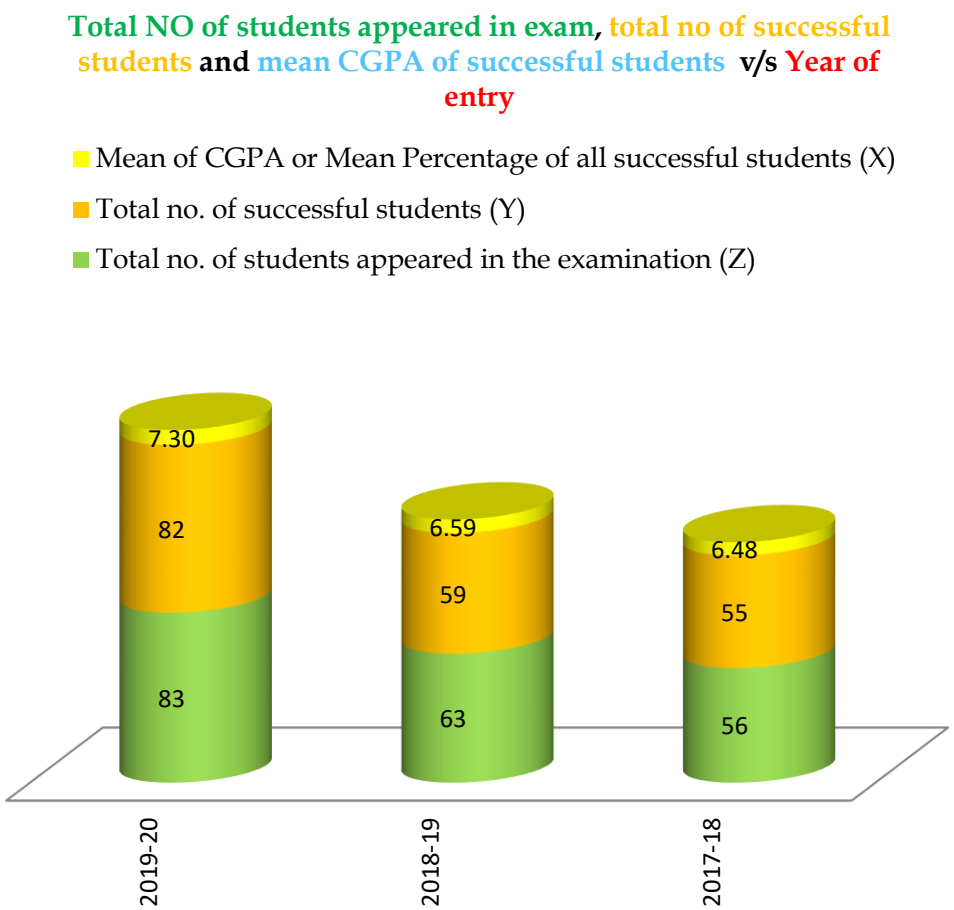


Fig. 4.4.1 Academic Performance in Second Year

4.5 Placement, Higher Studies and Entrepreneurship (40)

Table 4.5.1 Placement, Higher Studies and Entrepreneurship

Item	LYG (2017-18)	LYGm1 (2016-17)	LYGm2 (2015-16)
Total No. of Final Year Students (N)	53.00	62.00	68.00
No. of students placed in companies or Government Sector (x)	30	34	28
No. of students admitted to higher studies with valid qualifying scores (GATE or equivalent State or National Level Tests, GRE, GMAT etc.) (y)	0	4	4
No. of students turned entrepreneur in engineering/technology (z)	0	3	0
x + y + z =	30	41	32
Placement Index : [(x + y + z)/N]	0.57	0.66	0.47

Average Placement [(P1 + P2 + P3)/3]: 0.57

Assessment [40 * Average Placement]: 22.64

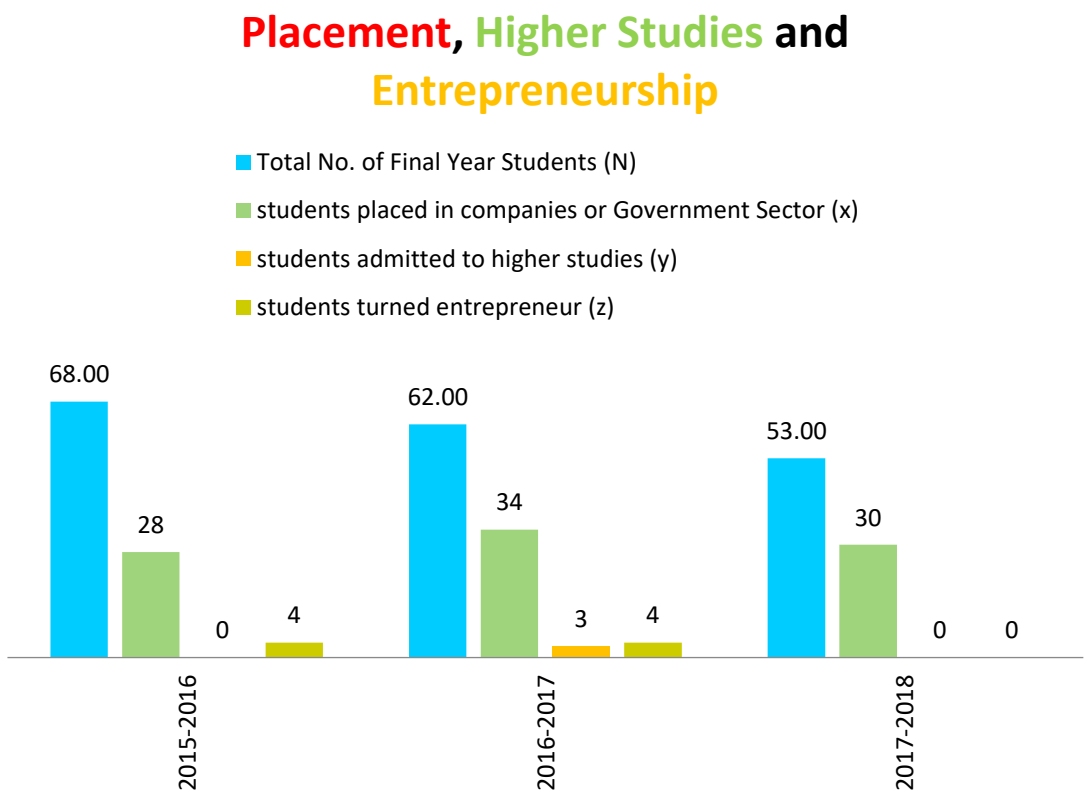


Fig. 4.5.1 Placement, Higher Studies and Entrepreneurship

Table 4.5.2 Placement, Higher Studies and Entrepreneurship for Assessment Year LYG

Sr. No	Student Name	Enrollment No	Employee Name	Appointment No.
1	Bhut Deep Bhikhubhai	170310105002	Aalidhra Pharmachem Private Limited	Nil Date: 01-March-2021
2	Chavda Rahul Mashribhai	170310105004	Meghmani Organics Limited (Sez I)	MOL/HR/11032/2021 Date: 13-Sep-2021
3	Chhuchhar Aala Khimabhai	170310105005	Meghmani Organics Limited (Sez I)	MOL/HR/11030/2021 Date: 07-Sep-2021
4	Dhaval Hemant Paljibhai	170310105009	Prism Johnson Limited	Employee No: 2095012 Company Offer Letter Date: 08-Jun-2021
5	Gohel Jay Jagdishbhai	170310105012	Apprentice Trainee Aarti Industries Limited, Jhagadia Unit	Mailed from HR Date:13-Nov-2021
6	Kanani Maulik Jayshukhbhai	170310105020	Bizotic Life Science	BZ/HR/offer/08/2021 Date: 20-Feb-2021
7	Kandoriya Kirit Sanjaybhai	170310105021	Gujarat Credo Alumina Chemicals Pvt. Ltd. (Gcacpl)	GCACPL/HR/227 Date: 05-Oct-2021

Sr. No	Student Name	Enrollment No	Employee Name	Appointment No.
8	Kanzariya Kishan Lalji	170310105022	Kutch Chemical Industries Limited	Nil Date: 11-Oct-2021
9	Laladiya Niraj Kaushikbhai	170310105026	Gujarat Credo Alumina Chemicals Pvt. Ltd. (Gcacpl)	GCACPL/HR/221 Date: 23-Sep-2021
10	Lunagariya Ketan Maganbhai	170310105027	Raccon Utility Services	Nil Date: 29-July-2021
11	Maru Keval Maganbhai	170310105030	Prism Johnson Limited	Employee No: 2095000 Company Offer Letter Date: 01-Jun-2021
12	Maru Malaykumar Ashokbhai	170310105031	Aalidhra Pharmachem Private Limited	Nil Date: 19-July-2021
13	Mer Niravkumar Mukeshbhai	170310105033	Technichem Organics Pvt. Ltd.	Nil Date: 15-Nov-2021
14	Nakum Jay Dineshbhai	170310105034	Unimark Remedies Limited	Nil Date: 07-Jan-2022
15	Parmar Bhargavkumar Bhupatbhai	170310105038	Prism Johnson Limited	Employee No: 2095013 Company Offer Letter Date: 01-Jun-2021
16	Rathod Shaileshsinh Angitsinh	170310105043	Deedy Chemicals Private Limited - Wgjahp000654	Apprenticeship Date: 01-Aug-2021
17	Sherasiya Dhavalkumar Vinodbhai	170310105046	Diamines Quality Driven	DACL/P&A/2021 Date: 11-Aug-2021
18	Sisangia Piyush Harsukhbhai	170310105049	Prism Johnson Limited	Employee No: 2095016 Company Offer Letter Date: 01-Jun-2021
19	Sonagara Vipulkumar Ranchhodbhai	170310105052	Neogen Chemicals Limited (E02212400117)	Apprenticeship Date: 15-Dec-2021
20	Sonagra Yash Bhojabhai	170310105053	Meghmani Organics Limited (Sez I)	MOL/HR/11028/2021 Date: 05-Aug-2021
21	Vaghasiya Dipen Kishorbhai	170310105056	Meghmani Finechem Ltd.	MFL/Offer/CA/2021 Date: 14-Aug-2021
22	Vansh Vishal Kanabhai	170310105057	Epp Composites.Private Limited Piping Division	EPP/HR/Offer/September/2021 Date. 28-Sep-2021
23	Chhapara Deep Ramanikbhai	180313105002	Prism Johnson Limited	Employee No: 2094998 Company Offer Letter Date: 08-Jun-2021
24	Mishra Rahul Amardev	180313105013	Witmans Industries Pvt Ltd	Nil Date: 06-Dec-2021
25	Zalavadiya Jeet Dineshbhai	180313105023	Bizotic Life Science	BZ/HR/offer/09/2021 Date: 20-Feb-2021

Sr. No	Student Name	Enrollment No	Employee Name	Appointment No.
26	Parmar Aakash Arvindbhai	180313105015	Atul Limited WGJBRP000054	Apprenticeship Date: 14-Feb-2022
27	Khandhar Rajesh Jamanbhai	180313105008	Meck Pharmaceuticals & Chemicals Pvt. Ltd.	Nil Date: 22-April-2022
28	Gojiya Arjun Karabhai	170310105014	Lockrashak	Selection List
29	Javaiya Pratikkumar Jayantilal	170310105017	Guru Ashish Pharma Chem PVT LTD.	Nil Date: 21-July-2021
30	Kukadiya Maheshbhai Gordhanbhai	170310105025	PSI	Selection List

Table 4.5.3 Placement, Higher Studies and Entrepreneurship for Assessment Year LYGm1

Sr. No	Student Name	Enrollment No	Employee Name	Appointment No.
1	Ankleshvariya Kishan Bharat	160310105001	Faculty Of Technology & Engineering(Msu), Vadodara (M.E In Petrochemical Engg)	Marksheet Of Semester 01 And Admission Letter
2	Barad Siddharaj Hitendrabhai	160310105002	Ami Lifescience Pvt. Ltd.	Ref: ALPL/ HR/PGT/OFR/331/2022 Date:11-Feb-2022
3	Barvaliya Mayurkumar Vinubhai	160310105003	Meghmani	MP/HR/OFFER/2021 Date: 06-Jan-2021
4	Dhaduk Ostin Kantibhai	160310105005	Vasoya Industries Pvt. Ltd.	VIPL/023/21-22 Date:28-Dec-2020
5	Gajera Dhruminkumar Maheshbhai	160310105008	Scientific Life Science	NIL Date: 21-Jan-2021
6	Gamit Rahulkumar Jitubhai	160310105010	Realcade Life Science Pvt Ltd.	Pay Slip for Month March 2021
7	Gohel Akshay Jaman	160310105011	Sun Pharmaceutical Ltd	YAS/DJ/105 Date: 07-April-2021
8	Gohil Yashpalsinh Kiritsinh	160310105013	Assistant Branch Postmaster	Salary Slip November 2021
9	Kakadiya Nikunj Kalubhai	160310105016	Ion Exchange (India) Ltd	Pay Slip for Month Dec 2020
10	Kanpara Jatin Manojbhai	160310105017	Cmk Electropower Pvt. Ltd.	NIL Date: 09-Nov-2020
11	Kanzariya Bhimji	160310105018	Yashashvi Rasayan Pvt. Ltd.	REF:/YRPL/HR/2021/23 Date: 23-March-2021
12	Karangiya Ravi Naranbhai	160310105019	Gokul Agro Resources Limited	Company Mail Date:08-Aug-2020
13	Keshwala Bharat Rajubhai	160310105021	Team Lease Services Limited	NIL Date: 12-Feb-2021

Sr. No	Student Name	Enrollment No	Employee Name	Appointment No.
14	Khunti Rajasi Ramde	160310105023	Gokul Agro Resources Limited	Company Mail Date:08-Aug-2020
15	Lambhiya Rahul Pragjibhai	160310105024	Panama Petrochem Ltd.	NIL Date: 01-April-2021
16	Mangukiya Kishankumar Pravinbhai	160310105028	G.C. Cera Tiles	Visiting Card (MD)
17	Meetkumar Chaudhari	160310105030	Environmental Technician - Filed Laboratory Niagara College Canada	Admission Letter Niagara College Canada and IELTS Result Visa
18	Mehta Shaleen Mukeshbhai	160310105031	Prorener Engineering Consultants Private Limited	NIL Date: 07-Jun-2021
19	Murani Viraj	160310105032	Evershine Overseas	Visiting Card (MD)
20	Parmar Mehul	160310105036	Sun Pharmaceutical Ltd	YAS/DJ/105 Date: 07-April-2021
21	Patel Rohan Kamleshbhai	160310105040	Concord Biotech Limited	CBL/APP/20-21/EC-2900 Date: 21-Dec-2020
22	Patel Romil Vinodchandra	160310105041	Zydus	CHL/DBH-API/HRSS/OFFER/20/ZYDUS3659 Date: 08-Oct-2020
23	Patel Yash Jayantibhai	160310105042	Yashashvi Rasayan Pvt. Ltd.	REF:/YRPL/HR/2021/23 Date: 23-March-2021
24	Pethani Ajay Dineshbhai	160310105044	Aashary Chemo Pharma	NIL Date: 25-Nov-2020
25	Rajkotiya Dhumit Jayantilal	160310105045	Kishan Wealth Management Pvt. Ltd.	Visiting Card (MD)
26	Rami Manishbhai Haribhai	160310105047	Aarti Industries Limited Anushakti Division (E05202400028)	Apprenticeship Contract (CN012107014)
27	Sejal Rathod	160310105050	Faculty Of Technology & Engineering (Msu), Vadodara (M.E In Polymer Technology)	Marksheet Of Semester 01 And Admission Letter
28	Sherasiya Divyeshkumar Pravinbhai	160310105052	Bizotic Life Science	BZ/HR/OFFER/11/2021 Date: 20-Feb-20221
29	Vadgama Viral Kiritbhai	160310105055	Meck Pharmaceuticals & Chemicals. Pvt. Ltd.	NIL Date: 29-Oct-2020

Sr. No	Student Name	Enrollment No	Employee Name	Appointment No.
30	Vasava Bhupendrabhai Jitendrabhai	160310105057	Jr. Engineer Detox Operation Extreme Engineering & Technology Consulant Llp	NIL Date: 19-March-2021
31	Jadav Vishal Premjibhai	170313105005	Indo Amines Limited	Nil Date: 01-Nov-2021
32	Kagathara Kishankumar Karubhai	170313105006	Pranav Chemicals	Nil Date: 27-April-2021
33	Makwana Khushal Krushnkant	170313105008	Deedy Chemicals Pvt.	NIL Date: 16-Jan-2021
34	Parmar Gaurav Hasmukhbhai	170313105009	Meghmani Organics Limited	REF:MOL/HR/15186/2021 Date: 22-Feb-2021
35	Parmar Sachin Sanjaybhai	170313105010	Meghmani Organics Limited	REF:MOL/HR/15187/2021 Date: 22-Feb-2021
36	Prajapati Banty Manharbhai	170313105011	Vishwakarma Government Engineering College (M.E. In Chemical Engineering)	Marksheet Of Semester 01 And Admission Letter
37	Rathod Chandresh Govind	170313105012	Solaris Chemtech Industries Limited	Pay Slip for Month Oct 2020
38	Ravi Ranjan	170313105014	Unimark Remedies Limited	Nil Date: 27-Sep-2021
39	Siddhapura Yash Prakashbhai	170313105015	Bizotic Life Science	BZ/HR/OFFER/10/2021 Date: 20-Feb-2021
40	Vaghela Aakash Rameshbhai	170313105017	Capgemini Ref: 4633693/844125	Employment Offer Letter Date: 16-Jun-2021
41	Valand Bhargavbhai Bharatbhai	170313105019	Shriram Alkali And Chemicals	Apprenticeship Contract (WGJBRP000043)

Table 4.5.4 Placement, Higher Studies and Entrepreneurship for Assessment Year LYGm2

Sr. No	Student Name	Enrollment No	Employee Name	Appointment No.
1	Chavda Hardas Alabhai	150310105007	Indo Amines Limited	IAL/2020-21/101140/021 Date: 24-Feb-2020
2	Chovatiya Bhautik Laxmidas	150310105008	Basic International	Nil Date: 26-Dec-2020
3	Detroja Vishal Harakhjibhai	150310105011	Apothecon Pharmaceuticals Pvt. Ltd	Nil Date: 03-Feb-2020
4	Gohil Vimal Maheshbhai	150310105020	Faculty Of Technology & Engineering (MSU), Vadodara (M.E In Polymer Technology)	Marksheet of semester 01
5	Gojiya Himat Ramsibhai	150310105021	Indo Amines Limited	IAL/2020-21/101140/022 Date: 24-Feb-2020
6	Jethloja Himanshu Bharatbhai	150310105024	Meghmani Organics Limited	Salary slips month of Feb 2021
7	Kadavala Mitesh Devshibhai	150310105025	Bharat Rashayan Limited	BRL: HR DAHEJ 2020:11:26 Date: 19-Nov-2020
8	Kadthiya Bhaveshkumar Keshubhai	150310105026	Unimark Remedies Ltd. Vapi	Nil Date: 19-Nov-2020
9	Kalavadiya Hitarth Dineshbhai	150310105027	Gopal Snacks Pvt. Ltd.	Salary slips month of Jan 2021
10	Karangiya Vanitkumar Jagmalbhai	150310105031	Matangi Industries LLP	MILLP/HR/2020-21/AMD23 Date:15-Dec-2020
11	Karena Dilipkumar Bhikhubhai	150310105032	Bharat Rashayan Limited	BRL: HR DAHEJ 2020:11:27 Date:19-Nov-2020
12	Mokariya Bharat Parsotambhai	150310105035	Sterling Biotech Ltd	SGL/I/07/2019/285 Date: 24-Sep-2019
13	Nagani Bhadresh	150310105036	Sterling Biotech Ltd	SGL/I/07/2019/220 Date:12-July-2019
14	Panchal Nikhilkumar Rajnikantbhai	150310105039	M.S. Programme In IIT Madras	CHE ADMS/JULY 2020/MS/08 Date: 29-July-2020
15	Patel Anilkumar Natavarbhai	150310105040	Deedx Chemicals Pvt. Ltd.	Nil Date: 01-July-2021
16	Patel Meetkumar Dineshbhai	150310105041	Panoli Intermediates (India) Pvt. Ltd.	Nil Date: 27-July-2019
17	Patel Viralkumar Rakeshbhai	150310105042	IELTS Result 052353/ Petroleum Engineering	Admission Letter Southern Alberta Institute Of Technology and IELTS Result Visa

Sr. No	Student Name	Enrollment No	Employee Name	Appointment No.
18	Postariya Deepak Ranmalbhai	150310105044	Matangi Industries LLP	MILLP/HR/2020-21/AMD23 Date:15-Dec-2020
19	Sorathiya Sanket Hemrajbhai	150310105047	Shreyans water engineers,	Nil Date: 22-Jun-2019
20	Savaliya Ravikumar Parashotambhai	150310105050	Panoli Intermediates (India) Pvt. Ltd.	Nil Date: 02-July-2020
21	Sojitra Jaydeep Kamleshbhai	150310105052	Ion Exchange Refreshing The Plant	HO/COM/SS Date: 24-Sep-2020
22	Tarangkumar Narendrakumar Patel	150310105055	Concord Biotech Limited	CBL/T-APP/19-20/EC-2673 Date: 06-Feb-2020
23	Vadsola Mitul Laljibhai	150310105058	Meghmani Organics Limited	Mol/HR/151296/2020 Date: 16-March-2020
24	Vala Dravid Kacharabhai	150310105060	GSCL : Sidheegram	APPRENTICESHIP UNDER ACT 1961 Date: 22-Oct-2020
25	Dhandhukiya Sunilkumar Bharatbhai	160313105003	Madhu Silica Pvt. Ltd	MSPL/2019-20 Date: 01-Aug-2019
26	Goswami Janvi Bipingiri	160313105004	Feedchem Inc.	Nil Date:18-May-2019
27	Parmar Haresh Madhavji	160313105010	Nirma Limited	Ref: 8001003OLTR2001000027 Date: 08-Jan-2020
28	Patel Meetkumar Brijeshbhai	160313105011	Panoli Intermediates (India) Pvt. Ltd.	Nil Date: 27-July-2019
29	Prajapati Vijaykumar Tuljaram	160313105012	Neogen Chemicals Limited	Nil Date:27-Feb-2021
30	Shukal Rushit Kirtikumar	160313105013	Madhu Silica Pvt. Ltd.	Nil Date: 01-Sep-2020
31	Yadav Abhishek Ramlot	160313105017	Madhu Silica Pvt. Ltd.	Nil Date:27-Jan-2020
32	Ramani Nikunj Hareshbhai	150310105045	Glenmark Life Science	Nil Date: 21-Oct-2021

4.6 Professional Activities (20)

4.6.1 Professional societies/ chapters and organizing engineering events (5)

Chemical engineering department has started Indian Institute of Chemical Engineers (IIChE) students' chapter in the year 2011. Currently 27 (twenty-seven) students are members of IIChE student's chapter, refer Table 4.6.1.1 for further details. The primary objective of a students' chapter is to provide the students with an opportunity to enrich their knowledge concerning a diverse range of domains, inculcating the sense of responsibility and enhancing their potential. The chemical student society stands to gain a lot from the initiatives of the chapter. The student

chapters guide its members in career choice and arrange lectures, seminars, short term courses, plant visits, etc., at regular intervals. Please find below mentioned activities of the Students' Chapter organized in chemical engineering department.

- To arrange excursions and plant visits of interest to the student chemical engineers
- To assist and guide student chemical engineers in their career planning and placement
- To assist any other activities of social, technical and educational interest to members
- Expert Lectures/project fair were organized as given in Table 4.6.1.2 below by chemical engineering department under IIChE student chapter

Table 4.6.1.1 No. of students joined the IIChE students' chapter

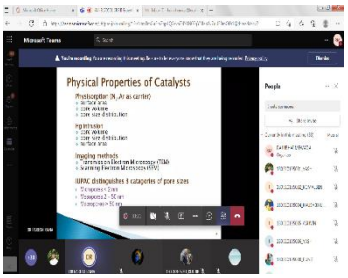
Sr. No.	Membership No.	Name	Student Members Till	D.O.B.
1	SM-71259	Gusai Kaunikpuri Vimalpuri	2025	21/09/2003
2	SM-71260	Gorfad Jaydip Rajubhai	2024	12/11/2002
3	SM-71261	Rathod Aniket Bhavasinh	2025	26/07/2003
4	SM-71262	Makwana Yash Dineshbhai	2025	11/10/2002
5	SM-71263	Deep Rameshbhai Khunt	2025	07/02/2003
6	SM-71264	Dabhi Hardik Ghanashyambhai	2025	10/10/2001
7	SM-71265	Meet Babariya	2025	28/11/2002
8	SM-71266	Parmar Ajaysinh Kesharisinh	2024	12/01/2003
9	SM-71267	Khunt Bhargav Shaileshbhai	2023	08/03/2002
10	SM-71268	Pansuriya Dhruvin Kamleshbhai	2023	18/08/2002
11	SM-71269	Vaghasiya Gaurav Manishbhai	2025	10/12/2002
12	SM-71270	Hingu Gautamkumar Sureshbhai	2025	28/10/2001
13	SM-71271	Hadiyal Shani Nileshbhai	2024	27/04/2003
14	SM-71272	Pankhaniya Gunjan A	2025	16/07/2003
15	SM-71273	Suhagiya Het Bhupendrabhai	2025	05/06/2003
16	SM-71274	Patel Harniskumar Maheshkumar	2024	29/10/2002
17	SM-71275	Patel Yatinkumar Bhailalbhai	2025	12/09/2002
18	SM-71276	Patel Yash Rakeshbhai	2025	12/09/2002
19	SM-71277	Vainsh Ronit	2025	25/02/2003
20	SM-71278	Sakariya Divyam Rameshbhai	2025	18/07/2003
21	SM-71279	Jayesh Lakhaman Bhai Karmur	2024	10/11/2002
22	SM-71280	Himanshu Singh Dharmendra	2025	08/11/2001
23	SM-71281	Valand Rishabh Shambhubhai	2024	07/10/2002
24	SM-71282	Kamani Parth Chandubhai	2025	27/12/2002
25	SM-71283	Krunal Raval	2025	29/09/2002
26	SM-71284	Raiyani Daxit	2025	19/10/2002
27	SM-71285	Rutvik Zalavadiya	2025	09/09/2002

Table 4.6.1.2 Expert Lectures/project fair were organized by department under IIChE student chapter

Sr. No	Topic of Expert Lecture	Date	Resource person with Designation	Organized by Chemical Department Faculty
1	Role of optimization in process control	09/03/2021	Dr. Nitin Padhiyar Assistant Professor IIT Gandhinagar	Dr. S. A. Amin & Prof. S.S. Patel
2	Role of optimization in engineering	10/03/2021	Dr. Nitin Padhiyar Assistant Professor IIT Gandhinagar	Dr. S. A. Amin & Prof. S.S. Patel
3	Catalyst characterization	21/09/2021	Dr. P. H. Rana Professor LDCE, Ahmedabad	Dr. R. K. Mewada
4	Energy balance in chemical process industries	01/12/2021	Prof. Shuchen Thakore Associate Professor VGEC, Chandkheda	Dr. S. A. Amin & Prof. S.S. Patel
5	Design engineering project fair	27/09/2021	5th semester students	Chemical engineering department
6	Mecabe-Thiele method for distillation	09/03/2022	Dr. S. R. Shah Assistant Professor LDCE, Ahmedabad	Prof. D. K. Mehta
7	Air pollution and control	01/04/2022	Dr. Sudhil Korgaokar Assistant Professor VVP, Rajkot	Dr. A. D. Baldania
8	Programming Language for Chemical Engineering Computation (PMRF)	01/04/2022 to 23/04/2022 (06 Hrs per week)	Surbhi Khewle (PhD Scholar)	Dr. S. A. Amin Prof. D. K. Mehta Prof. S. S. Patel

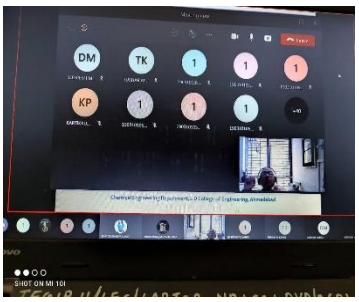
Role of optimization in process control 09.03.2021

Role of optimization in engineering 10.03.2021

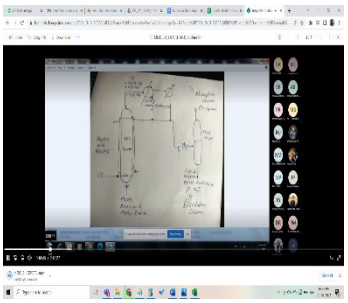


Catalyst characterization 21.09.2021

Design engineering project fair 27.09.2021

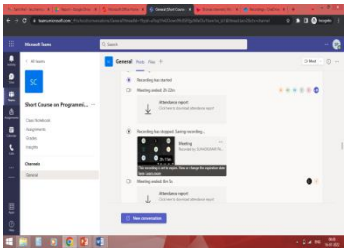


Energy balance in chemical process 01.12.2021



Mecabe-Thiele method for distillation 09.03.2022

Air pollution and control Computation (PMRF) 01.04.2022 to 23.04.2022



Programming Language for chemical engineering 01.04.2022

Fig. 4.6.1.1Glimpse of Expert Lectures/project fair were organized by department under IIChE student chapter

The Professor, Associate Professor and Assistant Professor of Chemical Engineering department are also life time members in the various professional body are given in Table 4.6.1.3

Table 4.6.1.3 No. of faculty life time members in the various professional society

Sr. No.	Name of Faculty	Designation	Professional Society	Member since (YEAR)	Membership Number
01	Dr. R. K. Mewada	Professor	Indian Institute of Chemical Engineers (IIChE)	2004	24218
02	Dr. R. K. Mewada	Professor	Indian Society for Technical Education (ISTE)	2001	33019
03	Prof. D. K. Mehta	Assistant Professor	Indian Society for Technical Education (ISTE)	2012	83166

Sr. No.	Name of Faculty	Designation	Professional Society	Member since (YEAR)	Membership Number
04	Prof. A. D. Baldania	Assistant Professor	Indian Institute of Chemical Engineers (IIChE)	2014	50985
05	Prof. A. D. Baldania	Assistant Professor	Indian Society for Technical Education (ISTE)	2010	73340
06	Prof. A. D. Baldania	Assistant Professor	The Institute of Engineers India (IEI)	2012	100321
07	Prof. A. D. Kalariya	Assistant Professor	The Institute of Engineers India (IEI)	2020	1700375
08	Prof. A. D. Kalariya	Assistant Professor	Indian Institute of Chemical Engineers (IIChE)	2020	70784
09	Prof. A. D. Kalariya	Assistant Professor	Indian Society for Technical Education (ISTE)	2012	83165
10	Prof. G. D. Vegad	Assistant Professor	Indian Society for Technical Education (ISTE)	2007	53070
11	Dr. S. A. Amin	Associate Professor	Indian Society for Technical Education (ISTE)	2019	126738

4.6.2 Publication of technical magazines, newsletters, etc. (5)

The chemical engineering department is publishing newsletter “LECCHEMNEWS” at every six months from the even semester of the academic year 2020-21 "LECHEMNEWS" provide details for students and faculties academic achievements. Along with this it also includes the academic excellence achieved by faculty members in their respective research area; expert lectures arranged by the department on various topics; and academic performance of students in respective academic year.

To highlight technical events department also publish technical magazine “CATALYSIS” in the academic year 2020-21. In conjunction with other technical matter, magazine considered the abstracts of project reports; and the poster made by students during the project fair; and technical articles prepared by students.

Team of students and faculty members’ work together for the publication of the newsletter and technical magazine. The newsletter and technical magazine have been e-published on the Principal Email, official social media groups of the college, college website and also circulated among the faculty members and stake holders. Whereas, it is published and circulated via social media accounts of students and alumni regularly. Table 4.6.2.1 represent details of the newsletter and technical magazines published in the academic year 2020 to 2022

Table 4.6.2.1 Details of the newsletter and technical magazines published

Sr. No	Volume and Issue	Technical content period	Month & Year	Link	Remark
01	Volume 01 Issue 01	July 2020 to Dec 2020	March 2021	https://drive.google.com/file/d/1uVgGc-hQrQSrAemBTyOlxxbpC7aiBLXL/view?usp=sharing	Newsletter
02	Volume 02 Issue 01	Jan 2021 to June 2021	Oct 2021	https://drive.google.com/file/d/1t9q-YRGgEBGJLdDSJpRKu-SLCNZ0CjJ3/view	Newsletter
03	Volume 01 Issue 01	Jan 2021 to June 2021	Aug 2021	https://drive.google.com/file/d/1S0-4M97EFFpxW4hC7U0hHrqJGS7IINiL/view?usp=sharing	Technical Magazine
04	Volume 03 Issue 02	July 2021 to Dec 2021	April 2022	https://drive.google.com/file/d/1NWR68WP1OZL4LnU0DZo7k84AzlLzezyp/view?usp=sharing	Newsletter
05	Volume 01 Issue 02	July 2021 to Dec 2021	April 2022	https://drive.google.com/file/d/1faA_02MPFABuu69Y750xW-k7F0whg5TJ/view?usp=sharing	Technical Magazine

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

Students have been participated in online or offline internship program. Refer below mentioned objectives for the internship program. Additionally, Table 4.6.3.1 represents the list of students participated in online internship program.

- Assist the students' development of employer-valued skills such as teamwork, communications and attention to learn Engineer's responsibilities and ethics
- Enhance and/or expand the students' knowledge of a particular area(s) of skill
- Expose the student to professional role models or mentors who will provide the student with support in the early stages of the internship and provide an example of the behavior's expected in the intern's workplace
- To familiarize with various materials, processes, products and their applications along with relevant aspects of technology and troubleshooting
- To know about the particular industry and its operation, products specification and market value
- To gain experience in writing technical project reports

Table 4.6.3.1 No. of students participated in various Online Internship Program-2021 (OIP-2021) at Indian Institute of Chemical Engineers Kolkata

Sr. No.	Enrolment No	Student Name	Name of Event	Date
1	180310105004	Barajya Kaushikkumar Hasmukmshaj	PRE	15-July to 30-Aug, 2021

Sr. No.	Enrolment No	Student Name	Name of Event	Date
2	180310105005	Baroliya Ashvin Chandubhai	PRE	15-July to 30-Aug, 2021
3	180310105014	Chaudhary Dhavalbhai Hirabhai	PRE	15-July to 30-Aug, 2021
4	180310105015	Chauhan Dhaval Rameshbhai	PRE	15-July to 30-Aug, 2021
5	180310105018	Dabhi Mansukh Kalabhai	CPT	10-Jun to 20-July, 2021
6	180310105021	Gohil Princekumar Chhatrasinh	PRE	15-July to 30-Aug, 2021
7	180310105022	Gohil Tarunkumar Fatesinh	PRE	15-July to 30-Aug, 2021
8	180310105024	Hadiya Parth Vajubhai	PRE	15-July to 30-Aug, 2021
9	180310105042	Patel Zils Manojbhai	PRE	15-July to 30-Aug, 2021
10	180310105045	Prajapati Prajalben Shantilal	PRE	15-July to 30-Aug, 2021
11	180310105047	Purohit Darshan Bipinbhai	PRE	15-July to 30-Aug, 2021
12	190313105008	Tikariya Dhruvin Rajendra Kumar	PRE	15-July to 30-Aug, 2021

Petroleum Refinery Engineering (PRE), Chemical Process Technology (CPT)

Students of chemical engineering department have been participated in various technical and non-technical activities to enhance their knowledge and managerial skills. The technical events considered conferences, workshop, mooc courses, competition etc. whereas non-technical events considered sports events, culture events and social activities etc. Table 4.6.3.2 represents bifurcation of students' participation in technical and no-technical activities at various levels such as college, state, zonal and national level. Furthermore, details activities are listed Table 4.6.3.3

Table 4.6.3.2 No. of students participated in various Technical and non-technical events

	2019-20	2020-21	2021-22
State level	5	9	2
Zonal level	8	0	0
National level	74	34	27
Participation	1	1	2
Courses	2	2	1
Total	90	46	32

Table 4.6.3.3 Details of students participated in various Technical and non-technical events

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
1	170310105048	Shukla Vedant Ashvinbhai	Talk on Topic	How to Gain Experience and Poket Money While in College	Internshala Student Partner 15 Program	10-Jan-20	Participation	2019-20
2	180313105002	Chhapara Deep Ramanikbhai	Digital Learning Hub	Carrer Edge - Knockdown the Lockdown	TATA Consultancy Services	07-Apr-2020 to 17-Apr-2020	Courses	2019-20
3	170310105012	Gohel Jay Jagdishbhai	Gujarat Student Startup and Innovation Policy	Smart Gujarat for New India Hackathon 2019-20	Atmiya University, Rajkot	24-Feb-2020 to 25-Feb-2020	National Level	2019-20
4	170310105051	Sonagara Nihal Vijaybhai	Gujarat Student Startup and Innovation Policy	Smart Gujarat for New India Hackathon 2019-20	Atmiya University, Rajkot	24-Feb-2020 to 25-Feb-2020	National Level	2019-20
5	170310105051	Sonagara Nihal Vijaybhai	Footprintsx10	Imprints	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	21-Feb to 23-Feb-2020	National Level	2019-20
6	170310105051	Sonagara Nihal Vijaybhai	Footprintsx10	Broken Floats	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	21-Feb to 23-Feb-2020	National Level	2019-20
7	170310105051	Sonagara Nihal Vijaybhai	Footprintsx10	Chemaze	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	21-Feb to 23-Feb-2020	National Level	2019-20

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
8	190313105005	Solanki Divyesh Maheshbhai	Techkshetr '20	Attending the seminar "The New World"	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
9	190313105005	Solanki Divyesh Maheshbhai	Techkshetr '20	Binary Brain a Technical	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
10	190313105005	Solanki Divyesh Maheshbhai	Techkshetr '20	Rifle Shooting a Sports	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
11	190313105005	Solanki Divyesh Maheshbhai	Techkshetr '20	Battle Ground a Non-Technical	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
12	190313105005	Solanki Divyesh Maheshbhai	Centre for Consumer Studies, Indian Institute of Public Administration, New Delhi	Seminar on Consumer Protection and Empowerment in India	Rajkot Saher Jilla Grahak Suraksha Mandal, Rajkot	05-Feb-2020 and 06-Feb-2020	National Level	2019-20
13	190313105005	Solanki Divyesh Maheshbhai	Techkshetr '20	Jungle War a Non-Technical	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
14	190313105008	Tikariya Dhruvin Rajendrakumar	Techkshetr '20	Rifle Shooting a Sports	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
15	190313105008	Tikariya Dhruvin Rajendrakumar	Techkshetr '20	Jungle War a Non-Technical	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
16	190313105008	Tikariya Dhruvin Rajendrakumar	Techkshetr '20	Battle Ground a Non-Technical	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
17	190313105008	Tikariya Dhruvin Rajendrakumar	Techkshetr '20	Binary Brain a Technical	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
18	190313105008	Tikariya Dhruvin Rajendrakumar	Techkshetr '20	Attending the seminar "The New World"	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
19	180310105001	Ambani Yash Arvindbhai	Technothon 2020	Bingo Banziga	VVP Engineering College, Rajkot	11-Feb-20	National Level	2019-20
20	180310105001	Ambani Yash Arvindbhai	Technothon 2020	Apticulture	VVP Engineering College, Rajkot	11-Feb-20	National Level	2019-20
21	180310105014	Chaudhary Dhavalbhai Hirabhai	Paramarsh 2019	Inquizitive	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
22	180310105014	Chaudhary Dhavalbhai Hirabhai	Paramarsh 2019	Rocketry	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
23	180310105014	Chaudhary Dhavalbhai Hirabhai	Paramarsh 2019	Wall - E - Ball	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
24	180310105014	Chaudhary Dhavalbhai Hirabhai	Paramarsh 2019	The False Perception	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
25	180310105014	Chaudhary Dhavalbhai Hirabhai	Paramarsh 2019	Battledore	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
26	180310105014	Chaudhary Dhavalbhai Hirabhai	Paramarsh 2019	3D Printing	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
27	180310105015	Chauhan Dhaval Ramesh	Paramarsh 2019	Inquizitive	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
28	180310105015	Chauhan Dhaval Ramesh	Paramarsh 2019	Rocketry	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
29	180310105015	Chauhan Dhaval Ramesh	Paramarsh 2019	Wall - E - Ball	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
30	180310105015	Chauhan Dhaval Ramesh	Paramarsh 2019	The False Perception	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
31	180310105015	Chauhan Dhaval Ramesh	Paramarsh 2019	Battledore	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
32	180310105015	Chauhan Dhaval Ramesh	Paramarsh 2019	3D Printing	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
33	180310105021	Gohil Princekumar Chhatrasinh	Gtu Zonal Techfest 2020	Laser Warfare 3.0	HJD Institure of Technical Education and Research	13-Feb-2020 and 14-Feb-2020	Zonal Level	2019-20
34	180310105022	Gohil Tarunkumar Fatesinh	Gtu Zonal Techfest 2020	Laser Warfare 3.0	HJD Institure of Technical Education and Research	13-Feb-2020 and 14-Feb-2020	Zonal Level	2019-20
35	180310105023	Goswami Dixit Hareshgiri	Digital Learning Hub	Presentation Skill	TATA Consultancy Services	03-May-2020 to 05-May-2020	Courses	2019-20
36	180310105023	Goswami Dixit Hareshgiri	The International Association For Chemical Safety	Spillage Response Awareness Training	The Knights of Safety	13-May-20	National Level	2019-20
37	180310105023	Goswami Dixit Hareshgiri	The International Association For Chemical Safety	COSHH Hazard Communication Awareness	The Knights of Safety	11-May-20	National Level	2019-20
38	180310105023	Goswami Dixit Hareshgiri	The International Association For Chemical Safety	The Safety Data Sheet Awareness Certification	The Knights of Safety	11-May-20	National Level	2019-20
39	180310105023	Goswami Dixit Hareshgiri	Agcs Safety Training	Hazard Assessment Pro.	Cwhalen	6-May-20	National Level	2019-20
40	180310105023	Goswami Dixit Hareshgiri	Capability Development	Industrial Water System	TATA STEEL	24-Apr-20	National Level	2019-20
41	180310105036	Nakum Dipak Ratnabhai	Volunteer	Mega Job Fair Volunteer Rajkot	Lukhdhirji Engineering College, Morbi	06-Feb-2020 to 07--Feb-2020	State Level	2019-20
42	180310105036	Nakum Dipak Ratnabhai	Gujarat Student Startup And Innovation Policy	Smart Gujarat for New India Hackathon 2019-20	Atmiya University, Rajkot	24-Feb-2020 to 25-Feb-2020	National Level	2019-20
43	180310105036	Nakum Dipak Ratnabhai	Startup Sathi Webinar Series	Idea to Market; The Design Journey	I-Hub, Gujarat	31-May-20	National Level	2019-20
44	180310105040	Parmar Vipul Ghanshyambhai	Technothon 2020	Bingo Banziga	VVP Engineering College, Rajkot	11-Feb-20	State Level Symposium	2019-20
45	180310105040	Parmar Vipul Ghanshyambhai	Technothon 2020	Flip Flap Tic Toe	VVP Engineering College, Rajkot	11-Feb-20	State Level Symposium	2019-20

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
46	180310105040	Parmar Vipul Ghanshyambhai	Technothon 2020	Hit The Wicket	VVP Engineering College, Rajkot	11-Feb-20	State Level Symposium	2019-20
47	180310105040	Parmar Vipul Ghanshyambhai	Technothon 2020	Apticulture	VVP Engineering College, Rajkot	11-Feb-20	State Level Symposium	2019-20
48	180310105040	Parmar Vipul Ghanshyambhai	Gtu Zonal Techfest 2020	Paper Presentation	HJD Institure of Technical Education and Research	13-Feb-2020 and 14-Feb-2020	Zonal Level 3 rd position	2019-20
49	180310105025	Hirani Jaydeep Murji	Gtu Zonal Techfest 2020	Paper Presentation	HJD Institure of Technical Education and Research	13-Feb-2020 and 14-Feb-2020	Zonal Level 3 rd position	2019-20
50	180310105023	Goswami Dixit Hareshgiri	Gtu Zonal Techfest 2020	Paper Presentation	HJD Institure of Technical Education and Research	13-Feb-2020 and 14-Feb-2020	Zonal Level 3 rd position	2019-20
51	180310105046	Prajapati Vijaykumar Ramjibhai	Paramarsh 2019	Bizaurus	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
52	180310105046	Prajapati Vijaykumar Ramjibhai	Paramarsh 2019	Roe	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
53	180310105049	Raiyani Ronak Vijaybhai	Techkshetr '20	Alchemic Rush a Non-Technical	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
54	180310105058	Thummar Bhautik Bharatbhai	Techkshetr '20	Battle Ground a Non-Technical	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
55	180310105058	Thummar Bhautik Bharatbhai	Techkshetr '20	Alchemic Rush a Non-Technical	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
56	180310105058	Thummar Bhautik Bharatbhai	Techkshetr '20	Dialectic Assembly a Non-Technical	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
57	190313105002	Gadher Jaydeep Hiteshbhai	Centre For Consumer Studies, Indian Institute Of Public Administration, New Delhi	Seminar on Consumer Protection and Empowerment in India	Rajkot Saher Jilla Grahak Suraksha Mandal, Rajkot	05-Feb-2020 and 06-Feb-2020	National Level	2019-20
58	190313105002	Gadher Jaydeep Hiteshbhai	Techkshetr '20	Attending the seminar "The New World"	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
59	190313105002	Gadher Jaydeep Hiteshbhai	Techkshetr '20	Jungle War a Non-Technical	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
60	190313105002	Gadher Jaydeep Hiteshbhai	Techkshetr '20	Battle Ground a Non-Technical	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
61	190313105002	Gadher Jaydeep Hiteshbhai	Techkshetr '20	Binary Brain a Technical	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
62	190313105002	Gadher Jaydeep Hiteshbhai	Techkshetr '20	Rifle Shooting a Sports	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
63	190313105004	Patel Karn Hasmukhbhai	Paramarsh 2019	Inquizitive	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
64	190313105004	Patel Karn Hasmukhbhai	Paramarsh 2019	Wall - E - Ball	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
65	190313105001	Bajaniya Chirag Ratilal	Techkshetr '20	Rifle Shooting a Sports	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
66	190313105001	Bajaniya Chirag Ratilal	Techkshetr '20	Battle Ground a Non-Technical	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
67	190313105001	Bajaniya Chirag Ratilal	Techkshetr '20	Binary Brain a Technical	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
68	190313105001	Bajaniya Chirag Ratilal	Techkshetr '20	Jungle War a Non-Technical	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
69	190313105001	Bajaniya Chirag Ratilal	Techkshetr '20	Attending the seminar "The New World"	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
70	180310105059	Vadukar Sharad Mohanbhai	Gtu Zonal Techfest 2020	Laser Warfare 3.0	HJD Institure of Technical Education and Research	13-Feb-2020 and 14-Feb-2020	Zonal Level	2019-20
71	180310105059	Vadukar Sharad Mohanbhai	Event / Workshop	Virtual Estate	Sardar Vallabhbhai Patel Institute of Technology, Vasad	13-Feb-2020 to 14-Feb-2020	National Level	2019-20
72	180310105059	Vadukar Sharad Mohanbhai	Event / Workshop	Bigg Base	Sardar Vallabhbhai Patel Institute of Technology, Vasad	13-Feb-2020 to 14-Feb-2020	National Level	2019-20
73	180310105059	Vadukar Sharad Mohanbhai	Event / Workshop	Sherlock	Sardar Vallabhbhai Patel Institute of Technology, Vasad	13-Feb-2020 to 14-Feb-2020	National Level	2019-20
74	180310105059	Vadukar Sharad Mohanbhai	Event / Workshop	Artiphilia 5.0	Sardar Vallabhbhai Patel Institute of Technology, Vasad	13-Feb-2020 to 14-Feb-2020	National Level	2019-20

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
75	180310105059	Vadukar Sharad Mohanbhai	Paramarsh 2019	3D Printing	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
76	180310105047	Purohit Darshan Bipinbhai	Gtu Zonal Techfest 2020	Laser Warfare 3.0	HJD Institure of Technical Education and Research	13-Feb-2020 and 14-Feb-2020	Zonal Level	2019-20
77	180310105053	Rathod Tanishqa Kishor	Techkshetr '20	Rifle Shooting a Sports	Polytechnic, The Maharaja Sayajirao University of Baroda	14-Feb-2020 to 16-Feb-2020	National Level	2019-20
78	180310105006	Bavarva Yash Amrutlal	Technothon 2020	Bingo Banziga	VVP Engineering College, Rajkot	11-Feb-20	National Level	2019-20
79	180310105006	Bavarva Yash Amrutlal	Technothon 2020	Apticulture	VVP Engineering College, Rajkot	11-Feb-20	National Level	2019-20
80	180310105042	Patel Zilskumar Manojbhai	Gtu Zonal Techfest 2020	Laser Warfare 3.0	HJD Institure of Technical Education and Research	13-Feb-2020 and 14-Feb-2020	Zonal Level	2019-20
81	180310105042	Patel Zilskumar Manojbhai	Technothon 2020	Chess	VVP Engineering College, Rajkot	11-Feb-20	National Level	2019-20
82	170310105022	Kanzariya Kishan Lalji	Footprintsx10	Imprints	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	21-Feb to 23-Feb-2020	National Level	2019-20
83	170310105022	Kanzariya Kishan Lalji	Footprintsx10	Broken Floats	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	21-Feb to 23-Feb-2020	National Level	2019-20
84	170310105022	Kanzariya Kishan Lalji	Footprintsx10	Chemaze	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	21-Feb to 23-Feb-2020	National Level	2019-20

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
85	190310105053	Patel Deep Vijaybhai	Paramarsh 2019	Rocketry	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
86	190310105053	Patel Deep Vijaybhai	Paramarsh 2019	3D Printing	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
87	190310105053	Patel Deep Vijaybhai	Paramarsh 2019	Wall - E - Ball	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
88	190310105053	Patel Deep Vijaybhai	Paramarsh 2019	Inquizitive	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	20-Sep-2019 to 22-Sep-2019	National Level	2019-20
89	180310105038	Parmar Bhavesh Jagdishbhai	Webinar	Advanced Future Applications of Nuclear Energy: Space and Defence	Government Engineering College, Bharuch	16-Oct-20	National Level	2019-20
90	180310105038	Parmar Bhavesh Jagdishbhai	Technical Symposium	Zealot (Skill Devlopment & Logical + Aptitude Resoning)	B.H>Gardi College of Engineering & Technology	19-Feb-2020 and 20-Feb-2020	National Level	2019-20
91	170310105012	Gohel Jay Jagdishbhai	Gujarat Student Startup and Innovation Hub	Comprehensive Online Intellectual Property Rights (IPR)	I-Hub	06-July-2020 to 14-Sep-2020	National Level	2020-21
92	180310105024	Hadiya Parth Vajubhai	5 Day Webinar Series	Emerging Trends in Chemical Engineering	L. D. College of Engineering	28-Sep-2020 to 03-Oct-2020	National Level	2020-21

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
93	190313105004	Patel Karn Hasmukhbhai	Bently Institute	Introduction to STAAD.Pro/EN	Mahavir Traders	03-Oct-2020 to 10-Oct-2020	State Level	2020-21
94	170310105012	Gohel Jay Jagdishbhai	5 Day Webinar Series	Emerging Trends in Chemical Engineering	L. D. College of Engineering	28-Sep-2020 to 03-Oct-2020	National Level	2020-21
95	180310105010	Bhatt Chirag Dayaram	Mission Fission	Online National Level Quiz	IIChE - VGEC Chandkheda	24-Apr-21	National Level	2020-21
96	180310105005	Baroliya Ashvin Chandubhai	Covid-19	Online Awareness Quiz on COVID-19	Student Awareness Committee of P.G.Department of Economics, Sardar Patel University	12-Jul-05	National Level	2020-21
97	180310105005	Baroliya Ashvin Chandubhai	Online	Online Quiz on Constitution of India	Rao Bahadue Y. Mahabaleswarappa Engineering College, Ballari	5-Jun-20	National Level	2020-21
98	180310105005	Baroliya Ashvin Chandubhai	6 Kar Air Sqn Ncc	E - Quiz on NCC and Indian Armed Forces	ST Aloysius College, Mangaluru, Karnataka	11-Jul-20	National Level	2020-21
99	180310105015	Chauhan Dhaval Ramesh	Prerna Social	The Nine Time	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	12-Jul-05	National Level	2020-21
100	180310105015	Chauhan Dhaval Ramesh	Prerna Social	Check-O-Pic	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	12-Jul-05	National Level	2020-21
101	180310105015	Chauhan Dhaval Ramesh	6 Kar Air Sqn Ncc	E - Quiz on NCC and Indian Armed Forces	ST Aloysius College, Mangaluru, Karnataka	11-Jul-20	National Level	2020-21
102	180310105015	Chauhan Dhaval Ramesh	Radiance Club	Deep Meaning Presentation	Silver Oak University	09-Sep-2020 and 10-Sep-2019	State Level	2020-21

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
103	180310105015	Chauhan Dhaval Ramesh	Radiance Club	Focus Fight	Silver Oak University	09-Sep-2020 and 10-Sep-2019	State Level	2020-21
104	180310105023	Goswami Dixit Hareshgiri	Digital Learning Hub	Interview Skills	TATA Consultancy Services	03-May-2020 to 11-July-2020	Courses	2020-21
105	180310105023	Goswami Dixit Hareshgiri	Online	Quiz on General Knowledge 73%	G.M.B. Polytechnic, Rajula	10-Jul-20	Participation	2020-21
106	180310105023	Goswami Dixit Hareshgiri	Mission Fission	Online National Level Quiz	IIChE - VGEC Chandkheda	24-Apr-21	National Level	2020-21
107	180310105023	Goswami Dixit Hareshgiri	5 Day Webinar Series	Emerging Trends in Chemical Engineering	L. D. College of Engineering	28-Sep-2020 to 03-Oct-2020	National Level	2020-21
108	180310105023	Goswami Dixit Hareshgiri	Webinar	A Youth Empowerment Program	J. Z. Shah Arts & H. P. Desai Commerce College, Ahmedabad	17-Apr-21	National Level	2020-21
109	180310105025	Hirani Jaydeep Murji	Webinar	A Youth Empowerment Program	J. Z. Shah Arts & H. P. Desai Commerce College, Ahmedabad	17-Apr-21	National Level	2020-21
110	180310105035	Nakum Dhaval Ratilal	Mission Fission	Online National Level Quiz	IIChE - VGEC Chandkheda	24-Apr-21	National Level	2020-21
111	180310105035	Nakum Dhaval Ratilal	Techno Tail	Technical Quiz	ACADIO Non Technical Event	1-Mar-21	National Level	2020-21
112	180310105035	Nakum Dhaval Ratilal	Pen Wielder	Writing	ACADIO Non Technical Event	1-Mar-21	National Level	2020-21
113	180310105035	Nakum Dhaval Ratilal	Online Course	Excel Lessons - Zero to Pro for Teachers and Office Workers	Elchin Abbasov, Instructor	24-Mar-21	Courses	2020-21
114	180310105035	Nakum Dhaval Ratilal	Webinar	Advanced Future Applications of Nuclear Energy: Space and Defence	Government Engineering College, Bharuch	16-Oct-20	National Level	2020-21

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
115	180310105036	Nakum Dipak Ratnabhai	Online	Online Quiz on Constitution of India	Rao Bahadue Y. Mahabaleswarappa Engineering College, Ballari	5-Jun-20	National Level	2020-21
116	180310105049	Raiyani Ronak Vijaybhai	Webinar	The Role of Engineer's in Sustainability	Design Innovation Centre Gujarat Technological University	15-Sep-20	National Level	2020-21
117	180310105049	Raiyani Ronak Vijaybhai	Workshop	Simulia Abaqus	Design Innovation Centre Gujarat Technological University	17-Aug-2020 to 18-Aug-2020	National Level	2020-21
118	180310105049	Raiyani Ronak Vijaybhai	6 Kar Air Sqn Ncc	E - Quiz on NCC and Indian Armed Forces	ST Aloysius College, Mangaluru, Karnataka	11-Jul-20	National Level	2020-21
119	180310105049	Raiyani Ronak Vijaybhai	Webinar	New Age Technologies Creating Young Age Entrepreneurs Globally	I - Hub, Gujarat	16-Aug-20	National Level	2020-21
120	180310105049	Raiyani Ronak Vijaybhai	Quiz	Space X	Sardar Vallabhbhai Patel Institute of Technology, Vasad	13-June-2020 to 15-June-2020	National Level	2020-21
121	180310105058	Thummar Bhautik Bharatbhai	Covid 19 Awareness Programme	Online Quiz on COVID-19	Noida Institute of Engineering & Technology, Greater Noida	12-Jul-05	National Level	2020-21
122	180310105058	Thummar Bhautik Bharatbhai	Workshop	Simulia Abaqus	Design Innovation Centre Gujarat Technological Uni.	17-Aug-2020 to 18-Aug-2020	National Level	2020-21
123	190313105004	Patel Karn Hasmukhbhai	Paramarsh 2020	The Fading Trail	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	12-Jul-05	National Level	2020-21

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
124	180310105053	Rathod Tanishqa Kishor	Online Non Credit Course	Introduction to Phychology	Yale University and offered through Coursera	6-Sep-20	National Level	2020-21
125	180310105053	Rathod Tanishqa Kishor	Mission Fission	Online National Level Quiz	IIChE - VGEC Chandkheda	24-Apr-21	National Level	2020-21
126	180310105027	Jethava Kirit Aravind	Online Training	PROCESS ENGINEERING & DESIGN	Chemical Engineering Department, VGEC under the banner of Institution of Engineers (India)	February to May 2021 20 Hrs.	National Level	2020-21
127	190310105053	Patel Deep Vijaybhai	Paramarsh 2020	The Fading Trail	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	2020	National Level	2020-21
128	180310105038	Parmar Bhavesh Jagdishbhai	Mission Fission	Online National Level Quiz	IIChE - VGEC Chandkheda	24-Apr-21	National Level	2020-21
129	180310105038	Parmar Bhavesh Jagdishbhai	Webinar	Sustainable Industrial Development	Government Engineering College, Bharuch	15-Oct-20	National Level	2020-21
130	180310105038	Parmar Bhavesh Jagdishbhai	5 Day Webinar Series	Emerging Trends in Chemical Engineering	L. D. College of Engineering	28-Sep-2020 to 03-Oct-2020	National Level	2020-21
131	200310105013	Kamani Parth Chandubhai	Participation	Cyber Sanjivani Competition	Competition Organized By Surat City Police In Collaboration With Cyber Suraksha Setu.	13-Jul-05	State Level	2020-21
132	200310105014	Sojitra Tushar Mansukhbhai	Participation	Cyber Sanjivani Competition	Competition Organized By Surat City Police In Collaboration With Cyber Suraksha Setu.	2021	State Level	2020-21
133	200310105016	Raiyani Daxit Ashvinbhai	Participation	Cyber Sanjivani Competition	Competition Organized By Surat City Police In Collaboration With Cyber Suraksha Setu.	2021	State Level	2020-21

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
134	200310105018	Gorfad Jaydip Rajubhai	Online Quiz	National Level Quiz on Python Programming	Sigma Institute of Engineering	12-Jul-05	State Level	2020-21
135	200310105043	Dobariya Hiraj Jentilal	Participation	Cyber Sanjivani Competition	Competition Organized By Surat City Police In Collaboration With Cyber Suraksha Setu.	13-Jul-05	State Level	2020-21
136	200310105044	Vaghasiya Gauravkumar Manishbhai	Participation	Cyber Sanjivani Competition	Competition Organized By Surat City Police In Collaboration With Cyber Suraksha Setu.	13-Jul-05	State Level	2020-21
137	200310105013	Kamani Parth Chandubhai	Quiz	Traffic Signs" Organized By The Road Safety Patrol	Nirmala College For Women(Autonomous)	11-Aug-2021 to 14-Aug-2021	State Level	2021-22
138	200310105013	Kamani Parth Chandubhai	5-Day Online Workshop	Capacity Building For Sustainable Rural Development	Svnit, Surat	19-July-2021 to 23-July-2021	National Level	2021-22
139	200310105013	Kamani Parth Chandubhai	Webinar	High Performane Polymers For Paints And Plastics	Department Of Paint Technology And Department Of Plastic Technology, School Of Chemical Technology, Harcourt Butler Technical University, Kanpur	21-Aug-21	National Level	2021-22
140	200310105013	Kamani Parth Chandubhai	Webinar	Online Education In Technical Institutions: A New Normal	Department Of Paint	27-Aug-21	National Level	2021-22
141	200310105014	Sojitra Tushar Mansukhbhai	Chem-Q Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
142	200310105016	Raiyani Daxit Ashvinbhai	Chem-Q	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
143	200310105017	Rana Harshrajsinh Arjunsinh	Chem-Q Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
144	200310105017	Rana Harshrajsinh Arjunsinh	Ethical Hacking & Cyber Security Workshop Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
145	200310105036	Gondaliya Rahulbhai Prakashbhai	Ethical Hacking & Cyber Security Workshop Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
146	200310105036	Gondaliya Rahulbhai Prakashbhai	Android Devlopment Workshop Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
147	200310105036	Gondaliya Rahulbhai Prakashbhai	Chem-Q Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
148	200310105043	Dobariya Hiraj Jentilal	Chem-Q Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
149	200310105045	Patel Yash Rakeshbhai	Android Devlopment Workshop Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
150	200310105045	Patel Yash Rakeshbhai	Chem-Q Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
151	200310105045	Patel Yash Rakeshbhai	Ethical Hacking & Cyber Security Workshop Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
152	200310105501	Savaliya Tushal Parshotambhai	Chemiscribble Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
153	200310105501	Savaliya Tushal Parshotambhai	Chem-Q Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
154	200310105501	Savaliya Tushal Parshotambhai	Cloud Computing Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
155	200310105501	Savaliya Tushal Parshotambhai	Internet Of Things Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
156	200310105501	Savaliya Tushal Parshotambhai	Stock Street Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
157	200310105504	Sakadasariya Chintankumar Shaileshbhai	Chem-Q Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
158	200310105504	Sakadasariya Chintankumar Shaileshbhai	Chemiscribble Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
159	200310105504	Sakadasariya Chintankumar Shaileshbhai	Gd/Pi Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
160	200310105504	Sakadasariya Chintankumar Shaileshbhai	Photography Workshop Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
161	200310105504	Sakadasariya Chintankumar Shaileshbhai	Turncoat Lakshya 2021	National Level Edu-Tech Fest Organized by Team Robocon	L. D. College of Engineering	10-Aug-2021 to 14-Aug-2021	National Level	2021-22
162	180310105025	Hirani Jaydeep Murji	Online Quiz	"QURIOSITY 2.O" Chapter of Indian Institute of Chemical Engineers (IIChE)	Dr. D.Y. Patil Institute of Engineering, Management & Research	28-Aug-21	National Level	2021-22
163	180310105023	Goswami Dixit Hareshgiri	Online Quiz Lakshya 2021	"QURIOSITY 2.O" Chapter of Indian Institute of Chemical Engineers (IIChE)	Dr. D.Y. Patil Institute of Engineering, Management & Research	28-Aug-21	National Level	2021-22
164	180310105053	Rathod Tanishqa Kishor	Participation	employability skills, life skills and function English skills of 80hrs from	KCG, Education Department, Government of Gujarat.	15-July-21 to 31-July-21	State Level	2021-22
165	200310105510	Singhadiya Dhruvit Pravin	Participation	D.E. Project Presentation Competition 2nd Rank	LEC, Morbi	28-Sep-21	College Level	2021-22
166	180310105058	Thummar Bhautik Bharatbhai	Quiz	Entrepreneurship Awareness Quiz rganized by Entrepreneurship Development Cell	Murugappa Polytechnic College, Chennai – 600062	4-Jan-22	National Level	2021-22
167	180310105051	Rank Kuldip Rameshbhai	Webinar	Resume Building	Pune Institute of Business Management in Collaboration with L. E. College	21-Oct-21	State Level	2021-22

Sr. no	Enrollment no.	Name	Tech fest	Event name	Organization institute	Date	Level	Year
168	190310105056	Patel Samarth Sanjaybhai	Course	Quality Management System (QMS) organisedby Terra-Green Technologies PVT LTD.	IIChE	02-Oct-21 to 03-Oct-21	State Level	2021-22

Criterion 5: Faculty Information and Contribution (200)

The details of faculty members of Chemical Engineering Department are reported in Annexure II.

5.1 Student Faculty Ration (20)

Student Faculty Ratio of Chemical Engineering Department is shown in Table B.5.1.

No. of UG Programs in the Department (n): 00

No. of PG Programs in the Department (m): 01

No. of Students in UG 2nd Year= **u1.1 = 60+12**

No. of Students in UG 3rd Year= **u1.2 = 60+12**

No. of Students in UG 4th Year= **u1.3 = 60+12**

No. of Students in PG 1st Year= **p1.1 = 0**

No. of Students in PG 2nd Year= **p1.2 = 0**

Table 5.1.1 Student Faculty Ratio of the Chemical Engineering Department

Year	**CAY(2021-22)**	**CAYm1(2020-21)**	**CAYm2 (2019-20)**
u1.1	(60+6)=66	(60+9)=69	(60+12)=72
u1.2	(60+6)=66	(60+6)=66	(60+9)=69
u1.3	(60+6)=66	(60+6)=66	(60+6)=66
UG1	198	201	207
p1.1	0	0	0
P1.2	0	0	0
PG1 (p1.1+p1.2) (M.E. in Chemical Engg.)	0	0	0
Total No. of Students in the Department (S = UG1+PG1)	198	201	207
No. of Faculty in the Department (F)	9	9	8
Student Faculty Ratio (SFR =S1/F1)	22	22.33	25.88
Average SFR SFR=(SFR1+SFR2+SFR3)/3	**23.40**		

Note: The entire faculty whether regular or contractual (except Part-Time), will be considered. The contractual faculty (doing away with the terminology of visiting/adjunct faculty, whatsoever)

who have taught for 2 consecutive semesters in the corresponding academic year on full time basis shall be considered for the purpose of calculation in the Faculty Student Ratio. However, following will be ensured in case of contractual faculty:

Shall have the AICTE prescribed qualifications and experience.

Shall be appointed on full time basis and worked for consecutive two semesters during the particular academic year under consideration.

Should have gone through an appropriate process of selection and the records of the same shall be made available to the visiting team during NBA visit.

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

	Total number of regular faculty in the department	**Total number of contractual faculty in the department**
CAY(2021-22)	6	3
CAYm1(2020-21)	6	3
CAYm2(2019-20)	5	3

Average SFR for three assessment years: 23.40

Assessment SFR: 10

5.2 Faculty Cadre Proportion (25)

The reference Faculty cadre proportion is 1(F1):2(F2):6(F3)

F1: Number of Professors required = 1/9 x Number of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students(N) as per 5.1

F2: Number of Associate Professors required = 2/9 x Number of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students(N) as per 5.1

F3: Number of Assistant Professors required = 6/9 x Number of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students(N) as per 5.1

Table 5.2.1 Faculty Cadre Proportion

Year	Professors		Associate Professors		Assistant Professors	
	Required F1	**Available ***	**Required F2**	**Available***	**Required F3**	**Available***
CAY (2021-22)	1	1	2	1	6	4
CAYm1 (2020-21)	1	1	2	0	6	5
CAYm2 (2019-20)	1	1	2	0	6	4
Average	RF1=1	AF1=1	RF2=2	AF2=0.33	RF3=6	AF3=4.33

Cadre Ratio Marks:

[(AF1 / RF1) + [(AF2 / RF2) * 0.6] + [(AF3 / RF3) * 0.4]] * 12.5:

= [(1) + [(0*0.6)] + [(0.67*0.4)]]*12.5

=17.00

5.3 Faculty Qualification (25)

- FQ = 2.5 x [(10 X+4 Y)/ F)]
- where X is no. of regular faculty with Ph.D.,
- Y is no. of regular faculty with M.Tech.,
- F is no. of regular faculty required to comply 20:1 Faculty Student ratio(no. of faculty and no. of students required are to be calculated as per 5.1)

Table 5.3.1 Faculty Qualification

	X	**Y**	**F**	**FQ=2.5 x [(10X+4Y)/F)]**
CAY (2021-22)	3	6	9	15
CAYm1 (2020-21)	1	8	10	10.50
CAYm2 (2019-20)	1	7	10	9.50
Average assessment of faculty qualification				11.67

5.4 Faculty Retention (25)

Table 5.4.1 Average assessment of faculty qualification

Description	2020-21	2021-22
No of Faculty Retained	5	5
Total no of Faculty	5	5
% of Faculty Retained	100	100

Average: 100%

Assessment Marks: 25

5.5 Innovations by the Faculty in Teaching and Learning (20)

Innovations by the faculty in teaching and learning:

- Faculties are using online Microsoft Teams and Google Meet platform for delivering lectures and other academic activities like; online quizzes, assigning the assignments, conducting the seminar/webinar, project review and oral exams.
- Faculties are using a Virtual laboratory platform managed by IIT Bombay (http://vlabs.iitb.ac.in/vlab/) to demonstrate and conduct experiments for various courses.
- The LCD projectors, multimedia system kind of modern teaching aids are also used by the faculty members of chemical engineering department.
- The available video lectures series from NPTEL, SWAYAM are used by faculties in teaching-learning process and shared with the students too.
- The faculties are practicing to organize the industrial visits, inviting the domain experts to share their knowledge, experience and skill in various technical and non- technical areas to bridge between the academic and real professional world for the students.
- The faculty members use e-library like Libertika, various software like, ANSYS and open-source platform to make the students competent in a concerned field.
- Faculty members assign the students open-handed exercise individually or in a team like to prepare technical posters/charts/ flex banners, mini-project etc. to enhance the capabilities of students.
- The study materials prepared by the faculties are available on the department website for the benefit of students.
- Faculties are regularly participating in various MOOC certified courses, STTPs, FDPs, Workshops etc. time-to-time for self-up gradation and to enhance the technical knowledge.

- Faculties incorporate the content/topic/area beyond the syllabus in the teaching process to fill the gap between syllabus and recent trends in the concerned engineering field.
- Faculties guiding various innovative projects under SSIP scheme to take up the technical challenges and to develop entrepreneur skill in the students.
- Faculties are arranging the technical and non-technical events with the support of department/institute/outside organization that gives the opportunities to the students to develop their competency in technical knowledge, skill, team management, leadership, creativity etc. and thereby overall personality as a professional.

5.6 Faculty as participants in Faculty development/training activities/STTPs (15)

Table 5.6 Faculty Development/Training activity/STTPs of CAYm3, CAYm2, CAYm1

Name of the faculty	Max 5 per faculty		
	2020-21(CAYm1)	2019-20(CAYm2)	2018-19(CAYm3)
Prof. (Dr.) R. K. Mewada	5	5	0
Prof. (Dr.) S. A. Amin	5	3	5
Prof. D. K. Mehta	5	5	5
Prof. (Dr.) A. D. Baldaniya	5	5	5
Prof. A. D. Kalariya	5	3	5
Prof. G. D. Vegad	5	5	0
Prof. S. S. Patel	0	0	0
Prof. M. T. Chauhan	0	0	0
Prof. B. B. Kariya	0	0	0
Sum	30	26	20
RF = Number of Faculty required to comply with 20:1 Student Faculty	9.90	10.05	10.35
Assessment	18.18	15.52	11.59

Average assessment over 3 years: 15

5.7 Research and Development (30)

5.7.1 Academic Research (10)

Academic research includes research paper publications, Ph.D. guidance, and faculty receiving Ph.D. during the assessment period.

Number of quality publications in refereed/ SCI Journals, citations, Books/ Book Chapters etc.(6)

Ph.D. guided / Ph.D. awarded during the assessment period while working in the institute (4)

All relevant details shall be mentioned.

Table 5.7.1.1 List of paper, book publications and patent by faculties during CAY, CAYm1, CAYm2, CAYm3

Academic Year	CAY (2021-22)	CAYm1 (2020-21)	CAYm2 (2019-20)	CAYm3 (2018-19)
No. of Publications	1	2	3	2
Books Publications	0	0	0	0
No. of Patent	0	0	0	0

Table 5.7.1.2 List of paper publications by faculty for the past Academic Year CAYm1, CAYm2, CAYm3

Sr. No.	Faculty Name	Publication Title	Journal name	ISSN/ISBN	Month/Year	Index in SCI/Scoups/UGC	Current Impact Factor
1	Prof. (Dr.) R. K. Mewada	Photocatalytic decolouration, degradation and disinfection capability of Ag2CO3/ZnO in natural sunlight	Journal of the Indian Chemical Society	0019-4522	Feb-22	scoups	2
2	Prof. (Dr.) S. A. Amin	Etherified amino resins with tailor-made properties: A holistic approach via polymerization	Industrial & Engineering Chemistry research	10.1021/acs.iecr.0c02561.	Aug-20	scoups	3.72
3	Prof. (Dr.) S. A. Amin	Process Design of Batch Reactors Using Multi-Objective Optimization for Synthesis of Butylated Urea Formaldehyde Resins	Computers & Chemical Engineering	10.1016/j.compchemeng.202.106892	Apr-20	scoups	4
4	Prof. (Dr.) S. A. Amin	Multi Objective Dynamic Optimization Study of Butylated Urea	IFAC-Papers Online	10.1016/j.ifacol.2018.09.268	2018	scoups	1.132

Sr. No.	Faculty Name	Publication Title	Journal name	ISSN/ISBN	Month/Year	Index in SCI/Scoups/UGC	Current Impact Factor
		Formaldehyde Resin Process in a Batch Reactor					
5	Prof. (Dr.) S. A. Amin	Formation of Alkoxy Groups in the Synthesis of Butylated Urea Formaldehyde Resins: Reaction Mechanism and Kinetic Model	Chemical Engineering Research and Design	10.1016/j.cherd.2018.05.002	July-2018	scoups	3.739
6	Prof. (Dr.) A. D. Baldania	A Review on Production of Furfural from Biomass	International Journal of Scientific and Engineering Research	2229-5518	Apr-20	SCI	-
7	Prof. (Dr.) A. D. Baldania	A Brief Review Production of Activated Carbon from Wood Waste (Biomass)	International Journal of Scientific and Engineering Research	2229-5518	Apr-20	SCI	-
8	Prof. G. D. Vegad	Viscosity Reduction of Indian Heavy Crude Oil by Emulsification to O/W Emulsion Using Polysorbate-81	Journal of Surfactant and Detergents	10.1002/jsde.12470	Nov-20	SCI	1.902

Table 5.7.1.3 List of books published by the faculties during CAYm1, CAYm2, & CAYm3

Sr. No.	Text book name	Author With Designation	ISBN Number	Year	Publication
-	-	-	-	-	-

Table 5.7.1.4 List of Patents by the faculties during CAYm1, CAYm2, & CAYm3

Sr. No.	Title	**Name of Applicant**	Patent No.	Date
-	-	-	-	-

Table 5.7.1.5 Ph.D. Guided /Ph.D. awarded during CAYm1, CAYm2, & CAYm3

Sr. No.	Name of Faculty	Year of PhD awarded	PhD Guided/Pursuing
1	Prof. (Dr.) R. K. Mewada	-	04/02
2	Prof. (Dr.) S. A. Amin	2021	-
3	Prof. (Dr.) A.D. Baldania	2021	-

5.7.2 Sponsored Research (5)

2020-21 (CAYm1)

Project Title	Duration	Funding Agency	Amount
A Sanitizer that prevents and preserves	2020-2024	SSIP	137250
Solar air purifier	2020-2024	SSIP	83000
Activated Carbon	2020-2024	SSIP	32650
Numerical study of multiphase flow characteristics in pipeline	2020-2024	SSIP	5000
Toilet to tap water recycling	2020-2024	SSIP	16000

2019-20(CAYm2)

Project Title	Duration	Funding Agency	Amount
Utilization of Natural waste material	2019-2020	SSIP	32000
ECO Friendly Plastic	2019-2020	SSIP	30000
Direct Solar Dryer	2019-2020	SSIP	45000

2018-19 (CAYm3)

Project Title	Duration	Funding Agency	Amount
Noise control machine	2018-2021	SSIP	140000
Recycle of waste paper with zero discharge	2018-2021	SSIP	20000
BAPA's fuel	2018-2021	SSIP	50000

Cumulative Amount (X + Y + Z) = 590900.00

5.7.3 Development Activities (10)

- Provide details:
- Product Development
- Instructional materials
- Working models/charts/monograms etc.

5.7.3.1 Product Development

Table 5.7.3.1 List of Product Development

Sr. No.	Type of Product	Funding Agency	Faculty Guided
1	Biodegradable Plastic	SSIP	Prof.(Dr.) R. K. Mewada
2	Bagase to Paper	SSIP	Prof.(Dr.) R. K. Mewada

5.7.3.2 Research Laboratory

Table 5.7.3.2 List of Research Laboratory

Sr. No.	Laboratory Name	Location	Utilized for research by	Faculty In charged
1	All Lab	A-207, A-210, A-211, A-212, A-213	Students used as per their project requirement	Respective Lab In charge

5.7.3.3 Instructional Materials

Chemical Engineering Department has its own website from where students can access class notes, assignments, lab manuals and other resource material.

Links/sources of online material delivered to students for example:

NPTEL, Link:

http://nptel.ac.in/course.php?disciplineId=112 (http://nptel.ac.in/course.php?disciplineId=112)

SWAYAM Courses, https://swayam.gov.in/

Table 5.7.3.4 Working models/ charts/ monograms etc.

Group No.	Enrollment No.	Name of Students	Project Topic	Guide Name
1	200310105005	Mendpara Mayur Chamanlal	Fabrication of Wind Pump Setup	Dr. R. K. Mewada
	200310105012	Deep Rameshbhai Khunt		
	200310105021	Gadhiya Vivek Laxmnabhai		
	200310105025	Rupchandani Gaurav Bharatkumar		
2	200310105046	Sorathiya Shaileshkumar Rajeshbhai	Fabricate Automatic Water Distribution System in House Garden with mobile control (IoT)	Dr. R. K. Mewada
	200310105049	Jeetkumar Bhikhubhai Patel		
	200310105057	Piprotar Deven Babubhai		
	200310105064	Parmar Anil Laljeebhai		
3	200310105002	Raval Krunal Shambhubhai	Packed Tower	Dr. S. A. Amin
	200310105032	Parmar Ajaysinh Keshrisinh		
	200310105045	Patel Yash Rakeshbhai		

Group No.	Enrollment No.	Name of Students	Project Topic	Guide Name
	200310105066	Bhimani Achyut Kishorbhai		
4	200310105009	Makwana Nilesh Arvindbhai	CSTR	Dr. S. A. Amin
	200310105018	Gorfad Jaydip Rajubhai		
	200310105036	Gondaliya Rahul Bhai Prakash Bhai		
	210310105511	Vadukar Mayurkumar Mansukhbhai		
5	200310105022	Karmur Jayesh Lakhamanbhai	Small Scale working pump	Prof. D. K. Mehta
	200310105030	Nakum Hiren Vallabhbhai		
	200310105043	Dobariya Hiraj Jentibhai		
	200310105058	Maghudiya Parthiv Girindrabhai		
6	200310105004	Jha Mukund Dilipkumar	Small Scale working model of drip irrigation	Prof. D. K. Mehta
	200310105008	Makwana Yash Dineshbhai		
	200310105019	Chauhan Dhruvkumar Dharmendrabhai		
	210310105508	Variya Vaibhav		
7	200310105020	Gadara Vanshil Kishorbhai	Working Model of Automated Solar Grass Cutter	Prof. A. D. Baldania
	200310105028	Zalavadiya Rutvik Dipakbhai		
	200310105042	Babariya Meet Pravinbhai		
	200310105044	Vaghasiya Gaurav Manishbhai		
8	200310105041	Pravinbha Kherajbha Somaniya	Working Model of Geothermal Energy	Prof. A. D. Baldania
	200310105051	Makwana Navneetkumar Govindbhai		
	200310105052	Hardik Dabhi		
	210310105510	Makwana Chirag Rameshbhai		
	210310105507	Rathod Parth Jayeshbhai		

Group No.	Enrollment No.	Name of Students	Project Topic	Guide Name
9	200310105001	Hadiyal Shani Nileshbhai	Fabrication of model to validate Bernoulli's theorem	Prof. A. D. Kalariya
	200310105013	Kamani Parth Chandubhai		
	200310105023	Parmar Dhavalkumar Babubhai		
	200310105033	Patoliya Smit Chandubhai		
	200310105035	Rank Chintan Babubhai		
10	200310105026	Solanki Kapilkumar Keshubhai	Solar still water purification	Prof. A. D. Kalariya
	200310105040	Sumaniya Narendra Kherajbha		
	210310105506	Vekariya Meet Hareshbhai		
	210310105504	Bathwar Dipen Dineshbhai		
11	200310105006	Sakariya Divyam Rameshbhai	Measurement of flow rate of fluid using flow meters	Prof. G. D. Vegad
	200310105007	Gusai Kaunikpuri Vimalpuri		
	200310105048	Parmar Haresh Mohanbhai		
	200310105059	Pathan Jafarkhan Seerajkhan		
	200310105063	Khandar Ranjit Parsotambhai		
12	200310105060	Renuka Pavankumar Maldebhai	Study of flow pattern of multiphase flow through pipeline	Prof. G. D. Vegad
	200310105061	Rathod Aniket Bhavasinh		
	200310105067	Gor Kumkum Anand		
13	200310105016	Raiyani Daxit Asvinbhai	Study of bio fertilizer from waste	Prof. S. S. Patel
	200310105038	Mahajan Jhanvi Dilipbhai		
	200310105053	Kareliya Prashant		
	200310105055	Parmar Rajal Pethabhai		
	210310105501	Shingala Raj Chandubhai		

Group No.	Enrollment No.	Name of Students	Project Topic	Guide Name
14	200310105011	Patel Vatsal Yogesh	Working Model of Wind Mill	Prof. S. S. Patel
	200310105034	Chavda Piyush Polabhai		
	200310105050	Patel Meet Jagdishbhai		
	210310105503	Bhaiya Harsh Dipakbhai		
15	200310105014	Sojitra Tushar Mansukhbhai	Febrication of drum filter (water filter)	Prof. M. T. Chauhan
	200310105015	Vainsh Ronit Rajeshbhai		
	200310105029	Parmar Jayraj Govindbhai		
	200310105062	Kanzariyahasmukh		
16	200310105027	Dodiya Balvantsinh Raysinhbhai	Water heating electric geyser	Prof. M. T. Chauhan
	200310105037	Kanazariya Hardik Rajabhai		
	200310105047	Het Suhagiya		
	210310105505	Patel Helibahen Bhupendrkumar		
17	200310105010	Nandaniya Jenish Dineshbhai	Portable windmill	Prof. B. B. Kariya
	200310105039	Valand Rishabh Shambhubhai		
	200310105054	Pruthvirajsinh V Jadeja		
	210310105502	Yadav Rohitkumar Lalbahadur		
	210310105509	Machhi Meetkumar Mukeshbhai		
18	200310105003	Pankhaniya Gunjan Arvindbhai	Electric splitting of water	Prof. B. B. Kalriya
	200310105017	Rana Harshrajsinh Arjunsinh		
	200310105031	Patel Yatinkumar Bhailalbhai		
	200310105056	Kanet Jasmin Lakhaman		
19	190310105019	Fataniya Mit Lalitbhai	Fabrication of Electrolysis Setup	Dr. R. K. Mewada

Group No.	Enrollment No.	Name of Students	Project Topic	Guide Name
	190310105029	Kalotra Ravikumar Vajubhai	to Produce Hydrogen and Oxygen using Solar PV Cells	
	190310105035	Khunt Bhargav Shaileshbhai		
	190310105038	Makadiya Om Jitendrabhai		
	200310105510	Singhadiya Dhruvit Pravin		
20	190310105007	Chauhan Mohit Rasikbhai	Fabrication of Small-Scale Furnace	Dr. R. K. Mewada
	190310105011	Chavda Abhay Arjanbhai		
	190310105024	Hingu Gautamkumar Sureshbhai		
	190310105036	Kotadiya Jaykumar Hitendrabhai		
21	190310105065	Saolanki Bhautik Kanjibhai	Use the nodemcu microprocessor and pH and temperature sensors to measure the pH and temperature in non-isothermal reactor	Dr. S. A. Amin
	190310105009	Chavada Paresh Govindbhai		
	190310105048	Pansuriya Dhruvin Kamleshbhai		
	190310105050	Parmar Mahesh Shambhubhai		
22	190310105003	Bambhaniya Yash Jayantibhai	Fabrication of small-scale cooling tower	Prof. D. K. Mehta
	190310105004	Bhalala Vaibhav Narshinhbhai		
	190310105040	Maridiya Akhil Rajeshbhai		
	190310105072	Trada Prince Jayeshbhai		
	200310105511	Prajapati Kartikkumar		
23	190310105015	Dangar Sagar Ajaybhai	Fabrication of small-scale packed tower	Prof. D. K. Mehta
	190310105059	Polar Jitendra Mavjibhai		
	190310105069	Tank Vivek Manubhai		
	200310105507	Maththar Sahil Ajaykumar		
24	190310105001	Aghara Krutikkumar Rajnikantbhai	To Prepare a Working Model of	Prof. A. D. Baldania

Group No.	Enrollment No.	Name of Students	Project Topic	Guide Name
	190310105037	Lunagariya Purvisha Jitendrabhai	Horizontal and Vertical Wind Turbine	
	200310105505	Dodiya Niraj Chandubhai		
	200310105506	Patel Fenil Mukeshbhai		
	200310105509	Zala Kishankumar Vallabhbhai		
25	190310105026	Jogal Rajesh Dadubhai	To Prepare a Working Model of Flat Plate Solar Collector	Prof. A. D. Baldania
	190310105033	Karmur Mahesh Hamir		
	190310105049	Parmar Bhavesh Ramnikbhai		
	190310105056	Patel Samarth Sanjaybhai		
	190310105067	Sumra Mahmadnasir Sadikahamad		
26	190310105014	Dabhi Pareshkumar Babubhai	Preparation of double pipe heat exchanger	Prof. A. D. Kalariya
	190310105031	Kanzariya Ashvinkumar Vallabhbhai		
	190310105032	Kanzariya Rajesh Ramjibhai		
	190310105034	Khimani Jignesh Kishor		
	190310105051	Parmar Rakesh Govindbhai		
27	190310105017	Dhanani Jayesh Karubhai	Fabrication of instrument to find the critical radius of insulation	Prof. A. D. Kalariya
	190310105043	Moradiya Prince Nagjibhai		
	190310105044	Movaliya Raj Rameshbhai		
28	190310105025	Jadeja Aniketsinh Gajendrasinh	In house measurement of rheological properties for transporting water t overhead tank	Prof. G. D. Vegad
	190310105054	Patel Dhrumilkumar Yogeshbhai		
	190310105057	Patel Shubham Sandipbhai		
	190310105058	Pindariya Rahul Nebhabhai		
29	190310105045	Nakum Gaurav Mukeshbhai	In house measurement of	Prof. G. D. Vegad

Group No.	Enrollment No.	Name of Students	Project Topic	Guide Name
	190310105053	Patel Deep Vijaybhai	rheological properties and heating requirement for geyser	
	190310105068	Talaviya Nikhil Vinodbhai		
	190310105075	Vala Shubham Dansinhbhai		
	190310105077	Vora Krunal Mukeshbhai		
30	190310105078	Zapadiya Nilesh Ranchhodbhai	Removal of color by electrolysis process	Prof. S. S. Patel
	200310105501	Savaliya Tushal Parshotambhai		
	200310105504	Sakadasariya Chintankumar Shaileshbhai		
	200310105508	Nihar Kanakhara		
31	190310105010	Chavda Prayagrajsinh Indrasinh	Temperature indicator controller with PID	Prof. S. S. Patel
	190310105047	Padhiyar Chiragkumar Vipulsinh		
	190310105052	Parmar Yogeshkumar Kiranbhai		
	190310105060	Rajput Shreyassinh Devendrasinh		
	190310105070	Thakor Shambhuji Govindji		
32	190310105018	Dobariya Nirajkumar Prakashbhai	Fabrication Of Small-Scale Ball Mill	Prof. M. T. Chauhan
	190310105020	Gajera Amish Nareshbhai		
	190310105042	Moliya Vivek Rameshbhai		
	190310105071	Thummar Utsav Rameshbhai		
33	190310105002	Ambaliya Uday Arvindbhai	Fabrication of Small-Scale Clarifier	Prof. M. T. Chauhan
	190310105016	Dhanani Akshay Pravinbhai		
	190310105022	Gohil Jaydeep Mansukhbhai		
	190310105030	Kaneriya Jay Hiteshbhai		
	190310105076	Verma Mahek Chintubhai		

Group No.	Enrollment No.	Name of Students	Project Topic	Guide Name
34	190310105008	Chauhan Sahilkumar Kishorbhai	Design and construction liquid level measurement system	Prof. B. B. Kariya
	190310105013	Dabhi Foram Laljibhai		
	190310105023	Hathaliya Kuldip Devabhai		
	190310105055	Patel Kushal Satishbhai		
35	190310105028	Kakadiya Kevalkumar Kalubhai	Design a flowmeter	Prof. B. B. Kariya
	190310105062	Saradva Himanshu Narbheram		
	190310105066	Sonagra Anand Damjibhai		
	190310105073	Vaghamashi Dhaval Bhaveshbhai		
	200310105502	Sidpara Renish Ranchhodbhai		

5.7.4 Consultancy (from Industry) (5)

2020-21 (CAYm1)

Project Title	Duration	Funding Agency	Amount
-NIL-	-NIL-	-NIL-	-NIL-

2019-20 (CAYm2)

Project Title	Duration	Funding Agency	Amount
-NIL-	-NIL-	-NIL-	-NIL-

2018-19 (CAYm3)

Project Title	Duration	Funding Agency	Amount
-NIL-	-NIL-	-NIL-	-NIL-

5.8 Faculty Performance Appraisal and Development System (FPADS) (30)

The Government of Gujarat has made qualitative changes in the performance measurement system. In early days it was called a confidential report in which senior officers used to write their comments regarding employees in which concerned officers were not aware about the performance gauged by their higher-ups. With this change now concern officers are reviewed mainly on the target set by the office and real achievements by the officers. Performance appraisal includes many important characteristics of the person like honesty, sense of responsibility, quality

output, work attitude, moral courage to take bold decisions, initiative etc. For this they are given numbers in the form of marks.

Copy of the assessed appraisal report is given to the concerned officers, so that they can positively understand their weaknesses which open a door of quality improvement in their own personality. At the same time the officer finds the scope for representation if one is not satisfied with the markings and if something is overlooked by reviewing authority. On the contrary this also leads Faculty Performance Appraisal and Development System (FPADS) to a transparent process. Yearly this process improves the day to day working of the employee.

In the institute the Faculty Appraisal and Development System (FADS) are now done in paper-less mode; using the 'SATHI–GUJ-HRMS' portal. Here in prescribed format and with well-defined methods; all the process starting from self-appraisal, review by higher authority to reorganization of this at the Government of Gujarat level is done online under the security of GSWAN. The benefit of the SATHI-Guj-HRMS portal is at any point of time all the CR reports are available to concerned officers and one knows the status of marking. That helps officers for better record keeping and positively encourages them to perform better in upcoming years.

Faculty Performance Appraisal and Development System (FPADS) focus on the delivery by quality faculty in different activities they undertake. The process of appraisal will consider, in addition to quantitative evaluation on the basis of faculty work norms, evaluation on qualitative performance which is reflected through the positive contribution of an individual faculty in overall development of the Institute and academic activities like teaching in academic program, Research publication, their awards and achievements.

The Institute follows the government approved self-appraisal method to evaluate teachers regarding research and other activities. The use of 'SATHI–GUJ-HRMS' portal is done here as described earlier. Faculties are individually apprised of their strengths and weaknesses by their respective Heads and encouraged to achieve higher goals. The appraisals also help to assess the merit of the faculty members in applying for personal promotions.

In government institutions, the faculty performance appraisal and development system is well-defined and transparent also. Faculties fill their Performance Appraisal Report (PAR) every year in the month of April. The PAR of the faculty (Assistant Professor Cl-II) is assessed by the Reporting Officer (Head of Department Cl-I) and finally reviewed by the Reviewing Officer (Principal). Then after faculty can see his/her PAR reviewed report to know his/her performance. The PAR of a Class–I officer (Associate Professors and Professors) is sent to the Reporting Officer (Principal) for assessment and is finally reviewed by the Commissionerate of Technical Education (CTE) office. All the reports of faculties (Class I and II) are submitted to the CTE for further procedure. After being reviewed by CTE it will be submitted to Education Department (GOG).

The whole appraisal system is transparent and follows a strict timeline as per laid down norms of Government of Gujarat.

A well-defined method as suggested by Government of Gujarat is followed for promotion of faculty members. For promotion to the next level, the PARs of the last eight years are reviewed, and the faculty member having at least 5 PARs with the comment "Very Good or Higher" are considered to be eligible for zone of consideration subject to fulfilment of all other requirements. The PAR is also considered for the execution of the Career Advancement Scheme.

Point Based faculty Appraisal System under Career Advancement Scheme (CAS) of the state government consists of assessment based on trainings undertaken, paper publications, expert lectures delivered, contribution towards academic & administrative assignments, projects guided at UG levels, research projects, consultancy, individual achievements, interaction with outside world, etc.

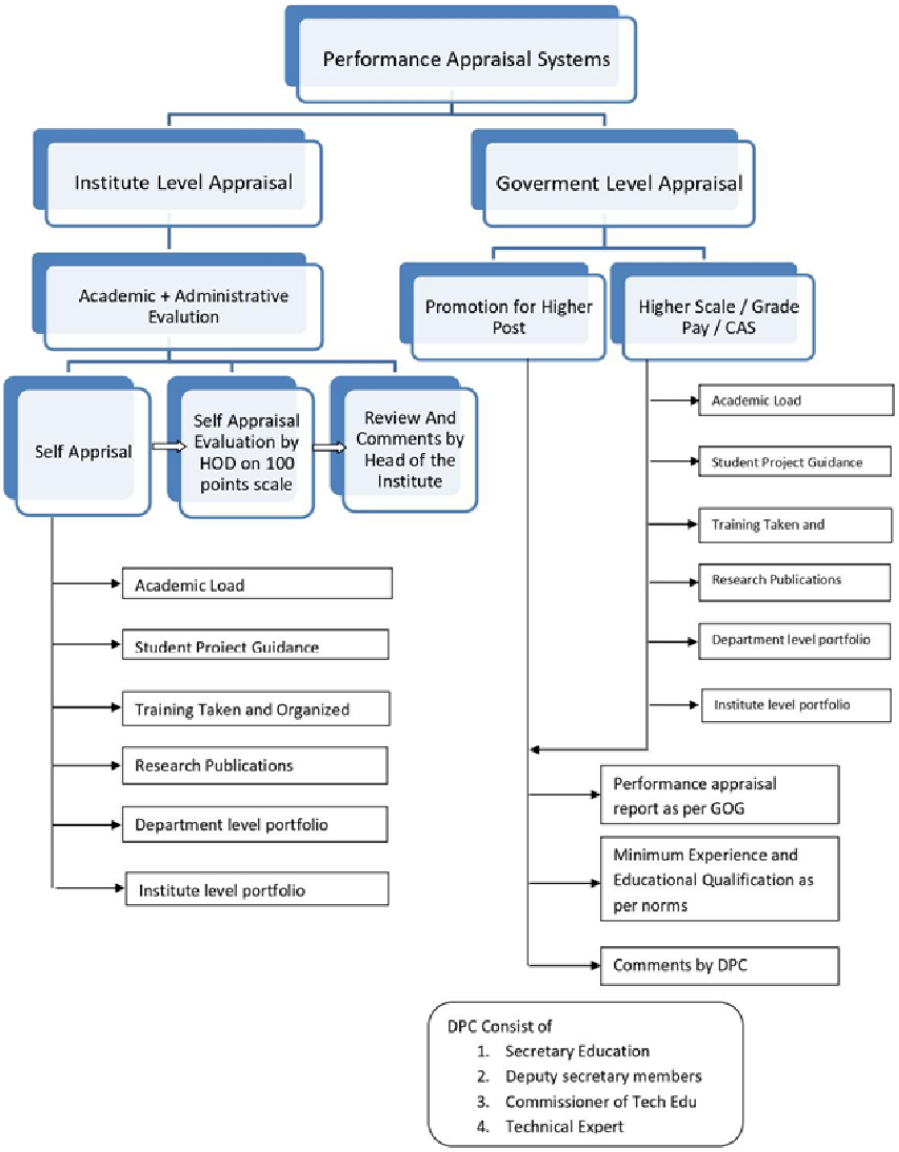


Fig 5.8.1 Performance appraisal system

Table 5.8.1 List of the faculty members availed Career Advancement (under CAS)

Sr. No.	Faculty Name	Old AGP	New AGP	Date on AGP given
1	Prof. D. K. Mehta	6000	7000	03-06-2019

Table 5.8.2 List of faculty members able for higher grade pay

Sr. No.	Faculty Name	7th Pay applicable on
1	Dr. R. K. Mewada	2019-20
2	Dr. S. A. Amin	2019-20
3	Prof. D. K. Mehta	2019-20
4	Dr. A. D. Baldania	2019-20
5	Prof. A. D. Kalariya	2019-20
6	Prof. G. D. Vegad	2019-20

5.9 Visiting/Adjunct/Emeritus Faculty etc. (10)

Table 5.9.1 List of Visiting Faculty during the CAYm2 (2019-20)

Sr. No.	Name of Faculty	Designation	No. of hours handling	Subject Handling
1	Ms. Komal Baxi	KCG empanelled trainer	40	Soft Skills
2	Mr. Uday Dholakiya	KCG empanelled trainer	40	Soft Skills
3	Ms. Alisha Katira	KCG empanelled trainer	60	ELT

Criterion 6: Facilities and Technical Support (80)

6.1 Adequate and well- equipped laboratories and technical manpower (30)

List of laboratories with location, equipment, technical manpower, batch size and weekly utilization status is given in table 6.1.1.

Table 6.1.1 List of laboratories with equipment

Sr. No.	Name of the laboratory	No. of students per setup (Batch Size)	Name of the important equipment	Weekly Utilization status (all the courses for which the lab is utilized)	Technical Manpower support		
					Name of the technical staff	Designation	Qualification
1	Fluid Flow Operation (A-211)	20 Students in Batch	1.Reynold's apparatus 2.Bernoulli's apparatus 3.Flow through notch/ orifice/venturi system 4. Pressure drop measurement 5.Fluidization air/solid	8 hrs.	Mr. T.M. Kavar	Lab Assistant	B.E. (Chemical)
2	Heat Transfer (A-212)	20 Students in Batch	1.Heat transfer from pin fin 2.Heat transfer by drop wise and film wise condensation 3.Shell and tube heat exchanger 4.Emissivity measurement apparatus 5.Conductivity of metal rod apparatus 6.Heat transfer by force convection 7.Thermal conductivity of composite wall 8.Critical heat flux apparatus 9.Thermocouple calibration rig 10.Critical radius of insulation 11.Plate type heat Exchanger 12.Thermal conductivity of liquid 13.Stefan Boltzmann apparatus 14.Falling film evaporator	6 hrs.	Mr. T.M. Kavar	Lab Assistant	B.E. (Chemical)

Sr. No.	Name of the laboratory	No. of students per setup (Batch Size)	Name of the important equipment	Weekly Utilization status (all the courses for which the lab is utilized)	Technical Manpower support		
					Name of the technical staff	Designation	Qualification
3	Mechanical Operation (A-212)	15 Students in Batch	1.Cyclone separator 2.Basket centrifuge 3.Plate & frame filter press 4.Ball mill 5.Belt conveyer 6.Black jaw crusher 7.Ribbon blender 8.Sieve shaker 9.Sigma mixer	12 hrs.	Mr.	Lab Assistant	B.E. (Chemical)
4	Mass Transfer (A-211)	15 Students in Batch	1.Leaching experiment 2.Batch crystallizer 3.Mixer settler type extractor 4.Absorption in packed bed 5.Distillation apparatus 6.Fluidized bed dryer 7.Packed bed distillation 8.Steam distillation setup 9.VLE apparatus 10.Vacuum distillation setup 11.Cooling tower	12 hrs.	T.M. Kavar	Lab Assistant	B.E. (Chemical)
	Instrumentation and Process Control (A-213)	15 Students in Batch	1.Flow control trainer 2.Level control trainer 3.Pressure controller setup 4.Temperature control trainer 5.Two tank interacting and non-interacting system	12 hrs.	Mr.	Lab Assistant	B.E. (Chemical)
6	Petroleum Refining and Petrochemicals (A-207)	15 Students in Batch	1.Ables flash point apparatus 2.Aniline point apparatus 3.Cleveland flash and fire point apparatus 4.Cloud and pour point apparatus	8 hrs.	T.M. Kavar	Lab Assistant	B.E. (Chemical)

Sr. No.	Name of the laboratory	No. of students per setup (Batch Size)	Name of the important equipment	Weekly Utilization status (all the courses for which the lab is utilized)	Technical Manpower support		
					Name of the technical staff	Designation	Qualification
			5.Penetro meter apparatus 6.Penskey Martin flash point apparatus 7.Red wood viscometer 8.Reid Vapor Pressure test apparatus 9.Saybolt viscometer apparatus 10.Smoke Point apparatus 11.Softening Point apparatus 12.Carbon Residue apparatus				
7	Chemical Reaction Engineering (A-207)	15 Students in Batch	1.Batch Reactor 2.Cascade CSTR 3.Plug flow reactor straight tube type 4.RTD studies in packed bed reactor	12 hrs.	Mr.	Lab Assistant	B.E. (Chemical)
8	PCSM (A-207)	15 Students in Batch	1.Refracto meter 2.pH meter 3. Turbidity meter	6 hrs.	T.M. Kavar	Lab Assistant	B.E. (Chemical)
9	Computer (A-210)	15 Students in Batch	Computers (30)	12 hrs.	Mr.	Lab Assistant	B.E. (Chemical)

6.2 Additional facilities created for improving the quality of learning experience in laboratories (25)

The Details of common facilities created for improving the quality of learning experiences mentioned in Table 6.2.1

Table 6.2.1 Details of common facilities created for improving the quality of learning experiences: -

Sr. No.	Facility name	Details	Reason for creating a facility	Utilization	The area in which students are expected to have enhanced learning	Relevance to POs/PSOs
1.	Namo- Wi-Fi /Internet	LAN cable connection speed: 22 MBPS, Wi-Fi speed 7 MBPS	For clearing concepts and obtaining necessary data for various projects	Throughout the semester	Working on their own UG projects and start-ups	PO2, PO10, PSO1
2.	Departmental Library (A-101)	Having a collection of Text Books, Reference, Books and Project/Seminar reports	To meet the needs of students, provide reference facilities, etc.	Throughout the semester	Enhancing the student knowledge and knowledge depth	PO1,PO 2, PO11 PSO1, PSO2
3.	Projectors	One projector in the seminar hall and one for the classrooms	For better visualization of theoretical concepts	20 hrs per semester	A better understanding of flow processes, unit operations etc.	PO5
4.	Seminar Hall (A-113)	Seminar hall fully equipped with Projector, 84 Student Desk, White Board, Fan, Cushion chair, Microphone, Speaker	To present technical talk/ project seminars/ research papers/ workshops/ industry interaction presentation. Overall development of students like cultural activities, group discussion etc	20 hrs per semester	To bridge the gap between academic curriculum and industrial needs, personality development, etc.	PO10
5.	Project/ Research and Analytical lab (A-207)	Design engineering projects prepared by students in various fields of engineering	Real-time application of theoretical concepts, developing creative skills, motivating students to come up with innovative projects/product, assist students with their startup projects, etc.	Throughout the semester	Development of prototype models for various projects, perform experiments, etc.	PO1, PO2, PO3,PO 4, PO5,PO11, PO12, PSO1, PSO2, PSO3, PSO4

Individual laboratories:

The Details of additional facilities created for improving the quality of learning experiences in individual lab

Table 6.2.2 Mass transfer operation lab:

Sr. No.	Facility name	Details	Reason for creating a facility	Utilization	The area in which students are expected to have enhanced learning	Relevance to POs/PSOs
1	Models and Charts for Demonstration	Models and charts related to Mass Transfer Operation	To demonstrate concepts of Mass Transfer Operation through charts models	As per requirement	Mass Transfer Operation	PO1
2	Development of LRs	Resource Material related to Mass Transfer Operation	To improve understanding of concept through experiments	As per requirement	Mass Transfer Operation	PO1
3	Virtual Laboratory	Web-enabled experiments can be designed for remote operation and viewing so as to enthuse the Curiosity and innovation into students	To help in learning basic and advance concepts through remote experimentation	Throughout the semester to perform V-lab experiments	To provide practical exposure to students	PO1,PO3,PO5,PO10, PO 12 PSO1, PSO2

Table 6.2.3 Fluid flow operation lab:

Sr. No.	Facility name	Details	Reason for creating a facility	Utilization	The area in which students are expected to have enhanced learning	Relevance to POs/PSOs
1	Models and Charts for Demonstration	Models and charts related to Fluid Flow operation	To demonstrate concepts of fluid flow operation through charts models	As per requirement	Fluid Flow operation	PO1
2	Development of LRs	Resource Material related to Fluid Flow operation	To improve understanding of concept through experiments	As per requirement	Fluid Flow operation	PO1
3	Virtual Laboratory	Web-enabled experiments can be designed for remote operation and viewing so as to enthuse the Curiosity and innovation into students	To help in learning basic and advance concepts through remote experimentation	Throughout the semester to perform V-lab experiments	To provide practical exposure to students	PO1,PO3,PO5,PO10, PO12 PSO1, PSO2

Table 6.2.4 Heat Transfer Lab:

Sr. No.	Facility name	Details	Reason for creating a facility	Utilization	The area in which students are expected to have enhanced learning	Relevance to POs/PSOs
1	Models and Charts for Demonstration	Models and charts related to heat transfer	To demonstrate concepts of Heat transfer through charts models	As per requirement	Heat Transfer	PO1
2	Development of LRs	Resource Material related to heat transfer	To improve understanding of concept through experiments	As per requirement	Heat Transfer	PO1

Table 6.2.5 Instrumentation and process control lab:

Sr. No.	Facility name	Details	Reason for creating a facility	Utilization	The area in which students are expected to have enhanced learning	Relevance to POs/PSOs
1	Models and Charts for Demonstration	Models and charts related to Instrumentation and process control	The more strikingly visual your presentation is, the more people will remember it. and more importantly, they will remember you.	As per requirement	Instrumentation and Process Control Lab	PO1
2	Development of LRs	Resource Material related to Instrumentation and process control	To improve understanding of concept through experiments	As per requirement	Instrumentation and Process Control Lab	PO1

6.2.6 Mechanical operation lab:

Sr. No.	Facility name	Details	Reason for creating a facility	Utilization	The area in which students are expected to have enhanced learning	Relevance to POs/PSOs
1	Models and Charts for Demonstration	Models and charts related to Mechanical Operation	To demonstrate concepts of Mechanical Operation through charts models	As per requirement	Mechanical Operation	PO1
2	Development of LRs	Resource Material related to Mechanical Operation	To improve understanding of concept through experiments	As per requirement	Mechanical Operation	PO1
3	Virtual Laboratory	Web-enabled experiments can be designed for remote operation and viewing so as to enthuse the Curiosity and innovation into students	To help in learning basic and advance concepts through remote experimentation	Throughout the semester to perform V-lab experiments	To provide practical exposure to students	PO1,PO 3, PO 5, PO 10, PO 12 PSO1, PSO2

Table 6.2.7 Petroleum refining and petrochemicals lab:

Sr. No.	Facility name	Details	Reason for creating a facility	Utilization	The area in which students are expected to have enhanced learning	Relevance to POs/PSOs
1	Models and Charts for Demonstration	Models and charts related to Petroleum Refining and Petrochemicals	To demonstrate concepts of Petroleum Refining and Petrochemicals through charts models	As per requirement	Petroleum Refining and Petrochemicals	PO1
2	Development of LRs	Resource Material related to Petrochemicals	To improve understanding of concept through experiments	As per requirement	Petroleum Refining and Petrochemicals	PO1
3	Virtual Laboratory	Web-enabled experiments can be designed for remote operation and viewing so as to enthuse the Curiosity and innovation into students	To help in learning basic and advance concepts through remote experimentation	Throughout the semester to perform V-lab experiments	To provide practical exposure to students	PO1,PO3,PO5,PO10, PO 12 PSO1, PSO2

Table 6.2.8 Chemical reaction engineering lab:

Sr. No.	Facility name	Details	Reason for creating a facility	Utilization	The area in which students are expected to have enhanced learning	Relevance to POs/PSOs
1	Models and Charts for Demonstration	Models and charts related to Chemical Reaction Engineering course	To demonstrate concepts of Chemical Reaction Engineering through charts models	As per requirement	Chemical Reaction Engineering	PO1
2	Development of LRs	Resource Material related to Chemical Reaction Engineering	To improve understanding of concept through experiments	As per requirement	Chemical Reaction Engineering	PO1
3	Virtual Laboratory	Web-enabled experiments can be conducted so as to enthuse the curiosity and innovation into students	To help in learning basic and advanced concepts through remote experimentation	All students participate in performance of V-lab experiments when instructed	To provide practical exposure to students	PO1,PO3, PO5,PO10, PO12 PSO1, PSO2

6.3 Laboratories: Maintenance and overall ambience (10)

The Department provides very good laboratory facilities and hands-on training to the undergraduate students both in the conventional subjects and also in the emerging fields of specialization. All laboratories are well equipped and furnished to meet the requirements of the curriculum and teaching-learning process. The preventive maintenance of various equipment and machines, as well as calibration of the instruments, is carried out periodically. The technical staff is well trained for the maintenance and calibration of the instruments. All laboratories are well-lit and have a continuous power supply which ensures the unrestricted working of the machines and instruments. Laboratories are spacious enough to accommodate the assigned batch of students. The laboratories are properly ventilated to ensure healthy circulation of fresh air and light. Conventional blackboards are also provided in every laboratory.

The salient points about the laboratory maintenance and overall ambience are as under:

6.3.1 Maintenance of laboratory equipment:

1. Regular maintenance of the equipment has utmost importance in our laboratory, as contamination can stop the projects or invalidate the lab results altogether.
2. Electrical maintenance is carried out by Electrical Department & R & B Department as per requirement of the laboratory.
3. The technical staffs are well trained for the maintenance of all the lab equipment.
4. Cleaning of labs and is also carried out on a regular basis.
5. Purchase of consumable and non-consumable item is planned before the commencement of every semester and record of the same is maintained in the respective laboratories.
6. Breakdown (write-off) register is maintained in the department.
7. As per the requirement, minor repairs are carried out by the lab assistant and faculty member.
8. Major repairs, if any, are out sourced as per the procedure of the Institute through the Department.
9. Laboratories are upgraded by the latest equipment and software from time to time. Also, equipment which is not in proper usable conditions is write-off and new equipment is purchased in place of the same.
10. Display board of Do’s and Don’ts along with Safety measures rules are well placed in each laboratory.
11. Stock verification and academic audit is done for each laboratory annually.

6.3.2 Overall ambience:

1. Department has experienced faculty to educate students in all the fields of chemical engineering.
2. Department has fully furnished Laboratories with highly valuable and efficient equipment which shall cater to all subjects as per curriculum requirements.
3. All the equipment of the laboratories and staff cabins is neatly & legible labeled.
4. Good quality tables, stools & benches are provided in laboratories.
5. All the labs are regularly conducted and experiments are performed every week.
6. Labs are well-equipped with sufficient hardware and licensed software to run a program-specific curriculum and off program curriculum.
7. Relevant Models and Charts are displayed in the laboratories for better understanding.
8. Sufficient numbers of windows are available for circulation of air and ventilation.
9. The lighting system is very effective, along with the natural light in every corner of the rooms having an adequate number of windows.
10. The Labs are equipped with a white/blackboard, computer, Internet, and such other amenities.
11. There is sufficient space to perform experiments without any chaos.

6.4 Project Laboratory (5)

The project laboratory provides an opportunity for the students to integrate theoretical knowledge with hands-on experience. Execution of the project goes a long way in developing independent thinking, organizing various elements of work in the project and finding solutions to problems. The project work inculcates creativity and innovative thinking in the students. The project work helps to transform students into life-long learners. Groups of students work together on projects during their undergraduate program and postgraduate program. The students regularly work in the project laboratory for design engineering projects and IDP (Industry Defined Project)/ UDP (User Defined Project) projects.

All the laboratories in the department are utilized for the efficient execution of the Bachelor. Students are also participating in various project competitions like hackathon, Vibrant Gujarat, National conferences or Symposiums and International conference at the Institute as well as outside the Institute. As a part of design engineering-I, design engineering-II and summer internship students has prepared working model by using fundamental knowledge of chemical engineering. Photographs of some of these projects are shown in Figure 6.4.1.

Fig. 6.4.1 Students giving demonstration of their DE projects models to (a)Prof. M.T.Chauhan (b) Dr. S.N.Pandya and Dr. R.K.Mewada sir (c) Prof. D.K.Mehta (d) Dr. S.N.Pandya (e) Dr. S.N.Pandya and Dr. S.A.Amin (f) Dr. D.P.Maheshwari

6.5 Safety measures in laboratories (10)

The department tries to take care of environment, health and safety excellence while teaching undergraduate students and also make every effort for the utilization of its facilities. Please note safety in laboratories is a very important aspect of engineering education. To impart this practice among the students, department has followed certain standards.

For instance, recognizing the importance of safety in the laboratories always starts with getting acquainted with the possible source of hazards. For this, we have formulated certain guidelines which give an idea about "*Dos and Don'ts*" while working in the laboratories.

Also considered the correct procedures are followed while handling chemicals/materials, equipment, and executing the experiment. Additionally, the individual should identify and use emergency equipment and protective gear to impart safety practices. In this regard, students are expected to conduct experiments in a safe manner respecting the physical well-being of their fellow students and themselves. Further, the safety information is provided by a faculty member, laboratory assistants or staff member at the beginning of each laboratory sessions.

Following General safety guidelines are followed:

1. Adequate safety and hygienic conditions prevail in all places of laboratories. Laboratory apparatus are regularly inspected to ensure proper maintenance.
2. All the Laboratory equipment and scientific instruments are positioned as per plan to ensure protection.
3. Sufficient space is available for easy and free movement in the Lab.
4. All the laboratories are sufficiently ventilated and lighted to ensure safety.
5. Electrical devices are periodically inspected & maintained to avoid accidents.
6. First aid kit is available.
7. Students are advised and trained to abide by the entire Do's and Don'ts displayed in the laboratory.
8. Students are advised to perform experiments under surveillance of lab technician/project mentor in order to avoid any sort of mishaps.

Following guidelines enlisted below are followed in the laboratories while dealing with glassware:

1. Glass breakage is a common cause of injuries in laboratories. Only glass in good condition should be used.
2. Clean all glassware before sending for repair. Glassware that has been in contact with infectious agents shall be disinfected before disposal or repair.
3. Protect hands with leather gloves when inserting glass tubing. Hold elbows close to the body to limit movement when handling tubing.
4. Use glassware of the proper size. Allow at least 20% free space. Grasp a three-neck flask by the middle neck, not a side neck.
5. Conventional laboratory glassware must never be pressurized or used with vacuum.

Following guidelines enlisted below are followed in the laboratories dealing with chemicals:

1. The chemicals used in a laboratory are often toxic or flammable and any accident involving these has the potential for personal injury. Therefore, it is good practice to assume that all chemicals are potentially hazardous. So, right process for Handling and Transportation of Chemicals must be followed.
2. Proper storage of chemicals is necessary to maximize employee safety with regard to chemical compatibility, spill control, fire/explosion control, and provide a "user friendly" system with respect to point-of-use.

3. Liquid is first collected in tank and depending on its characteristic (Acidic or Basic), it is neutralized before discarding.
4. Particulate matters are separated by filtration and neutralized before discarding.
5. Under all circumstances, a laboratory coat, safety glasses, and gloves should be used for self-protection.
6. Waste chemicals and/or waste water containing chemicals are disposed as per the norms.

In addition to enhance the right safety practice, the following things are taken care prior to disposal of chemical waste.

1. At first, chemical waste is segregated according to its phase i.e. liquid or solid.
2. Liquid is first collected in tank and depending on its characteristic (Acidic or Basic), it is neutralized before discarding.
3. Similarly, Particulate matters are separated by filtration and neutralized before discarding.

All exits, fire extinguishers, electrical disconnect and first-aids are kept such that they are accessible at all times. It is ensured that all chemical storage rules must be observed at all times. Chemicals are kept closed until used, and they are marked-up with substance name (in alphabetical order), hazard information, concentration and date of creation. Any unsafe and dangerous behavior is not tolerated during the lab practice. Additionally, all exits are furnished with, fire extinguishers, electrical disconnect and first-aids. Common learning and training session for using fire extinguisher is conducted prior to performing the experiments in the department. A very popular CO_2 fire extinguisher which is suitable for class-B fire in flammable liquids and gases, such as petroleum products, oils, solvents, alcohols or oil-based paints are well explained with its usage procedure. In order to use CO_2 fire extinguisher, we should place the CO_2 cylinder in an up-right position, remove safety clip from the cylinder and then stick hard on the nobe of the cylinder in the required direction. We believe in clean and green environment; therefore, a proper guidance is provided to the students for preserving the environment.

Table 6.5.1 Safety measures in laboratories

Sr. No.	Name of the laboratory	Safety measures
1	Chemistry/Organic Chemistry/Physical and Inorganic Chemistry Laboratory	**The safety measures to be followed in all laboratories are mentioned in Table 6.5.2**
2	Chemical Reaction Engineering Laboratory	
3	Mass Transfer Operation Laboratory	

4	Instrumentation and Process Control Laboratory	
5	Heat Transfer Laboratory	
6	Mechanical Operations Laboratory	
7	Chemical Process Industries Laboratory	
8	Fluid Flow Operations Laboratory	
9	Petroleum Refining and Petrochemicals Laboratory	

Table 6.5.2 Safety Aids in individual laboratories

Sr. No.	Safety Aids
1	A fire extinguisher is kept in the laboratories
2	All students are required to wear Identity Card (I-Card), laboratory coat, as well as shoes and no student, will be permitted to work in the laboratory without one.
3	All accidents and incidents (near misses and spills) must be reported immediately to lab staff.
4	Before the use of any chemicals or materials, refer MSDS of the same and follow the safety and hazard norms.
5	Never throw used match sticks, litmus papers, broken glass apparatus, filter papers or any other insoluble solid material into the sink or on the floor. Dispose of them off in the waste bin.
6	When attempting practical work all stools should be put away.
7	Never do unauthorized experiments.
8	Follow the instructions as per given manuals and instructed by respective faculty and staff members.
9	Do not leave the experiments unattended while in progress.
10	Never taste anything. Never pipette by mouth; use a bulb.
11	Check your glassware and set-up before use. Cracks could cause the glassware to fail during usage and causes serious injury to you or lab mates.
12	Keep your lab-space clean and organized.
13	Check and read the label of the reagent bottle carefully before using its content. 
14	Clean every piece of apparatus as soon as the work is finished and keep these at the proper place.
15	Do not waste water, gas or any utility.
16	Wash hands before leaving the laboratory.

Criterion 7: CONTINUOUS IMPROVEMENT (50)

7.1. Actions taken based on the results of evaluation of each of the COs, POs & PSOs (20)

Outcome based education works on the basis of realizing the strengths, weaknesses of the students and thereby strengthening their skill-set through analyzing course outcomes and introducing the mechanisms for overall improvement. Accordingly, a formal evaluation scheme is implemented in the institute to confirm the academic learning/learning outcomes, work upon gaps identified and improve the performance of the student as per the Course Outcomes (COs).

The evaluation scheme in each course comprised of following assessment components based on the defined teaching scheme of respective subject.

- End Semester Theory Exam (ESE-T)
- End Semester Practical/Viva Exam (ESE-V)
- Progressive Assessment for Practical (PA-I)
- Progressive Assessment for Theory (PA-M) (Mid Semester Examination/Assignment/Class Interaction/Open ended projects/Quiz/Tutorials/Attendance)

The department has segregated all POs and PSOs into three categories as strong (SU), moderate (M) and slightly (SL) POs as follows:

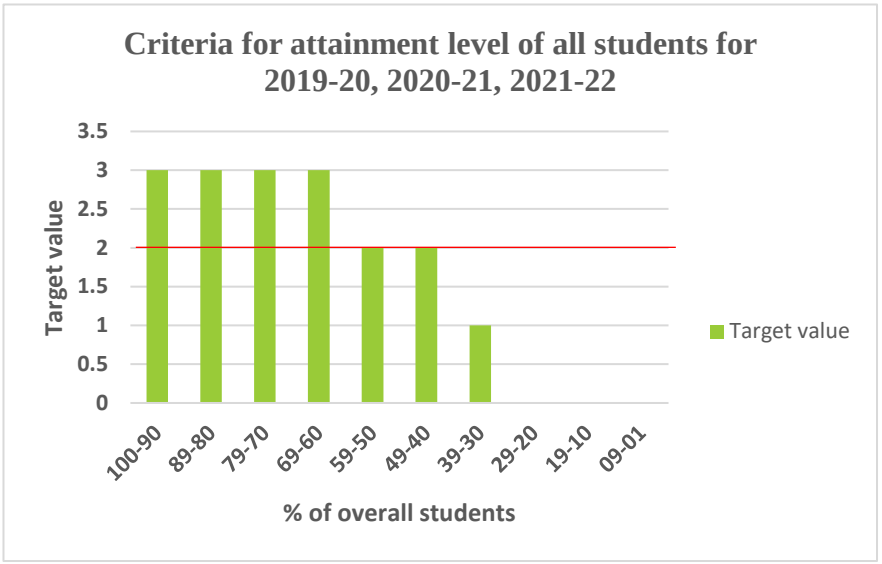
- If the attainment level is below 1 then POs attainment level would be considered as SL.
- If the attainment level is in between 1 to 2 then POs attainment level would be considered as M.
- If the attainment level is above 2 then POs attainment level would be considered as SU.

Methods for deciding the action taken for improving POs and PSOs attainment level:

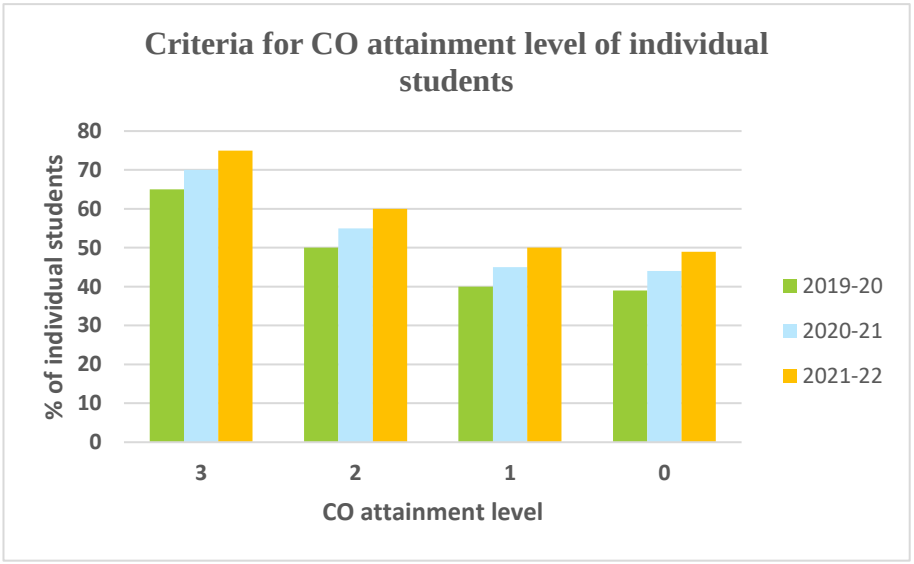
It is noted from Table 7.1.1 that all POs and PSOs achieve their target attainment level for the Academic Year (AY) 2019-20 and 2020-21, whereas Table 7.1.2 indicates for AY 2021-22. However, it is observed that COs of few of the courses do not meet the target attainment level. The COs are mapped with assessment components. In other words, a consolidated mark-sheet is prepared by the course coordinator consisting of all the above evaluation components. The consolidated mark-sheet enables to realize the course attainments of the class.

Please note, the target attainment level for each PO and PSO in academic year 2019-2020 and 2020-2021 and 2021-22 are set to 2 only. But for continuous improvement purpose, we have increased the CO attainment level of individual students by 5 % for each consecutive year since

2019-20 to 2021-22. Detail strategy is already mentioned in Table 3.2.1.3. Also refer following figure 7.1.1 which represent the continuous improvement strategy of the department. The PO and PSO attainment levels and identified actions based on the process shown in Figure 7.1.1a, for improvement are listed in Table 7.1.3 for the AY 2020-21.



(a)



(b)

Fig. 7.1.1 Continuous Improvement Strategy

Table 7.1.1 Summary of weighted average attainment of PO/PSO AY 2019-20 and 2020-21

Year	AY 2019-2020			AY 2020-2021		
PO/PSO	Target Value (Initial)	Attainment Value	Target Set for Next Year	Target Value (Initial)	Attainment Value	Target Set for Next Year
PO 1	2	2.67	2	2	2.75	2
PO 2	2	2.70	2	2	2.76	2
PO 3	2	2.72	2	2	2.74	2
PO 4	2	2.79	2	2	2.77	2
PO 5	2	2.74	2	2	2.74	2
PO 6	2	2.80	2	2	2.85	2
PO 7	2	2.79	2	2	2.81	2
PO 8	2	2.85	2	2	2.78	2
PO 9	2	2.75	2	2	2.78	2
PO 10	2	2.86	2	2	2.85	2
PO 11	2	2.88	2	2	2.91	2
PO 12	2	2.74	2	2	2.80	2
PSO 1	2	2.79	2	2	2.79	2
PSO 2	2	2.87	2	2	2.79	2

Table 7.1.2 Summary of weighted average attainment of PO/PSO AY 2021-22

Year	AY 2021-2022		
PO/PSO	Target Value (Initial)	Attainment Value	Target Set for Next Year
PO 1	2	2.36	2
PO 2	2	2.36	2
PO 3	2	2.31	2
PO 4	2	2.47	2
PO 5	2	2.47	2
PO 6	2	2.57	2
PO 7	2	2.45	2
PO 8	2	2.43	2
PO 9	2	2.40	2
PO 10	2	2.64	2
PO 11	2	2.65	2
PO 12	2	2.35	2
PSO 1	2	2.27	2
PSO 2	2	2.39	2

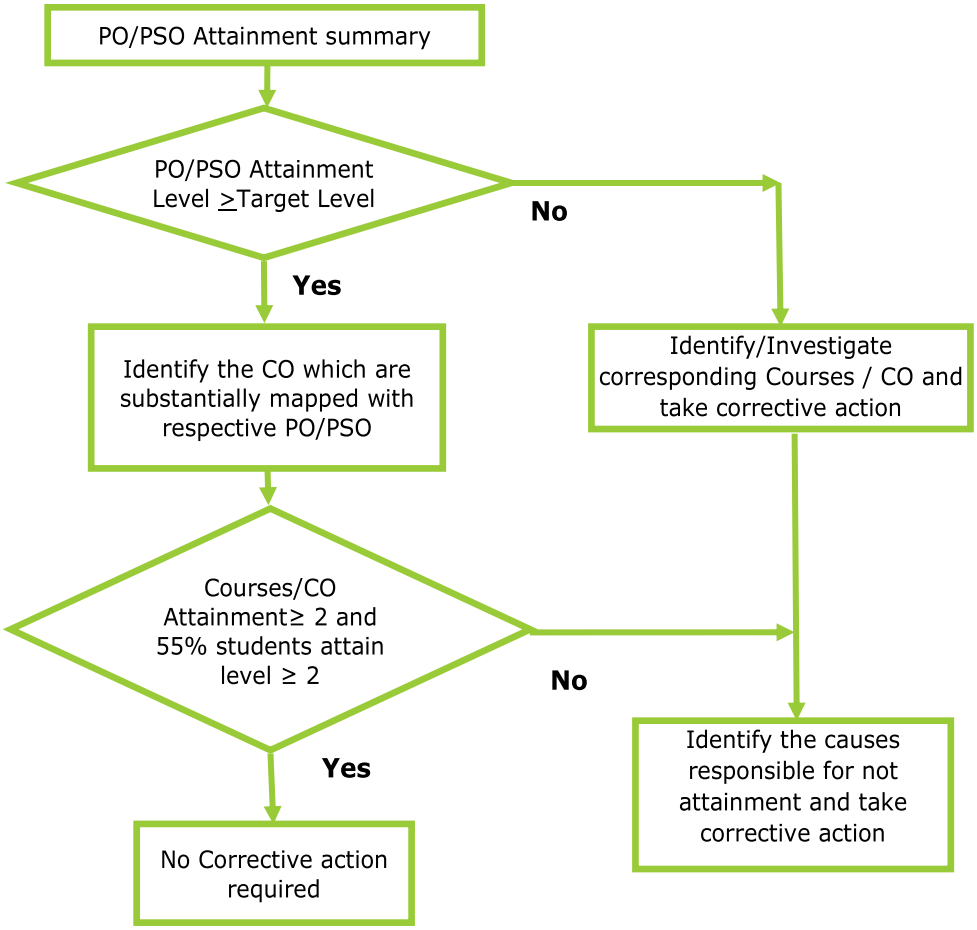


Fig. 7.1.1a Flowchart for deciding the actions based on the evaluation of Cos, POs and PSOs for the A.Y 20-21

Table 7.1.3 POs and PSOs attainment levels and actions for improvement (AY 2020-2021)

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	2.00	2.81	PO attainment level is achieved. However, in few courses, COs attainment level is not achieved. So, actions are suggested to take care of the COs.
Courses which affect PO 1 wherein COs attainment level is not achieved: C131-Mathematics-I. Action 1: The Tutorials involving topics will be given for practices and to understand the concepts. Action 2: Extra effort will be done in which students were facing difficulties in tutorial session. Action 3: Assignments involving examples will be given to enhance the skill of solving the problems.			
PO 2: Problem Analysis: Identify, formulate, review research literature, and analyses complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			

PO 2	2.00	2.82	PO attainment level is achieved. However, in few courses, COs attainment level is not achieved. So, actions are suggested to take care of the COs.
Courses which affect PO 1 wherein COs attainment level is not achieved: a) C131-Mathematics-I Action 1): The Tutorials involving topics will be given for practices and to understand the concepts. Action 2: Extra effort will be done in which students were facing difficulties in tutorial session. Action 3: Assignments involving examples will be given to enhance the skill of solving the problems.			
PO 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.			
PO 3	2.00	2.78	PO attainment level is achieved. However, in few courses, COs attainment level is not achieved. So, actions are suggested to take care of the COs.
Courses which affect PO 1 wherein COs attainment level is not achieved: a) C131: Mathematics-I b) C472: Chemical Reaction Engineering -II Action 1: The Tutorials involving topics will be given for practices and to understand the concepts. Action 2: Extra effort will be done in which students were facing difficulties in tutorial session.			
PO 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.			
PO 4	2.00	2.84	PO attainment level is achieved. However, in few courses, COs attainment level is not achieved. So, actions are suggested to take care of the COs.
a) C131-Mathematics-I Action 1: The Tutorials involving topics will be given for practices and to understand the concepts. Action 2: Extra effort will be done in which students were facing difficulties in tutorial session. Action 3: Assignments involving examples will be given to enhance the skill of solving the problems			
PO 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.			
PO 5	2.00	2.8	PO attainment level is achieved. However, in few courses, COs attainment level is not achieved. So, actions are suggested to take care of the COs.
Courses which affect PO 5 wherein COs attainment level is not achieved: a) C131-Mathematics-I Action 1: The Tutorials involving topics will be given for practices and to understand the concepts. Action 2: Extra effort will be done in which students were facing difficulties in tutorial session. Action 3: Assignments involving examples will be given to enhance the skill of solving the problems			
PO 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.			
PO 6	2.00	2.91	PO attainment level is achieved.
PO 7: 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.			
PO 7	2.00	2.88	The target level for PO7 is achieved.
PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			

PO 8	2.00	2.85	PO attainment level is achieved. Communications and other ethical/moral sensitivity is required when it comes to the application of Engineering expertise, needed to be addressed for real-life situations.
Courses which affect PO 8 wherein COs attainment level is not achieved: a) C472: chemical Reaction Engineering -II Action 1: Encourage to apply ethical principles and professional ethics in engineering practice.			
PO 9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.			
PO 9	2.00	2.86	The target level for PO9 is achieved.
PO 10: 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.			
PO 10	2.00	2.99	PO attainment level is achieved.
PO 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 multidisciplinary environments.			
PO 11	2.00	2.3	PO attainment level is achieved.
PO 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.			
PO 12	2.00	2.86	PO attainment level is achieved. Courses of the program are demonstrating the resource for contemporary issues and life-long learning.
PSO 1: Apply the knowledge of chemical engineering to accomplish the contemporary need of chemical & Allied Industries.			
PSO 1	2.00	2.86	The target level of PSO1 has been satisfactorily attained by the students
PSO 2: To execute the chemical engineering principle and modern engineering tools to design system by considering safety, cost, health, legal, cultural and environmental aspects.			
PSO 2	2.00	2.81	The desired target level for PSO2 has been achieved by the students. In few courses, target level of COs are not achieved. Such courses which impact the achievement of PSO2 are as listed below:
Courses which affect PSO 2 wherein COs attainment level is not achieved: Action 1: - industrial visits will be arranged for the students to acquire the understanding of chemical reaction engineering			

7.2 Academic Audit and actions taken thereof during the period of Assessment (10)

Education is a dynamic process which evolves with time, so in pursuit of perfection or excellence, the academic activities need continuous improvement. This can be achieved by assessing of present system's performance and implementing proper policies for its improvements.

Another important objective is to check if the rules and regulations set by the university as well as the state government are adhered to and standards are maintained at various departments within the institute. It is desired that the department prepares and follows its action plan and monitors it effectively. The flow chart showing the process of academic audit is given in Figure 7.2.1 as follows. Academic activities of the institute are managed by institute quality assurance cell (IQAC) in line with departmental quality assurance cell (DQAC). Figure 7.2.2.1 represents the process and hierarchy of the academic audit performed at the department.

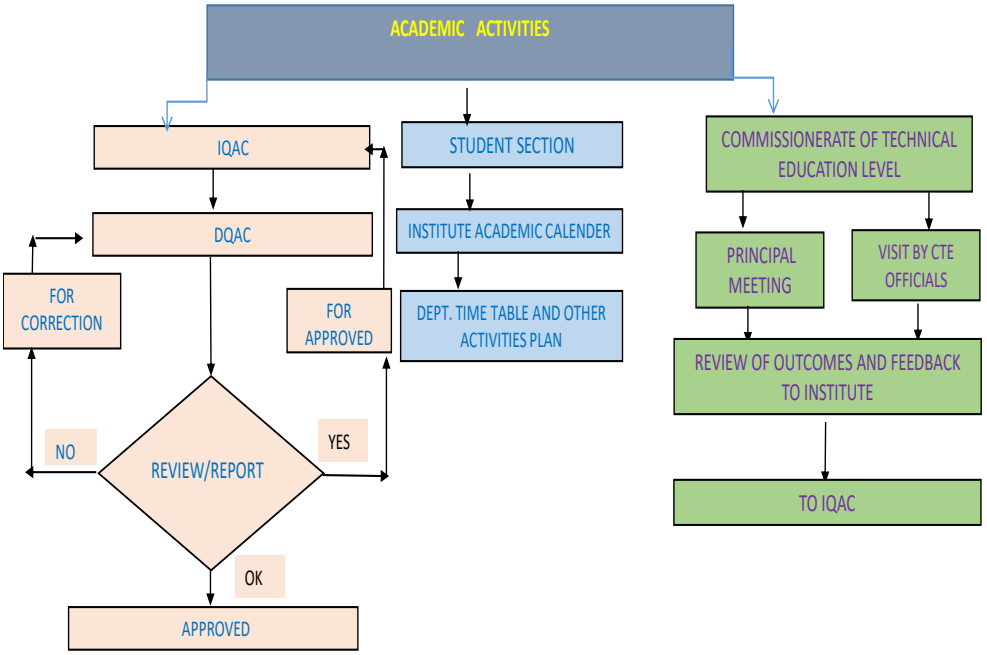


Fig. 7.2.1 Academic Audit

7.2.1. Institute Level Academic Audit and Review

The Institute has various academic committees which does planning and also observes delivery of academic duties at the Institute level. It comprises of senior professors. Academic committee takes care of various sub-tasks such as academic calendar, time table, students' feedback, and result analysis.

Institute IQAC working in line with departmental quality assurance committee (DQAC) which comprise of the HODs and faculty members of the department. Academic reports are approved initially by DQAC and then it will be forwarded to institute IQAC committee for final Approvement as shown in Fig. 7.2.1. Departmental quality assurance committee (DQAC) and

HODs together carry out faculty-wise result analysis of each and every subject, and identifies subjects which need more attention as well as group of students who need more guidance to improve institute result.

7.2.2. Departmental Level Academic Audit and Review

The department level academic review process is as shown in Fig. 7.2.2.1

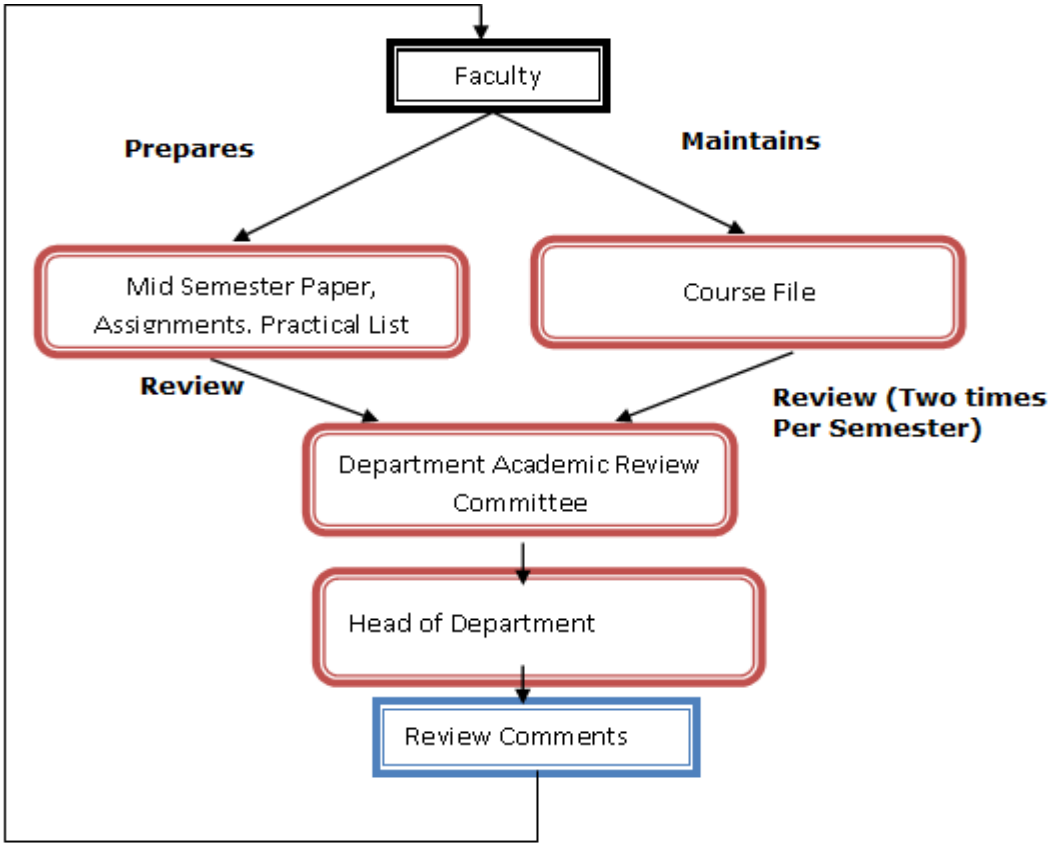


Fig. 7.2.2.1 Flow Diagrams for Department Level Academic Review

Academic activities for each semester is planned in advance and conveyed to the students at the commencement of the semester in the form of academic calendar, time table, and in MS team/Google classroom. As a part of academic review faculties prepares course files of their allocated subjects before the semester starts.

Academic review is carried per semester whereas teaching learning activities such as lab, lectures assignments and tutorials implemented or not are checked on monthly basis by DQAC and IQAC cell of the institute. Purpose of the academic review is to ensure that the teaching learning activities of various courses are as per the plan.

- Head of the department and senior faculty members verifies the contents of the course file comprising of lesson plan, assignments, extra material lecture notes, etc. And give feedback to

the faculty member for further improvement. The basic details of course files are as shown in Table 7.2.2.1

Table 7.2.2.1 Content of Course file

Sr. No.	Contents of Course File	Sr. No.	Contents of Course File
1	Vision, mission of institute and Chemical Engineering program, PO, PSO	14	Mid semester question paper CO and bloom taxonomy
2	Teaching scheme and syllabus (as per (GTU)	15	Quiz bank
3	GTU Academic Calendar	16	University question paper
4	Institute Academic Calendar	17	Attendance register
5	Course outcome	18	Continuous assessment record (co Rubric wise calculation)
6	Lecture/Lab/Tutorial plan	19	Attainment Calculation (including all internal and external evaluation component with all details
7	CO-PO-PSO mapping with justification	20	Sample Answer books
8	Rubrics	21	Result analysis
9	Lecture notes	22	Feedback Results
10	Lab manual	23	Web link for Google classroom/M S Team
11	Tutorial	24	Time Table and any other Details
12	Assignment (if any) open ended project	25	Any other details (if applicable)
13	Question bank		

A faculty member has to undergo faculty development program under Induction Training Program (ITP) to understand the teaching learning process. The faculty of the department participates in various Faculty Development Program (FDP), Industrial Training (IT), Short Term Training Program (STTP) to enhance the teaching-learning and administrative skills.

Question paper review (Quality Assessment)

The question papers of Mid Semester Examination/Class Test are reviewed by the senior faculty members of the department. The parameters checked include the coverage of syllabus, correctness of the marks, quality of questions, typographic mistakes, appropriateness of the figures and tables, etc. When certain discrepancy is reported based on the review, accordingly corrective actions are taken for improvement. The format of the question paper review is provided in Annexure 7.1.

7.2.3 Institute committees for academic activities

Other than IQAC cell, the Institute has various academic committees such as institute NBA committee, time table committee, student feedback committee etc. comprises of senior professors,

which does plan and also observes delivery of academic duties at the institute level. Academic committee, for instance, student section issues the academic calendar at the beginning of each semester and delivered to each department, whereas time table is issued by institute time table committees in line with departmental time table committee. Furthermore, students' feedback is collected by institute feedback committee in line with departmental feedback committee.

7.2.4 Institute Academic Audit by Commissionerate of Technical Education

The institute level audit is conducted every year for all the departments of the institute by Commissionerate of technical education (CTE) of government of Gujarat. The panel members nominated by the director of CTE comprise of the principal other institute and senior professors as an external expert from another institute. Table 7.2.4.1 provides details of the CTE level academic audit carried out during the assessment period. Circular regarding the university level academic audit for the A.Y 20-21 and A.Y 2019-20 are given in Annexure 7.2. External members of the academic audit team review academic audit data yearly and submit the confine report of the institute to the higher authority (CTE official) for necessary action and improvement. The format of the report which is submitted to CTE official are given in Annexure 7.3.

Table 7.2.4.1 The details of CTE Level Academic Audit

Period of observation	Sem	Date of visit	Overall strength
2019-20	Odd 2019-20	17 December 2019	Good teaching learning practices
2020-21	Even 2019-20 Odd 2020-21	14 March 2022	Good teaching learning practices Good publication at national and international level
2020-21	Even 2020-21	14 March 2022	Good teaching learning practices Good publication at national and international level

Audit by Institute Committee

- The department level academic audit is carried out twice in a year by a panel nominated by the institute head and institute inspection committee, which comprise of HOD of other department, as the chairperson and two senior professors/experienced faculty members of other department, as panel members. Please refer the order copy of the department level academic inspection committee for the A.Y 2019-20, 2020-21and 2021-22 in the Annexure 7.4.

- Institute academic committees review data submitted by the department and give feedback for improvement if required. Departmental academic audit coordinator collects academic activity data in required format and submits reports to the institute academic committee.
- For instance, the department has to prepare chapter 2 and chapter 3 of Technical Institute Inspection Manual: 2018 (TIIM) for institute academic audit, the details of the format is given in the annexure 7.5. Table 7.2.4.2 provides details of the institute level academic audit carried out during the assessment period. The institute committee monitored the departmental various activities listed in chapter 3 and individual faculty performance listed in chapter 2 and generate internal verification report which will be submitted to institute inspection committee for further improvement and necessary action. The format for internal verification report is given in Annexure7.6 for the A.Y 2019-20, 20-21 and 21-22.

Table 7.2.4.2 The Details of Department Level Academic Audit carried by institute

Period of observation	Sem	Date of visit	Overall strength
2019-20	Odd 2019-20	03/12/2019	Teaching learning practice in the department is good and satisfactory
2019-20 2020-21	Even 2019-20 Odd 2020-21	14/12/2020	Teaching learning practice in the department is good and satisfactory
2020-21	Even 2020-21	23/7/2021	Teaching learning practice in the department is good and satisfactory
2021-22	Odd 2021-22	15/02/2022	Teaching learning practice in the department is good and satisfactory

7.3. Improvement in Placement, Higher Studies, and Entrepreneurship (10)

7.3.1 Placement

Institute has a separate cell/department, is Training and Placement cell (T & P Cell), for the campus placement of students. This cell is headed by the Training and Placement Officer (TPO). Moreover, there are faculty as well as student placement coordinators at the department level for the smooth functioning of placement activity.

The Training and Placement Cell of the institute serves as an efficient linkage between the institute and the industry. They also focus on the overall development of the students through training and industry expert lectures to enhance the employability skills of the students.

The cell functions with the support of industries, professional engineers and management consultants. The cell also arranges industrial visit. All this service is enabled on T & P Portal.

The Education Department, Government of Gujarat has initiated the excellent concept called finishing school for the final year students to help them getting the job. The placement data for the last three years is given in Table 7.3.1.1

7.3.2 Higher Studies

- The Institute promotes the students to take part in competitive examinations like, GRE, TOFEL, GATE, CAT, UPSC, GPSC etc. for further studies in and outside of India. Lectures of experts from various professional bodies are arranged to impart the relevant skills to the students. The number of students qualified for higher studies is given in Table 7.3.1.1.

7.3.3 Entrepreneurship

The details of students of Institute, who became entrepreneurs, are given below in Table 7.3.1.1

Table 7.3.1.1 The Details of Placement, Higher Studies, and Entrepreneurship

ITEM	LYG (2017-2018)	LYGm1 (2016-2017)	LYGm2 (2015-2016)
Total No. of Final Year Students (N)	53.00	62.00	68.00
No. of students placed in companies or Government Sector (X)	30	34	28
No. of students admitted to higher studies with valid qualifying scores (GATE or equivalent State or National Level Tests, GRE, GMAT etc.) (Y)	0	4	4
No. of students turned entrepreneur in engineering/technology (Z)	0	3	0
X+Y+Z=	30	41	32
Placement Index	0.57	0.66	0.47

7.4. Improvement in the quality of students admitted to the program (10)

- The admission of students in the institute is through Admission Committee for Professional Courses (ACPC) under Directorate of Technical Education, Gujarat State (Constituted under Section 4 of the Gujarat Professional Technical Educational Colleges or Institutions (Regulation of Admission and Fixation of Fees) Act. 2007 (Guj.2 of 2008). Admission in engineering course will be either through 12^{th} standard + GUJCET/JEE or Diploma (here after called D2D i.e., Diploma to Degree). The detail of admission process is mentioned in Annexure 7.7. The information about the admissions for the last three years is presented in Table 7.4.1 and the students having a high rank in state level entrance examination prefer BE chemical engineering at Lukhdhirji Engineering College, Morbi which is reflected through the opening rank for the same.

Table 7.4.1 Admission data

Item		**CAY (2021-2022)**	**CAYm1 (2020-2021)**	**CAY*m*2 (2019-2020)**
National Level Entrance Examination (GATE)	No. of Students admitted	NA	NA	NA
	Opening Score/Rank	NA	NA	NA
	Closing Score/Rank	NA	NA	NA
State/University/Level Entrance Examination/Others (Name of the Entrance Examination)	No. of Students admitted	78	78	78
	Opening Score/Rank	EWS:19225 Open: 7759 SEBC: 19458 TFW 7456	OPEN: 3855 SEBC: 8336 SC:11654 TFW:7458	OPEN: 6249 SEBC: 12237 SC: 17975 TFW:5733 EWS:17276
	Closing Score/Rank	OPEN: 15383 SEBC: 21019 EWS:23782 TFW 10474	OPEN: 19251 SEBC: 24698 SC:22400 TFW:9170	OPEN: 18518 SEBC: 16638 SC: 30058 TFW:7234 EWS:19790
Name of the Entrance Examination for Lateral Entry or lateral entry details (D to D Students)	No. of Students admitted	15	12	11
	Opening Score/Rank	OPEN:1101380 SEBC:1102329 EWS:1104877 SC:1108986 ST:1107786	OPEN:1101535 SEBC:1102329 EWS:1280151	OPEN:1280069 SEBC:1280151 EWS:1280155 SC:1280248
	Closing Score/Rank	OPEN:1101095 SEBC:1104354 EWS:2000017	OPEN:9900028 SEBC:1102807 EWS:1103479	OPEN:3280014 SEBC:1280252
Average CBSE/Any other Board Result of admitted students (Physics, Chemistry and Maths)		60.09	55.96	45.95

Institute Level Criteria

Criterion 8: First Year Academics (50)

8.1 First Year Student-Faculty Ratio (FYSFR) (5)

Table 8.1.1 First year student -Faculty Ratio

SN	Name of the faculty member	PAN No.	Qualification	Date of Receiving Highest Degree	Area of Specialization	Designation	Date of joining	Teaching load (%)			Currently Associated (Yes/No)	Nature Of Association (Regular /Contract)	Date Of leaving (In case Currently Associated is 'No')
								CAY	CAYm1	CAYm2			
1	Dr. Ramesh Damor	AFTPD2578Q	M.Sc. and PhD	9/10/2014	Fractional differential equations	Associate Professor	3/2/2017	36	50	57	Yes	Regular	
2	Dr. Sanjay Kumar Singhal	AYNPS9528C	M.Sc. and PhD	17-11-2003	Neutron and gamma ray strength functions	Associate Professor	12/10/2018	79	79	100	Yes	Regular	
3	Dr. Hardik M. Makadia	ARYPM8827G	M.Sc. and PhD	4/7/2016	Graph Theory	Assistant Professor	30-06-2015	44	56	69	Yes	Regular	
4	Dr. S.H. Karakar	BFIPK0448E	M.Sc. and PhD	2/4/2019	Graph Theory	Assistant Professor	13-11-2020	56	50	0	Yes	Regular	
5	Prof. Dhairyavi K. Anjaria	AYMPA2318P	MA	1/4/2009	English language and literature	Assistant Professor	4/5/2011	69	81	100	Yes	Regular	
6	Prof. Jayant Kishorbhai Jogi	AFZPJ6107M	M.Sc	1/3/2003	Space Physics	Assistant Professor	6/5/2011	75	88	100	Yes	Regular	
7	Prof. Prashant K Rathod	ARKPR0395Q	M.Sc	1/5/2004	Space Physics	Assistant Professor	10/5/2011	81	88	100	Yes	Regular	
8	Dr.Devshi D. Bantva	ARSPB5610J	M.Sc. and PhD	6/9/2013	Graph Theory	Assistant Professor	20-05-2011	69	56	75	Yes	Regular	
9	Prof. Jagruti B Bheda	BCYPB7419M	M.A and Ph.D	21-08-2021	English language and literature	Assistant Professor	12/5/2011	75	38	100	Yes	Regular	
10	Dr. Ashish K Shukla	BRGPS5155J	M.A and Ph.D	7/12/2015	English language laboratory	Assistant Professor	20-12-2018	0	81	100	No	Regular	28-01-2022
11	Dr. S.K. Tiwari	ATWPT6474A	M.Sc. and PhD	31-07-2014	Functional Analysis	Assistant Professor	1/12/2020	63	81	0	Yes	Regular	
12	Dr. Bhavesh M. Kakrecha	BRYPK1528D	M.Sc. and PhD	19-12-2017	Domination in Graph	Assistant Professor	30-06-2015	0	0	75	No	Regular	12/11/2020
13	Dr.D.D.Tilala	BAIPT7970B	M.Sc. and PhD	18-02-2014	INORGAIC CHEMISTRY	Assistant Professor	10/10/2017	0	0	56	No	Regular	12/11/2020
14	Dr. Gunjan Ranabhat	AVKPR1421P	M.Sc. and PhD	23-08-2012	Real Analysis	Assistant Professor	15-10-2019	0	0	100	No	Regular	27-01-2020
15	Dr. S.R. Upadhyay	AAUPU4374K	M.A and Ph.D	30-12-2015	English Language	Assistant Professor	29-01-2022	69	0	0	Yes	Regular	
16	Prof.M.H. Pandya	ACSPP6486H	ME/M. Tech and PhD	2/6/2017	Machines and drives	Associate Professor	18-03-2011	43	0	0	Yes	Regular	

SN	Name of the faculty member	PAN No.	Qualification	Date of Receiving Highest Degree	Area of Specialization	Designation	Date of joining	Teaching load (%)			Currently Associated (Yes/No)	Nature Of Association (Regular /Contract)	Date Of leaving (In case Currently Associated is 'No')
								CAY	CAYm1	CAYm2			
17	Prof. S. N. PUROHIT	AFLPP1167K	M.E/M.Tech	11/8/2009	Power System	Assistant Professor	21-04-2011	0	13	0	Yes	Regular	
18	Prof.D. V. BAVLECHA	AAEPZ5008P	M.E/M.Tech	5/9/2016	Power System	Assistant Professor	19-02-2020	0	25	0	No	Regular	28-01-2022
19	Prof.H. M. BUCH	AFZPB6786N	ME/M. Tech and PhD	29-06-2020	Power System	Assistant Professor	13-11-2020	0	6	0	Yes	Regular	
20	Prof.A. C. LAKUM	ABEPL9263B	M.E/M.Tech	1/9/2004	Power System	Assistant Professor	19-12-2013	13	19	0	Yes	Regular	
21	Prof.P. D. RAVAL	AHHPR6247E	ME/M. Tech and PhD	18-12-2020	Power System	Assistant Professor	30-06-2015	6	19	0	Yes	Regular	
22	Prof. H.M.KARKAR	AOVPK3280R	ME/M. Tech and PhD	3/2/2021	Power System	Assistant Professor	3/9/2016	0	13	56	Yes	Regular	
23	Prof. B.B.PARMAR	AQBPP6867H	M.E/M.Tech	17-05-2005	Power System	Assistant Professor	12/8/2016	25	6	13	Yes	Regular	
24	Prof. V. G. JOTANGIYA	ALCPJ0477B	M.E/M.Tech	1/8/2011	Power Electronics and electrical drives	Assistant Professor	12/8/2016	38	31	0	Yes	Regular	
25	Prof. P.H.CHAUHAN	ARWPC7214R	M.E/M.Tech	20-07-2013	Power System	Assistant Professor	12/8/2016	13	44	31	Yes	Regular	
26	Prof. J.A. JADAV	AHSPJ4863D	M.E/M.Tech	3/8/2010	Industrial Electronics	Assistant Professor	1/9/2016	25	50	0	Yes	Regular	
27	Prof. P.N.PARMAR	CFIPP1371J	ME/M. Tech and PhD	21-07-2012	Power System	Assistant Professor	4/9/2019	69	44	38	Yes	Regular	
28	Prof. S.K. Patel	BCPPP9412D	M.E/M.Tech	15-07-2009	Microprocessor System	Assistant Professor	16-08-2016	13	25	13	No	Regular	28-01-2022
29	Prof. S.L. Kaila	AXDPK0922H	M.E/M.Tech	19-01-2012	Power System	Assistant Professor	3/9/2016	0	0	38	No	Regular	12/11/2020
30	Prof. G.N. Sarvaiya	BTAPS3137G	M.E/M.Tech	14-10-2014	Electric Powe System	Assistant Professor	29-01-2022	13	0	0	Yes	Regular	
31	Prof. S.K. Vyas	ALIPV8736F	M.E/M.Tech	29-10-2012	Electrical	Assistant Professor	5/10/2012	0	0	38	No	Contractual	9/11/2020
32	Prof. D.M.BHANKHODIYA	BISPB2288Q	M.E/M.Tech	19-01-2013	Power System	Assistant Professor	21-10-2013	0	0	25	No	Contractual	9/11/2020
33	Prof. D.T.VAGHELA	AFFPV7099L	M.E/M.Tech	23-11-2012	Power System	Assistant Professor	22-10-2013	0	0	25	No	Contractual	9/11/2020
34	Prof. C.K.VASOYA	ASCPG6729J	M.E/M.Tech	22-07-2014	Electrical	Assistant Professor	22-10-2014	0	0	13	No	Contractual	9/11/2020
35	PROF. M.H. LUNAGARIYA	AAQPL6664F	M.E/M.Tech	22-10-2009	Structural Engineering	Assistant Professor	13-11-2020	56	44	0	Yes	Regular	
36	PROF B.H. JAISWAL	AIUPJ8979K	M.E/M.Tech	10/12/2012	Transportation Engineering	Assistant Professor	11/9/2017	56	38	44	Yes	Regular	
37	PROF. S.A. PATEL	ASRPP2336F	M.E/M.Tech	28-01-2016	Town and Country Planning	Assistant Professor	1/11/2019	56	63	44	Yes	Regular	

SN	Name of the faculty member	PAN No.	Qualification	Date of Receiving Highest Degree	Area of Specialization	Designation	Date of joining	Teaching load (%)			Currently Associated (Yes/No)	Nature Of Association (Regular /Contract)	Date Of leaving (In case Currently Associated is 'No')
								CAY	CAYm1	CAYm2			
38	PROF. N.J.BHATT	AJGPB9718F	ME/M. Tech and PhD	13-10-2020	Water Resource Engineering	Assistant Professor	18-10-2017	0	0	31	Yes	Regular	
39	PROF V.H. KHOKHANI	BJNPK3889C	M.E/M.Tech	21-07-2012	Water Resource Engineering	Assistant Professor	25-07-2017	0	0	31	No	Regular	20-11-2020
40	Prof.H. K. Sarvaiya	CDQPS5764Q	ME/M. Tech and PhD	24-09-2018	Civil Enineering	Assistant Professor	27-05-2016	13	0	38	No	Regular	28-01-2022
41	Prof. MKPathak	ATZPP9104G	M.E/M.Tech	16-07-2009	Structural Engineering	Assistant Professor	17-07-2018	0	13	38	Yes	Regular	
42	Prof. M B Baldaniya	BLSPB6264P	M.E/M.Tech	9/5/2012	Structural Engineering	Assistant Professor	27-05-2016	0	13	0	Yes	Regular	
43	Prof. B R Kanzariya	CRZPK9878C	M.E/M.Tech	21-07-2012	Water Resource Engineering	Assistant Professor	4/10/2012	13	0	0	Yes	Contractual	
44	Prof. H.D. Bambhava	BGZPB5847E	M.E/M.Tech	20-07-2013	Construction management equipment	Assistant Professor	22-10-2013	0	13	0	Yes	Contractual	
45	PROF.A.A.PARMAR	BATPP7086H	M.E/M.Tech	28-06-2011	computer engineering	Assistant Professor	8/9/2016	44	44	38	Yes	Regular	
46	PROF. T.M VASAVADA	ADYPV1524F	ME/M. Tech and PhD	1/12/2019	Sensor Networks	Assistant Professor	8/9/2016	0	0	19	Yes	Regular	
47	PROF. R.R.KESHWALA	DLOTK2479D	M.E/M.Tech	20-06-2013	Information Technology	Assistant Professor	8/9/2016	0	0	25	Yes	Regular	
48	Prof. H.T.LORIYA	ADAPL5172D	ME/M. Tech and PhD	27-09-2018	Wireless Communication	Assistant Professor	17-12-2016	25	25	0	Yes	Regular	
49	Prof. A.R.GAUSWAMI	BKXPG3008A	M.E/M.Tech	24-12-2013	Industrial Electronics	Assistant Professor	7/5/2016	25	25	31	Yes	Regular	
50	Prof. P.M.SHAH	BOOPS5592G	M.E/M.Tech	15-07-2013	Power Electronics	Assistant Professor	21-05-2014	25	25	0	Yes	Contractual	
51	Prof. R.B.Parmar	ACDPP2403R	B.E/B.Tech	7/5/1992	EC	Assistant Professor	18-08-2011	25	25	38	Yes	Regular	
52	Prof. R.N.Rathod	ALSPR2901C	ME/M. Tech and PhD	5/7/2021	Wireless Communication	Assistant Professor	22-03-2011	19	19	38	Yes	Regular	
53	Prof. S H Trivedi	AEXPT1826N	M.E/M.Tech	26-08-2016	Industrial Electronics	Assistant Professor	17-12-2009	0	0	6	Yes	Regular	
54	Prof. M.R.Mali	ABZPM7632A	M.E/M.Tech	20-07-2010	CAD CAM	Associate Professor	21-09-2012	14	14	7	Yes	Regular	
55	Prof. B.J. Makwana	AEYPM6655D	M.E/M.Tech	2/8/2010	CAD CAM	Associate Professor	16-01-2016	14	14	7	Yes	Regular	
56	Prof. S.R. Patel	ACYPP1109R	M.E/M.Tech	24-07-2012	MECHANICAL	Assistant Professor	5/7/2011	13	38	25	Yes	Regular	
57	Prof. M.B. Jethwa	AGVPJ2558B	M.E/M.Tech	22-01-2018	Production	Assistant Professor	19-12-2013	0	6	19	Yes	Regular	

SN	Name of the faculty member	PAN No.	Qualification	Date of Receiving Highest Degree	Area of Specialization	Designation	Date of joining	Teaching load (%)			Currently Associated (Yes/No)	Nature Of Association (Regular /Contract)	Date Of leaving (In case Currently Associated is 'No')
								CAY	CAYm1	CAYm2			
58	Dr. V.A. Parikh	AGWPP6930G	ME/M. Tech and PhD	1/9/2020	Logistics and Supply Chain Management	Assistant Professor	26-08-2020	22	19	0	Yes	Regular	
59	Prof. P.H. Solanki	ASKPF6103N	M.E/M.Tech	27-07-2015	Production	Assistant Professor	4/12/2019	19	13	13	Yes	Regular	
60	Dr. M.D. Vadhvani	AKNPJ1508M	ME/M. Tech and PhD	8/1/2018	Lean Manufacturing	Assistant Professor	26-08-2020	9	19	0	Yes	Regular	
61	Prof.A.B. Panchal	BFPPP3108B	M.E/M.Tech	20-07-2013	Machine Design	Assistant Professor	27-05-2016	19	6	13	Yes	Regular	
62	Prof. H.Z. Parmar	AVKPP1346N	M.E/M.Tech	10/6/2010	Mechanical	Assistant Professor	20-06-2016	9	19	6	Yes	Regular	
63	Prof. P.B. Tailor	ABUPT7939G	ME/M. Tech and PhD	8/8/2015	Manufacturing	Professor	11/12/2018	14	29	14	Yes	Regular	
64	Prof. V.B. Patel	ABHPP5543P	ME/M. Tech and PhD	6/10/2014	Manufacturing	Professor	11/12/2018	14	29	14	Yes	Regular	
65	Prof V P Pandya	ADKPP4363N	M.E/M.Tech	30-04-1994	Thermal Science	Associate Professor	20-09-2012	0	0	21	No	Regular	31-07-2020
66	Prof.R.N. Chovatia	AEAPC0288A	M.E/M.Tech	7/1/2011	CAD CAM	Associate Professor	21-09-2012	29	36	36	Yes	Regular	
67	Prof. K.K. Dave	AKUPD8913H	M.E/M.Tech	9/2/2009	Mechanical	Assistant Professor	19-04-2011	38	38	63	Yes	Regular	
68	Prof. H.N. Jani	AHMPJ4266A	M.E/M.Tech	15-12-2008	Machine Design	Assistant Professor	1/7/2015	19	38	50	Yes	Regular	
69	Prof.H.D. Patel	AZKPP8476E	M.E/M.Tech	19-01-2013	CAD CAM	Assistant Professor	23-12-2014	25	31	63	Yes	Regular	
70	Prof. C.A. Maradiya	AUDPM8686M	ME/M. Tech and PhD	15-04-2021	Thermal Engineering	Assistant Professor	17-06-2016	31	31	25	Yes	Regular	
71	Prof.A.N. Dave	AJNPD0506C	ME/M. Tech and PhD	26-03-2018	Mechanical	Assistant Professor	10/6/2016	31	38	50	Yes	Regular	
72	Prof L M Rola	AJWPR8249M	M.E/M.Tech	19-01-2013	Thermal Science	Assistant Professor	13-06-2016	0	0	38	No	Regular	11/12/2020
73	Prof.J.H. Solanki	BPSPS1391L	M.E/M.Tech	19-12-2014	Heat Power and Thermal Engineering	Assistant Professor	23-06-2016	19	13	38	Yes	Regular	
74	Prof.R.C. Ghanghas	BLBPG5349B	M.E/M.Tech	6/2/2015	Materials Technology	Assistant Professor	6/11/2017	50	50	69	Yes	Regular	
75	Prof. J. M. Pujara	ATUPP4841P	ME/M. Tech and PhD	1/10/2018	Mechanical	Assistant Professor	13-11-2020	13	44	0	Yes	Regular	
76	Prof.M.B. Vaghela	AHOPV4111C	M.E/M.Tech	16-01-2014	CAD CAM	Assistant Professor	10/6/2016	50	31	44	Yes	Regular	
77	Prof.R.N. Makadiya	AWPPM3175P	M.E/M.Tech	8/1/2012	Thermal System Design	Assistant Professor	13-06-2016	38	38	63	Yes	Regular	
78	Prof.A.B. Khant	ANDPV1247Q	M.E/M.Tech	19-01-2013	Machine Design	Assistant Professor	13-06-2016	75	31	31	Yes	Regular	

SN	Name of the faculty member	PAN No.	Qualification	Date of Receiving Highest Degree	Area of Specialization	Designation	Date of joining	Teaching load (%)			Currently Associated (Yes/No)	Nature Of Association (Regular /Contract)	Date Of leaving (In case Currently Associated is 'No')
								CAY	CAYm1	CAYm2			
79	Prof.I.B. Shah	CRDPS8615P	M.E/M.Tech	19-01-2013	CAD CAM	Assistant Professor	8/10/2012	38	63	44	Yes	Contractual	
80	Prof D M Joshipura	ABUPJ2798R	ME/M. Tech and PhD	7/7/2020	Mechanical	Assistant Professor	11/4/2013	0	0	38	No	Regular	19-08-2020
81	Dr. K.R. Gurjar	AJGPG2350N	M.Sc. and PhD	14-09-2018	Organic Chemistry	Assistant Professor	20-11-2020	31	31	0	Yes	Regular	
82	Prof. R.A. Parmar	BMPPP1789P	M.E/M.Tech	31-01-2016	Computer Engineering	Assistant Professor	10/5/2018	0	0	31	Yes	Regular	
83	Prof. R.H.BHESDADIYA	AMSPB2039C	ME/M. Tech and PhD	5/9/2016	Power System	Assistant Professor	12/5/2011	38	31	38	Yes	Regular	
84	Prof.PB Somaiya	DPVPS0413A	M.E/M.Tech	24-05-2011	Civil Geotech	Assistant Professor	7/6/2016	13	0	25	No	Regular	28-01-2022
85	Prof H M Shah	ATDPS7060G	M.E/M.Tech	12/7/2008	Cryogenic	Assistant Professor	30-06-2015	0	0	75	No	Regular	19-08-2020

Data for first year courses to calculate the FY SFR:

Table 8.1.2 Calculation of FY SFR

Year	Number of Students (Approved Intake) N	Number of Faculty Members (Considering fractional Load) F	FY SFR	Assessment = (5*20)/FYSFR (Limited to Maximum 5)
CAY m2 (2019-20)	510	27	19	5
CAY m1 (2020-21)	480	21	23	4
CAY (2021-22)	480	20	24	4
Average	490	22	22	4

*****Note: If FYSFR is greater than 25, then assessment equal to zero.

8.2 Qualification of Faculty Teaching First Year Common Courses (5)

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 8.2.1 Assessment of qualification of faculty members teaching first year

Year	x Number of Regular faculty with Ph.D	y Number of Regular faculty with PG qualification	RF	Assessment of Faculty Qualification (5x + 3y) / RF
CAY m2 (2019-20)	6	14	25	2
CAY m1 (2020-21)	5	11	24	2
CAY (2021-22)	7	10	24	2
			Average Assessment	**2**

8.3 First Year Academic Performance (10)

Academic Performance = ((Mean of 1st Year 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 8.3.1 Academic Performance (Chemical)

Academic Performance	2020-21 (CAYm1)	2019-20 (CAYm2)	2018-19 (CAYm3)
Mean of CGPA or mean percentage of all successful students(X)	6.11	5.25	4.91
Total Number of successful students(Y)	64	73	56
Total Number of students appeared in the examination(Z)	65	73	58
API [X*(Y/Z)]	6.02	5.25	4.74
Average API [(AP1+AP2+AP3)/3]: 5.34			
Assessment = **Average API: 5.34**			

8.4 Attainment of Course Outcomes of first year courses (10)

8.4.1 Describe the assessment processes used to gather the data upon which the evaluation of Course Outcomes of first year is done (5)

- As described in section 2.2.2, various courses offered to the students of B.E. Chemical Engineering as per GTU curriculum including those offered in first year has three different evaluation schemes. Structure and weightage for CO attainment are as shown in Fig. 3.2.1.
- CO attainment is based on the internal and external assessment as per GTU scheme of examination. Depending upon nature, of course, maximum marks for various courses may be 150 or 100. Different components and its maximum marks are as shown in Table 3.2.1.2. For the 150 marks subject, component wise mark distribution is shown below;

  (a) Mid-Semester Exam (M) (30 Marks) :- Internal Assessment

  (b) Assignment and Lab work (I) (20 Marks) :- Internal Assessment

  (a) and (b) constitute internal components (30%) of evaluation

  (c) End semester exam (E) (70 Marks) :- External Assessment

  (d) End semester practical examination (V) (30 Marks) :- External Assessment

  (c) and (d) constitute external components (70%) of evaluation

- The Mid-Semester exam component is in form of written exam while assignment and continuous evaluation of practical work is in form of assessment of student done by subject faculty. The external component is divided in two sub-categories; End Semester exam (E) (70 Marks) and End semester practical examination (V) (30 Marks). The End semester exam component is in form of

written exam while end semester practical exam component is completed by internal subject faculty coordinator in first year.

- For 100 marks subject the internal and external component are divided in single component; that it, internal component is of mid-semester exam with assignment and external component is of end semester exam. Both these components are in form of written exam.
- For 100 marks subjects having only practical component, there is only one component for external and internal evaluation and their maximum marks are 80 and 20 respectively.

As the affiliating university i.e. GTU does not provide the marks obtained by the students in university examination and also average university average marks for individual subjects. The evaluation process is based on result/marks of the students in various components of the subjects. The grades of all students for all courses at the end of each semester are collected from the university results and converted into marks as per Gujarat Technological University Norms.

8.4.2 Record the attainment of Course Outcomes (CO) of all first-year courses (5)

The attainment of measured COs through progressive assessment are shown as follows in Table 8.4.2.1

Table 8.4.2.1 CO Attainment

CO Attainment (For Academic Year 2020-21)							
SN	**Course Code**	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**	**CO6**
1	C121	2	2	2	2	2	2
2	C122	3	3	3	3	3	3
3	C123	2.55	2.3	2.3	2.55	2.55	
4	C124	2	2	2	3	3	
5	C125	3	3	3	3		
6	C126	2	2	3	2	2	
7	C127	2.38	2.38	2.88	2.38		
8	C128	3	3	3	2	3	
9	C129	3	3	3	3	3	
10	C130	3	2	2	3		
11	C131	2	1	3	1	2	
12	C132	3	3	3	3	3	
13	C133	2	2	2	2	2	2
14	C134	3	3	3	3	3	
CO Attainment (For Academic Year 2019-20)							
SN	**Course Code**	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**	**CO6**
1	C121	3	2	2	1	1	2
2	C122	2	3	2	3	3	3
3	C123	2.18	1.89	1.89	2.18	2.18	-
4	C124	3	3	2	3	3	-

5	C125	2	2	2	2	-	-
6	C126	2	2	3	2	2	-
7	C127	2.2	2.3	2.5	2.5	-	-
8	C128	2	2	3	2	2	-
9	C129	3	3	3	3	3	-
10	C130	3	2.7	2.7	3	-	-
11	C131	1	-	2	2	1	-
12	C132	2	2	2	3	3	-
13	C133	2	2	2	2	2	2
14	C134	3	3	3	3	3	-
CO Attainment (For Academic Year 2018-19)							
SN	**Course Code**	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**	**CO6**
1	C121	2	2	2	3	1	3
2	C122	2	2	2	3	3	2
3	C123	1.64	1.75	1.91	1.95	1.79	
4	C124	2	2	1	2	2	
5	C125	2	2	2	2		
6	C126	2	1	1	1	2	
7	C127	2.1	1.9	2.4	2.7		
8	C128	2	2	1	1	1	
9	C129	3	3	3	3	3	
10	C130	1.72	2	1.72	1.72		
11	C131	1	1	1	1	1	
12	C132	1	1	1	2	2	
13	C133	1	1	1	2	1	2
14	C134	3	3	3	3	3	

Department has set values as follows in all 1st year courses;

For 2020-21,

If 60% or more students scored ≥ 60% of Marks then attainment level is 3.0. If 60% or more students scored ≥ 50% but < 60% of Marks then attainment level is 2.0. If 60% or more students scored ≥ 40% but < 50 % of Marks then attainment level is 1.0. However, for C131, same criteria of 2019-20 have been adopted.

For 2019-20,

If 55% or more students scored ≥ 60% of Marks then attainment level is 3.0. If 55% or more students scored ≥ 50% but < 60% of Marks then attainment level is 2.0. If 55% or more students scored ≥ 40% but < 50 % of Marks then attainment level is 1.0.

For 2018-19,

If 50% or more students scored ≥ 60% of Marks then attainment level is 3.0. If 50% or more students scored ≥ 50% but < 60% of Marks then attainment level is 2.0. If 50% or more students scored ≥ 40% but < 50 % of Marks then attainment level is 1.0.

- Correlation of Course Code with GTU subject code is given below in Table 8.4.2.2

Table 8.4.2.2 GTU subject code

Course	Subject Code (GTU)	Subject Name
C121	3110001	Chemistry
C122	3110002	English
C123	3110003	Programming for Problem Solving
C124	3110004	Basic Civil Engineering
C125	3110005	Basic Electrical Engineering
C126	3110006	Basic Mechanical Engineering
C127	3110007	Environmental Science
C128	3110011	Physics
C129	3110012	Workshop/Manufacturing Practices
C130	3110013	Engineering Graphics & Design
C131	3110014	Mathematics-1
C132	3110015	Mathematics-2
C133	3110016	Basic Electronics
C134	3110018	Physics

8.5 Attainment of Program Outcomes from first year courses (20)

8.5.1 Indicate results of evaluation of each relevant PO and or PSO if applicable (15)

Table 8.5.1.1a PO Attainment

PO Attainment (For Academic Year 2020-21)												
Course Code	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
C121	0.8	0.67	-	-	2	1	-	-	0.8	-	-	0.78
C122	3.00	-	-	-		2.67	2.83	-	3.00	3.00	-	3.00
C123	1.94	-	1.27	-	0.82	-	-	-	1.27	0.85	-	-
C124	1.6	1.92		2.17	2	1.6	2.5		1.6	2	-	1.6
C125	3	3	3	-	-	1	-	-	-	-	-	-
C126	1.47	1.33	-	-	-	-	-	-	-	-	-	-
C127	0.72	0.77	0.88	-	-	0.89	0.89	-	-	-	-	1.11
C128	1.87	1.87	0.93	-	-	-	-	-	1.9	-	-	1.27
C129	2	1	1	1	1	-	-	-	1	-	1	1
C130	1.69	1.17	-	-	1.00	-	-	-	-	1.00	-	-
C131	0.87	0.87	0.87	0.87	0.87	-	-	-	-	-	-	-
C132	2	2	2	2	2	-	-	-	-	-	-	-
C133	2.6	2.2	1	1.5	2	-	-	-	-	-	-	-
C134	2	2	1	-	-	-	-	-	2	-	-	1.4
Average	**1.83**	**1.57**	**1.33**	**1.51**	**1.46**	**1.43**	**2.07**		**1.65**	**1.71**	**1.00**	**1.45**

Table 8.5.1.1b PO Attainment

PO Attainment (For Academic Year 2019-20)												
Course Code	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
C121	0.6	0.83	-	-	2	0.67	-	-	0.5	-	-	0.61
C122	3	-	-	-	-	2.44	2.56	-	2.7	2.67	-	2.67
C123	1.63	-	0.99	-	0.67	-	-	-	0.99	0.62	-	-
C124	1.87	2.25	-	2.5	2	1.87	3	-	1.87	2	-	1.87
C125	2	2	2	-	-	0.67	-	-	-	-	-	-
C126	1.47	1.33	-	-	-	-	-	-	-	-	-	-
C127	0.79	0.8	0.84	-	-	1.04	1	-	-	-	-	1.28
C128	1.47	1.47	0.73	-	-	-	-	-	1.47	-	-	1.07
C129	2	1	1	1	1	-	-	-	1	-	1	1
C130	1.87	1.26	-	-	1	-	-	-	-	1	-	-
C131	0.67	0.67	0.67	0.67	0.67	-	-	-	-	-	-	-
C132	1.6	1.6	1.6	1.6	1.6	-	-	-	-	-	-	-
C133	2	2	1.33	-	-	-	-	-	-	-	-	-
C134	2	2	1	-	-	-	-	-	2	-	-	1.4
Average	**1.64**	**1.43**	**1.13**	**1.44**	**1.28**	**1.34**	**2.19**		**1.50**	**1.57**	**1.00**	**1.41**

Table 8.5.1.1c PO Attainment

PO Attainment (For Academic Year 2018-19)												
Course Code	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
C121	0.67	0.67	-	-	3	0.67		-	0.7		-	0.72
C122	2.50	-	-	-		2.11	2.22	-	2.33	2.33	-	2.33
C123	1.47	-	0.87	-	0.63			-	0.87	0.60	-	-
C124	1.2	1.42	-	1.67	1.33	1.2	2	-	1.2	1.33	-	1.2
C125	2	2	2	-	-	0.67	-	-	-	-	-	-
C126	0.93	0.67	-	-	-	-	-	-	-	-	-	-
C127	0.76	0.72	0.8	-	-	0.96	0.99	-	-	-	-	1.19
C128	0.93	0.93	0.47	-	-	-	-	-	0.93	-	-	0.6
C129	2	1	1	1	1	-	-	-	1	-	1	1
C130	1.21	0.8	-	-	0.57	-	-	-	-	0.57	-	-
C131	0.47	0.47	0.47	0.47	0.47	-	-	-	-	-	-	-
C132	0.93	0.93	0.93	0.93	0.93	-	-	-	-	-	-	-
C133	1.5	1.33	0.67	-	-	-	-	-	-	-	-	-
C134	2	2	1	-	-	-	-	-	2	-	-	1.4
Average	**1.33**	**1.08**	**0.91**	**1.02**	**1.13**	**1.12**	**1.74**		**1.29**	**1.21**	**1.00**	**1.21**

Table 8.5.1.1d Average PO Attainment

PO Attainment Average of 3 years (AY 20-21, 19-20 & 18-19												
Average of 3 years (AY 20-21, 19-20 & 18-19	**1.60**	**1.36**	**1.12**	**1.32**	**1.29**	**1.30**	**2.00**	**-**	**1.48**	**1.50**	**1.00**	**1.36**

8.5.2 Actions taken based on the results of evaluation of relevant POs (5)

Table 8.5.2.1.1 POs Attainment levels and Actions for improvement

POs	Target Level	Attainment Level	Observations
PO1: Engineering Knowledge			
PO1	1.37(20-21) 1.37(19-20) 1.37(18-19)	1.83 (20-21) 1.64 (19-20) 1.33 (18-19)	The target of PO1 is achieved based on the average value of attainment. However, measures are taken for non-attained PO 1 for particular case
Action 1: Additional Assignments/Tutorials for better learning are given in non-attained course. Action 2: Percentage of students scoring defined set of marks for all attainment levels is progressively enhanced.			
PO 2: Problem analysis:			
PO2	1.24(20-21) 1.24(19-20) 1.24(18-19)	1.57(20-21) 1.43 (19-20) 1.08 (18-19)	The target of PO 2 is achieved based on the average value of attainment. However, measures are taken for non-attained PO 2 for particular case
Action 1: Additional Assignments/Tutorials for better learning are given in non-attained course. Action 2: Animated Videos and assignments for better learning are given in few of the subjects. Action 2: Percentage of students scoring defined set of marks for all attainment levels is progressively enhanced.			
PO 3: Design/development of solutions:			
PO3	1.03(20-21) 1.03(19-20) 1.03(18-19)	1.33 (20-21) 1.13 (19-20) 0.91 (18-19)	The target of PO 3 is achieved based on the average value of attainment. However, measures are taken for non-attained PO 3 for particular case
Action 1: Additional Assignments/Tutorials for better learning are given in non-attained course. Action 2: Percentage of students scoring defined set of marks for all attainment levels is progressively enhanced.			
PO4: Conduct Investigations of Complex Problems			
PO4	1.15(20-21) 1.15(19-20) 1.15(18-19)	1.51 (20-21) 1.44 (19-20) 1.02 (18-19)	The target of PO4 is achieved based on the average value of attainment. However, measures are taken for non-attained PO 4 for particular case
Action 1: Additional Assignments/Tutorials for better learning are given in non-attained course. Action 2: Percentage of students scoring defined set of marks for all attainment levels is progressively enhanced.			
PO5: Modern tool usage			
PO5	1.09(20-21) 1.09(19-20) 1.09(18-19)	1.46 (20-21) 1.28 (19-20) 1.13 (18-19)	The target of PO5 is achieved based on the average value of attainment. However, measures are taken for non-attained PO 5 for particular case
Action 1: Additional Assignments/Tutorials for better learning are given in non-attained course. Action 2: Percentage of students scoring defined set of marks for all attainment levels is progressively enhanced.			

PO6: The Engineer and Society			
PO6	1.07(20-21) 1.07(19-20) 1.07(18-19)	1.43 (20-21) 1.34 (19-20) 1.12 (18-19)	The target of PO6 is achieved based on the average value of attainment.
Action 1: Percentage of students scoring defined set of marks for all attainment levels is progressively enhanced.			
PO7: Environment and Sustainability			
PO7	1.57(20-21) 1.57(19-20) 1.57(18-19)	2.07 (20-21) 2.19 (19-20) 1.74 (18-19)	The target of PO7 is achieved based on the average value of attainment.
Action 1: Activities like tree plantation were organized to sensitize students towards our responsibility for our environment. Action 2: Percentage of students scoring defined set of marks for all attainment levels is progressively enhanced.			
PO8: Ethics			
PO8	0	0	PO8 is not mapped and no target is fixed. Ethics has been formally introduced in unit 4: Ethics in Engineering of Effective Technical Communication that appears in sem 3 of BE degree program of GTU.
PO9: Individual and Team Work			
PO9	1.19(20-21) 1.19(19-20) 1.19(18-19)	1.65 (20-21) 1.50(19-20) 1.29 (18-19)	The target of PO9 is achieved based on the average value of attainment. However, measures are taken for non-attained PO9 for particular case
Action 1: Additional Assignments/Tutorials for better learning are given in non-attained course. Action 2: Animated Videos and PPTs are shared with the students for better learning. Action 2: Percentage of students scoring defined set of marks for all attainment levels is progressively enhanced.			
PO10: Communication			
PO10	1.17(20-21) 1.17(19-20) 1.17(18-19)	1.71 (20-21) 1.57 (19-20) 1.21 (18-19)	The target of PO10 is achieved based on the average value of attainment. However, measures are taken for non-attained PO10 for particular case
Action 1: Practice focusing on listening, reading, speaking and writing skills is been done. Enhancement of ascent and pronunciation of student by providing knowledge of phonetics and other linguistic methods. Action 2: Percentage of students scoring defined set of marks for all attainment levels is progressively enhanced.			
PO11:Project Management and finance			
PO11	0.67(20-21) 0.67(19-20) 0.67(18-19)	1.0 (20-21) 1.0 (19-20) 1.0 (18-19)	The target of PO11 is achieved based on the average value of attainment. However, measures are taken for non-attained PO11 for particular case

Action 1: Students are motivated to take Student Start Up and Innovation (SSIP) projects Action 2: Percentage of students scoring defined set of marks for all attainment levels is progressively enhanced.			
PO12: Life- long learning			
PO12	1.09(20-21) 1.09(19-20) 1.09(18-19)	1.45 (20-21) 1.41 (19-20) 1.21 (18-19)	The target of PO12 is achieved based on the average value of attainment. However, measures are taken for non-attained PO12 for particular case
Action 1: Students are motivated to learn from the lives of our renounced scientists during celebration of the days such as National Science Day. Action 2: Percentage of students scoring defined set of marks for all attainment levels is progressively enhanced.			

Pl. Note: In all POs the target level in all 3 years seems to be same but it is not so because for the same levels, the % of students getting a definite set of marks have been progressively enhanced every year as explained in detail in section 8.4.2 below the CO attainment Table 8.4.2.1.

Criterion 9: Student Support Systems (50)

9.1 Mentoring System to help at Individual Level (5):

Student mentoring Program in Lukhdhirji Engineering College, Morbi for the Student Community has been developed with the primary objective of enabling a reliable and comprehensive support system of constructive and positive interaction, guidance and mentorship of the students by the faculty members and the Head of Departments so as the students are motivated to excel in both academic and non-academic fields. Personal and professional support to the students is very much required in order to build confidence in the students and to make the most of their lives. The experienced faculty facilitates and supports the overall development of the students. Therefore, the process of mentoring provides a developmental opportunity for both the parties and can thus be of mutual benefit.

Implementation of Student Mentoring System:

In order to develop a smooth transition of the students to campus life for every new entrant to an academic Program at Lukhdhirji Engineering College, Morbi, the students go through an orientation program. Once the students got enrolment number from the university, they have been allotted to the faculty mentors of respective departments in almost equal strength, however whenever there is a shortage of faculty in few of the departments with respect to number of students, then the students of such departments are allotted to the departments where there are less number of students but more no of faculty members in order to keep number of allotted students roughly equal. All departments have mentors and chief mentors as along with an overall in charge of student mentorship program under the leadership of Principal of the college as per the following:

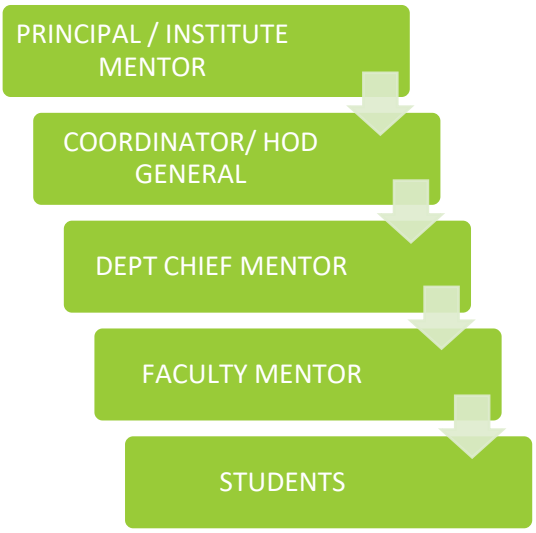


Fig 9.1.1 Hierarchy of Student Mentoring System

Each faculty mentor meets the respective allotted students' at least twice in a semester. The students can discuss his/her academic strengths/weaknesses, innovative ideas and personal on/off campus difficulties. It is necessary for a mentor to understand the wide variety of situations his mentees could face and be humble enough not to impose their own opinions but to tailor advice to the mentee's needs. A regular review meeting of faculty mentors with the chief mentors has been held at least twice per semester. The faculty members maintain the records of all the activities. Detailed Description is given as below:

Table 9.1.1 Description of Mentoring System

Sr. No.	Type of Mentoring	Functions
1	Orientation/Induction program for newly admitted students	Information to newly admitted students of B.E first year about the institute's vision & mission, faculty members and teaching/examination schemes of GTU is being communicated. Motivation of the students by experts has been done so that the students would be able to carry out their studies with enthusiasm and dynamism. Students are made familiar with old and new campuses, laboratories, libraries and other facilities through a guided tour by faculty members. The Induction Program is aimed for new entrants, with an objective to provide adequate time for the transition to hard-core engineering courses. During these 4 weeks of interaction with faculty and their classmates, the students will be equipped with the knowledge and the confidence needed to take on bigger challenges as future engineers of this country
2	Academic Development	Students have been shared with academic planners, academic schedules and e-learning resources. In order to enhance the practical knowledge of students, the mentors counsel irregular students in laboratory classes to attend regularly and complete backlog experiments during specified extra hours. Arrange special lab coaching for Students with backlogs in external lab exams. Students with poor attendance are identified and the faculty mentors motivate them to improve attendance by counseling them. Weak students have been given supplementary reading materials, model questions along with solutions and special classes to cope up.
3	Personal development	Individual students in specific cases are counseled to cope with physical, emotional, mental, social and environmental challenges. Yoga and Meditation workshops and such other holistic practices have been conducted by the experts and faculty mentors. Engage in family /peer counseling by Counselor/ Mentor /HOD to strengthen student's interpersonal relationships thereby improving their grades.
4	Professional guidance	Students are encouraged to discuss their innovative ideas and presentations. Ignite students 'thinking for innovative projects Technical workshops and webinars etc. have been arranged to support their learning capabilities. Students are persuaded and motivated to expand and upgrade their domain knowledge through consistent usage of technical and industrial literature. Students are guided to participate in competitive activities.

Sr. No.	Type of Mentoring	Functions
5	All round Development	Students are encouraged and facilitated towards all round development through participation in co-curricular, literary, cultural and sports activities in order to develop leadership qualities, decision making abilities, team spirit, socio psychological awareness, to shape the student into an intellectually integrated person.

Number of faculty mentors:	There are 08 chief mentors that is 1 for each department and 64 mentors (Mechanical Engg. -11, Chemical Engg-08, Production Engg--04, Power Electronics-05, Industrial Engg 01, IT-04, Civil 18, Electrical-13) in all 8 branches of Engineering
Number of students per mentor:	Approximately 20
Frequency of meeting:	Twice in a semester and as per the need of students

Effectiveness:

- Students' enrollment in GATE exam has been improved.
- Students' participation in curricular co-curricular and extracurricular activities have been increased.

9.2 Feedback analysis and reward/ corrective measures taken (10)

A feedback system has been developed at Lukhdhirji Engineering College, Morbi. Following table shows the outlines of the Feedback System. Description of the process is given in table 9.2.1

Table 9.2.1 Feedback System

Sr. No.	Description of Process	Remarks
1	Feedback collected for all courses:	Yes
2	Feedback collection process:	Hardcopy or online through Google forms Feedback mechanism is a well-organized system in the department/college for all courses. All the students are encouraged to give feedback.
3	Feedback receiver	Program coordinator / HOD
4	Frequency of feedback collection	Once in a semester
5	Matrices used for calculation	5-Excellent 4-Good 3-Average 2-Fair 1-Poor
6	Purpose of feedback process	For improving the overall Teaching –Learning Process.

Sr. No.	Description of Process	Remarks
7	Corrective actions taken in the last 3 years	To improve the overall results following actions were taken Conduction of MS TEAM Classroom Online Study Material Exam Specific Preparation Teaching load is shared with senior faculty members along with other faculty members. Class coordinators are assigned for necessary guidance. To increase the industry-institute interaction, more number of industrial visits and expert lectures has been arranged. To improve the placement, pre-placement talks, mock interviews, special sessions on communication skills and finishing schools have been arranged. Department is encouraging faculty members to participate in relevant MOOC courses. Faculty members are motivated to participate/organize online webinars /expert lectures with active cooperation of students.
8	Average Percentage of students who have participated:	Above 75%
9	Feedback analysis process:	The feedback collected from students is first analyzed by the Head of the Department. The feedback is reported to the concerned faculty/staff member. Corrective actions are suggested, wherever necessary.

Academic feedback form at Lukhdhirji Engineering College, Morbi is shown below:

L.E. COLLEGE, MORBI
_____DEPARTMENT
ACADEMIC FEEDBACK FROM STUDENT

This feedback is for enhancement of the teaching/learning process. Give your neutral feedback without any hesitation.

Enrollment No. (Optional): Name (optional):
Date: Academic year: 2019-20
Ratings: 1- Poor, 2 – Fair, 3 – Average, 4 – Good, 5 – Excellent.

Table 9.2.2 Academic Feedback Form

Sr. No.	**Teaching, Learning and Evaluation Parameter**	**Subject Code**			
		Name of Faculty member	**ABC**	**DEF**	**GHI**
1	Clarity in explaining the subject				
2	Content quality is relevant and useful				
3	Faculty answers to your queries/questions				
4	Coverage of entire syllabus in class				
5	Punctuality of teacher in class				
6	Teacher using modern teaching aids in the classroom				
7	Teacher encourages student's participation and discussion				
8	The teacher's attitude towards student is friendly and helpful				
9	The teacher is available and accessible in the department				
10	The evaluation process is fair and unbiased				
11	Regular and timely feedback for my performance				
12	Periodical assessment				

9.3 Feedback on facilities (5)

Feedback of students on institutional facilities is also taken each year. Following are key points of Facility feedback.

- The survey contains infrastructural, laboratory and common facilities of the institute.
- Due to pandemic situations faculty members have also used Google forms for collecting facility feedback.

- Based on which, corrective measures are devised. In case some recommendations of laboratories or resources are identified, the HOD shall take the recommendation to the principal for taking actions in order to provide the same.

Table 9.3.1 Feedback Collection Process

Sr. No.	Description of Process	Remarks
1	Collection of feedback on facilities, provided by the college.	Yes
2	Feedback collection process	Manual/Computerized
3	Feedback receiver	Head of the Department
4	Frequency of feedback collection	Once in an academic year
5	Purpose of feedback	To improve the quality of facilities.

Facility feedback form at Lukhdhirji Engineering College, Morbi is shown below:

L.E. COLLEGE, MORBI
_____DEPARTMENT

FACILITY FEEDBACK FROM STUDENTS
Ratings: 1- Poor, 2 – Fair, 3 – Average, 4 – Good, 5 – Excellent.

Table 9.3.2 Sample Facility Feedback

Sr. No.	Facility/ Parameter	Rating
1	How do you rate the classroom Infrastructure?	
2	How do you rate the cyber lab facility provided by the institution?	
3	Are you satisfied with the Extra – curricular infrastructure at college?	
4	Are you satisfied with the Hostel Facility provided by the institution?	
5	How do you rate the Lab facilities at the institution?	
6	How do you rate the Library Facilities provided by the institution?	
7	Are you satisfied with the placement support provided?	
8	How is the responsiveness of Student Section administration?	
9	How do you rate the Sports facilities provided by the Institution?	
10	Drinking water facility at the campus.	
11	Grievance redressal mechanism of the institute.	
12	How do you rank the campus as eco-friendly?	
13	Availability of the continuous power supply at the institute.	
14	How do you rate the Canteen / Mess facility at the campus?	

The feedback is analyzed, and the necessary corrective measures are implemented after discussions with the management.

Table 9.3.3 Feedback and corrective action

Sr. No.	Description of Process	Remarks
1	Hostel Facilities for Boys and Girls	Basic amenities are provided and appropriate actions were taken to resolve the issues by expediting with outsourcing agencies for improving facilities.
2	Grievance redressal mechanism of the institute.	Well defined Grievance redressal cell is functioning as per AICTE norms.
3	Enhancement in Sports Facility	The Student Gymkhana Committee is empowered to maintain the grounds & other sports facilities. Sport tools & equipment will be provided on the basis of recommendations of the Student Gymkhana Committee.
4	Mess/Canteen facility at the campus	Hostel Mess is working at boys and girl's hostel.
5	Drinking water facility	RO Drinking water facility had been provided.

9.4 Self Learning (5)

Self-learning helps students to gain knowledge and apply to larger domains. Self-learning helps the students to develop a better understanding of the subject. Various resources are available in college which facilitates students to solve their doubts and acquire additional knowledge with the help of experienced and trained faculty members.

- The institute believes that self-learning and learning beyond syllabus have a great scope in the development of the career of engineering.
- Everything in engineering cannot be taught in the classroom or laboratories. The quantum of knowledge related to applied science and engineering during the last century has been increased in a way that four years is too short period to cover specific branch of engineering.
- Institution provides adequate facilities for self-learning to students in order to be motivated to learn more and more and ultimately become life-long learners and innovators.
- Assignments are given in different forms to develop their interpersonal skills, communication skill, lifelong learning, and usage of modern tools; group activity and self-learning capability.
- As per the university teaching scheme, all the students prepare PPT for each course on a topic of his/her choice related to subject content and presents in front of the class.
- Students take maximum benefit of Internet and Wi-Fi facilities to improve learning process.

- Professional skill development courses and finishing schools have been arranged.
- Telecast of first year subject lectures through BISAG, delivered by faculty members of government engineering colleges, have been arranged for students.
- GTU, AICTE and other allied institutes organize webinars on various topics frequently and students are communicated through our HOD and faculty members to take maximum benefit by attending these webinars.
- GTU has introduced 100 Activity points' schemes under which students need to achieve 100 points during four years through participation in various technical, non-technical & management activities. It has created a very conducive self-learning environment in the institute as students participate in these activities.
- Students are encouraged to work in industries through internship/ project for realization of practical knowledge.
- Language lab facilities are provided which enables students to improve language proficiency.
- Industrial visits have been arranged by the respective departments.
- Technical and expert talks are arranged by various departments.
- College has also started the SWAYAM local chapter administered by NPTEL on March 2020. More than 300 students and faculties have been enrolled in the last three years in various MOOC courses.

This chapter has been declared as an active chapter by NPTEL-SWAYAM.

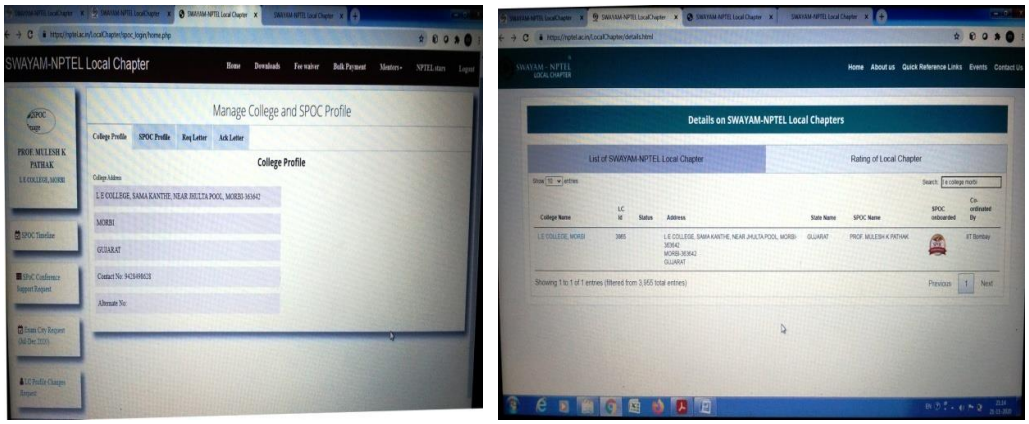


Fig 9.4.1 Snapshot of NPTEL SWAYAM Chapter organized by L. E. College, Morbi

9.5 Career Guidance, Training, Placement (10)

Training & placement office of the institute facilitates the process of placement of graduating students. Our institute holds the pride of being pioneers in the field of engineering and technology. The office liaises with various organizations, establishments which conduct interviews for graduates and post graduate students. The training & placement cell provides infrastructural facilities to conduct online tests, group discussions and interviews besides catering to other logistics. The office interacts with the companies for campus interviews for on campus as well-off campus. The dedicated team includes TPO, Co–TPOs, faculty coordinators, assistant TPO and student coordinators from each department. The placement season runs through the course of the year commencing from July to March. Pre-placement talks are also conducted in this regard. TPO invites alumni, corporate personnel to share their knowledge.

9.5.1 Facilities for Training Placement Cell at the Institute:

- Training & Placement Office.
- Computer lab with 50 computers, intranet and 100 Mbps internet facility for online test.
- Classrooms for conducting written examinations.
- Three well equipped seminar halls with audio-visual facilities.
- Well-designed rooms for conducting Group Discussions and Personal Interviews.

Table 9.5.1.1 Various Placement Activities, Career counselling activities for the year 2021& 2022

Lukhdhirji Engineering College, Morbi			
Year 2022			
Sr. No	**Name of the Activity**	**Location**	**Date**
1	Placement Fair - 2022	L.E. College, Morbi (Online)	15/03/2022 & 16/03/2022
2	Pre – Placement talk (Reliance, Byju's, TCS,BKT, SRF, Nirma)	Training & Placement Cell (Online)	Jan, Feb, March, April - 2022
Lukhdhirji Engineering College, Morbi			
Year 2021			
Sr. No	**Name of the Activity**	**Location**	**Date**
1	Opportunities for Studying in the USA	Training & Placement Cell	23/01/2021

2	Mega Placement Fair - 2021	Saurashtra University Campus, Rajkot	18/03/2021
3	Tech Saksham Program	Training & Placement Cell	18/06/2021
4	Study Abroad	Training & Placement Cell	19/06/2021
5	Study opportunities in the leading educational institution abroad & PostCovid updates	Training & Placement Cell	21/09/2021
6	Pre placement talk - eInfochips	Training & Placement Cell	21/09/2021
7	Current Trends in Renewable Energy	Training & Placement Cell	30/09/2021
8	Resume Writing Workshop	Training & Placement Cell	22/10/2021
9	Webinar on Competitive Examination Preparation GPSC	Training & Placement Cell	21/12/2020

Table 9.5.1.2 T & P activities for the year 2020

Sr. No.	Name of the Activity	Location	Date
1	On Campus Interview of M/s. Cohesion Foundation Pvt. Ltd.	L. E. College, Morbi	16-01-2020
2	Mega Placement Fair	Saurashtra University, Rajkot	07-02-2020
3	Off Campus Interview of M/s. Global CNC Automation	Rajkot	07-03-2020
4	Off Campus Interview of M/s. Mac power CNC Machines pvt. Ltd.	Rajkot	14-03-2020
5	Webinar on "Importance of Skills before entering into the Industry" Expert Speaker : Mrs. Payal Thakkar - Versil Pumps LLP	Online	28-10-2020
6	Life Skill Training Organized by Rubicon Skill Development Pvt. Ltd.	Online	2/11/2020 to 11/11/2020
7	Internship Drive - A One Salasar Pvt. Ltd.	Online	03-12-2020
8	Webinar on My Dream Overseas (Employment + Study) , Expert Speaker - Mr. Hardik Mehta Jointly organized with Directorate of Employment & Training Office- Rajkot, District Employment Exchange Office - Morbi	Online	04-12-2020
9	Off Campus Interview of M/s. Hitachi Hi - Rel Pvt. Ltd.	Off Campus	07-12-2020
10	Off Campus Interview of M/s. Velox Automation Pvt. Ltd.	Off Campus	08-12-2020

11	Off Campus Interview of M/s. Adaptive Engineering Pvt. Ltd.	Off Campus	11-12-2020
12	Off Campus Interview of M/s. Lioli Ceramica Pvt. Ltd.	Off Campus	14-12-2020
13	Off Campus Interview of M/s. GE Renewable Energy	Off Campus	18-12-2020
13	Off Campus Interview of M/s. Bharat Petroleum Corporation Ltd.	Off Campus	18-12-2020
14	Youth Employment Programme - TCS	Online	Going On

Table 9.5.3 shows Various Placement Activities, Career Counseling, and grooming activities, Organized / Participated by Training & Placement Cell, in the year of 2019

Table 9.5.1.3 T & P activities for the year 2019

Sr. No.	Name of the Activity	Location	Date
1	On Campus Interview of “M/s. Electrotherm (INDIA) Ltd.	L. E. College	08-02-2019
2	Job Fair 2019	Saurashtra University	12-02-2019
3	Career Guidance Seminar on "How to Join Indian Army"	L. E. College	18-02-2019
4	Seminar on "Financial Literacy"	L. E. College	27-03-2019
5	On Campus Interview of "M/s. Parboiler Company"	L. E. College	27-03-2019
7	Off Campus Interview of " M/s. Belador Incredible Laminates"	Monal Laminates, Morbi	30-03-2019
9	Expert Session by Mr. ArohWadnerkar on "Placement Conceptions and Corporate Lessons	L. E. College	15-04-2019
10	On Campus Interview of Louis Dreyfus Company India Pvt. Ltd.	L. E. College	03-05-2019
11	Off Campus Interview at "Varmora Granito Pvt. Ltd."	Varmora, Morbi	18-05-2019
12	Grooming activity and Group Discussion Competition	L. E. College	07-09-2019
13	Expert lecture by Mr. Uday Dholakiya on Grooming activity and group discussion competition "2020 and Beyond, the Industry Expectations"	L. E. College	16-09-2019
14	Grooming activity - GD, PI and Interpersonal skills	L. E. College	20-09-2019
15	On Campus Interview of Dream Vehicle Pvt. Ltd.	L. E. College	02-12-2019
16	On Campus Interview of M/ Reliance Industries Ltd.	L. E. College	23-12-2019

- Table 9.5.4 shows Various Placement Activities, Career Counseling, and grooming activities, Organized / Participated by Training & Placement Cell, in the year of 2018

Table 9.5.1.4 T & P activities for the year 2018

Sr. No.	Name of the Activity	Location	Date
1	Off Campus - " M/s. Hitachi Hiral"	Hitachi company	25-08-2018
2	Off Campus - TCS Drive	TCS	02-09-2018
3	Off Campus - Reliance Naval	Reliance	12-09-2018
4	On Campus Interview of "M/S. Super Gas SHV Energy Pvt. Ltd."	L. E. College	07-10-2018
5	On Campus Interview of "M/s. Emerging 5"	L. E. College	20-10-2018
6	Awareness Program on "Obligation of Income Tax and Utilization thereof in Welfare Scheme"	L. E. College	29-10-2018
7	On Campus Interview for on "M/s. Sanmar Group"	L. E. College	11-12-2018

9.5.2 List of Companies associated with L.E. College, Morbi

1. Reliance
2. Hitachi Hiral
3. TCS
4. Reliance Naval
5. Super Gas
6. Emerging 5
7. Sanmar Group
8. Electrotherm
9. Parboiler
10. Belador Incredible Laminates
11. Louis Dreyfus
12. Varmora Granito
13. Dream Vehicle
14. Cohesion Foundation

15. Global CNC Automation
16. Mac power CNC Machines
17. A One Salasar
18. Velox Automation
19. Adaptive Engineering
20. Lioli Ceramica
21. GE Renewable Energy
22. Bharat Petroleum Corporation
23. Bizotic Life Science
24. Nexzen Automation

9.5.3 List of Faculties involved in Training & Placement Cell Activities.

1. Principal: Prof. (Dr.) B.N.Suthar
2. Industry & Outreach Head: Prof. (Dr.) R. S. Damor
3. Training & Placement Officer: Prof. V.J. Rupapara
4. Co- T. & P. Officer: Prof. A. D. Baldania
5. Co- T. & P. Officer: Prof. R.N. Rathod
6. Electrical Department T & P Faculty Coordinator: Prof. P.N. Parmar
7. General Department T & P Faculty Coordinator: Prof. D.K. Anjariya
8. Chemical Department T & P Faculty Coordinator: Prof. M.T. Chauhan
9. Power Electronics Department T & P Faculty Coordinator: Prof. Samir Trivedi
10. IT Department T & P Faculty Coordinator: Prof. Rakesh Parmar
11. Industrial Department T & P Faculty Coordinator: Prof. H.D. Santoki
12. Mechanical Department T & P Faculty Coordinator: Prof. Jalpesh Solanki
13. Production Department T & P Faculty Coordinator: Prof. H.Z. Parmar
14. Civil Department T & P Faculty Coordinator: Prof. Bhargava Jaiswal

Table 9.5.3.1 Three Years Data of Placed Students

Sr. No	Year	No. of Students Placed	Branches	Maximum Package
1	2019	69	Chemical, Electrical, IT, Mech, Power Electronics, Production, Industrial & Civil	2.6 Lakes
2	2020	59	Chemical, Electrical, IT, Mech, Power Electronics, Industrial & Civil	3.36 Lakes
3	2021	25	Chemical, Electrical, IT, Mech, Power Electronics, Industrial	3.15 Lakes
4	2022	22	Chemical, Electrical, IT, Mech, Power Electronics, Industrial	7.5 Lakes

9.5.4 RUSA (Rashtriya Uchchatar Shiksha Abhiyan):

RUSA (Rashtriya Uchchatar Shiksha Abhiyan) is a centrally sponsored scheme of development for higher education in India initiated in 2013 by MHRD. The key objectives of RUSA are to improve the access, equity and quality in higher education through planned development of higher education at the state level. Such planning will include creating new academic institutions, expanding and upgrading the existing ones, developing institutions that are self-reliant in terms of quality education, professionally managed, and characterized by greater inclination towards research and provide students with education that is relevant to them as well the nation as a whole.

In RUSA L.E. College, Morbi received grant under component 9 (2019-20) of Rs 3,93,700/- The grant is utilized for different activities such as expert lecture, training and book purchase for equity initiative. Received grant under Component 12 (2020-21): Vocationalization of Higher Education Rs 10,86,956/-. The grant is utilized for vocational training for final year students at L.E. College, Morbi.

Activities Organized /Participated by RUSA in year of 2019-20

1. Technical Skill Development: Draftsman design developer training of 240 hours by GRAS Education Training Services Pvt Limited has been conducted for final year students
2. Technical Skill Development: Industrial Automation Specialist training of 480 hours by Sofcon India Pvt. Ltd has been conducted for final year students.

The main objective of component 9 is to ensure better participation rate of girl students and SC/ST/OBC students in higher education institutions. This is done by utilizing approved funds to create equal opportunity cells, conducting remedial classes, gender sensitization campaigns, and gender counseling and introducing innovative schemes for mentoring the girl child.

Component 12 focuses on skill development amongst students so as to increase their employability. The Institute has started receiving funds under component 12 and is utilizing the funds for benefit of the students as per the objectives.

Table 9.5.4.1 shows activities done under RUSA in the last three years.

Sr. No.	Component	Year	Activities
1	09	2018-19	Martial Arts workshop for girls considering self-defense. C/O: Phulkumar Chaurpagar
2	09	2019-20	Expert lecture on "Laws related to women's safety" C/O: Ms. KINJAL RAVAL
3	09	2019-20	Expert lecture "Laws related to women's safety" C/O: Ms. NAYANBALA BHAISHANKAR RAVAL
4	09	2019-20	Expert lecture on "Personality development, body language, motivation (Self grooming)" and "GD guidance, self-introduction, brief on career options (Personality development)" C/O: SHRUTI PIPALIA
5	09	2019-20	Expert lecture on "life assessment, future creation, goal setting (open talk on skill development)" and "four pillars of success" C/O: Mr. DILIPBHAI VIRJIBHAI VASAVA
6	09	2019-20	Expert lecture on "Common gynecological problem" C/O: NIDHI DHIRAJLAL TILALA
7	09	2019-20	Expert lecture on "Orientation program women in engineering" C/O: Mrs. DAVE BANSARI NAVINCHANDRA
8	09	2020-21	Purchased Department used books C/O: The Book Shop, Rajkot
9	09	2020-21	Purchased Department used books Books India, Ahmadabad
10	12	2019-20	51 Students Course Draftsman (Design Developer) C/O: GRAS Education Training Services Pvt Limited.
11	12	2019-20 2020-21	30 Students Course Industrial Automation Specialist (IAS/Q8005) C/O: SOFCON INDIA PVT. LTD

9.5.5 Finishing School:

The 'Finishing School Program' is an initiative launched in March 2017 by the Education Department – Government of Gujarat with an aim to increase the employability quotient of the students. Master Trainers who have a vast experience of the corporate environment impart training to the final year students focusing on communication- presentation skills, email writing, CV writing, telephonic/Skype interviews, attitudes and behavior, corporate culture and etiquette.

Activities Organized/Participated by Finishing School in year of 2019-20

1. Communication Skill Improvement –English Empowerment Training Program for all students of the college.

Activities Organized/Participated by Training & Placement Cell, in year of 2020-21

1 Online Training- Communication technique, Mock Interview, Online Interview, Group Discussion, Pronunciation improvement and vocabulary building.

Table 9.5.5.1 shows Finishing School Attended in Last Three Years

Finishing School				
Sr. No.	**Year**	**No. of batches**	**Total no. of students trained**	**Total no. of training hours**
1	2017 – 2018	3	123	100
2	2018 – 2019	4	205	80
3	2019 – 2020	2	120	80
4	2020-21	1	47	80
5	2021-22	3	119	80

9.6 Entrepreneurship Cell (5)

Entrepreneurship cell is established at the institute in 2017 to encourage the “Innovation, Incubation and Entrepreneurship”. Entrepreneurship cell collaborates with Center for Entrepreneurship Development (CED) – Gandhinagar, which is a Government of Gujarat Organization. CED organizes various awareness programs for potential and interested students and provides latest information about center and state government funding schemes.

Objectives of Entrepreneurship Development Cell are:

- Identification of the potential students along with their projects is done by the specialist committee and the respective student groups are encouraged to make their projects commercially viable.
- Various events were organized to know the importance of being an entrepreneur and make the students aware to get financial assistance to become an entrepreneur.

Table 9.6.1 shows Activities done in last three years in the Entrepreneurship Cell.

Sr. No.	Activity	Date	Expert/ Location	No. of Beneficiaries	Remarks
1	Entrepreneurship Awareness Program	14/07/2021	Online Platform	39 Students	Entrepreneurship Development Cell, L. E. College, Morbi
2	Entrepreneurship Awareness Program	29/01/2020	Seminar Hall, LEC Morbi	81 students	Mr. Bhargav Jani Office Assistant, The Center for Entrepreneurship Development – Rajkot.
3	Entrepreneurship Orientation Program	21/02/2018	Seminar Hall, LEC Morbi	111 students	Mr. Parag Kakaiya, trainer of NSIC, Rajkot.
4	Business Loan approval process	30/01/2018	Seminar Hall, LEC Morbi	109 Students	Mr. Gaurav Kumar (manager, Credit loan department, Bank of India- Morbi)
5	Government Schemes for Individuals	04/10/2017	Seminar Hall, LEC Morbi	93 Students	Entrepreneurship Development Cell, L. E. College, Morbi

9.6.1 SSIP Cell

Government of Gujarat has developed a Student Startup and Innovation Policy (SSIP) for providing assistance to Startups/ Innovation. Under this scheme, any individual/ group of individuals having innovative idea/ concept is eligible. Universities/ education institutions, Incubation Centre/ PSUs/ R&D Institutions/ Private and other establishments are eligible as an institution to support and mentor innovators as approved by committee. As a premier institution, L.E. College, Morbi is one the grantee institutions. The institute has received a first installment of Rs. 20.00 lakes in the month of Dec-2017. Though the various programs on sensitizing the student about the student start up were carried out in prior.

Following Activities were carried out under SSIP:

1. Developing Institute innovation and start-up council/Ecosystem/Cell: Institute approached well known innovators of Saurashtra and convinced them to come onboard of SSIP council. All agreed to help in developing ecosystem for innovation and start-ups at the institute. Principal, SSIP institute coordinator and many faculties of institute had visited many reputed and innovative industries, design studio and start-up ecosystem of Morbi and Rajkot industrial zone to develop fast-tracking start-up ecosystem at institute.
2. Developing Pre-Incubation Process: SSIP Institute coordinator and faculties have visited the start-up ecosystem of “WE” Group and incubation center of R K University to understand the pre-incubation process for student start-up at institute.

3. Co-working space/Pre-incubation facility/Common Innovation Centre: Co-working space/pre-incubation center is located at ground floor of IT building. The computer systems and internet are provided for the students.

4. Activity/Workshop/Conference/Capacity Building/Awareness program: Total 84 One Day workshop on Start-up awareness/seminar/IPR awareness/capacity building program is organized and 7034 students have participated. More than 20 schools/colleges and more 2000 students outreached of the Morbi region.

5. Awards/Recognition/Exposure: The students has published 04 paper and win the best paper award in innovation at international conference, few groups also got the best project award in project competition and many students group had participated in various Hackathon.

6. Technology Platforms/ICT portals: Students are encouraged to use available ICT platform to check products similar to the idea. The activities related to the start-up and innovation at the institute level, Information Technology department already put the all SSIP activity report and other concern stuffs on website to encourage the students.

7. Virtual Incubation/Mentoring and allied support: Each department provides the mentoring support to the students by faculty and also provide appropriate mentor from industry/design studio if required.

8. Proof of Concept (PoC) and Prototyping support: Based on various sensitization program and One Day workshops of start-up awareness conducted, institute has received about more than 250 project proposals for the various ideas/problem statements. Total 139 ideas/problem statements scrutinize by Department Level Scrutiny Committee (DLSC). After that each team presented their proposal to Institute Level Scrutiny Committee (ILSC) and finally 88 projects have been selected for SSIP financial support. Maximum Rs. 2 lakhs financial support will provide per idea/problem statement at institute level.

9. Patent Filing support: Total 03 utility patents filed and 03 idea/problem statements selected to file the patent.

10. Tinkering Lab/Fab Lab/Basic prototyping facility: The tinkering lab has been developed as per suggested list of Niti Ayog for Tinkering lab with cost of Rs. 1.4 lakhs. The students are working in the lab to prepare the prototype of their ideas/project.

Fig. 9.6.1.1 Startup awareness program and Proof of Concept (PoC) Demonstration

Table 9.6.1.1 shows outcomes of SSIP activities

Sr. No	Intervention	2018-19	2019-20	2020-21		2021-22 (up to 31/12/2021)	
		Achieved	Achieved	Target	Achieved	Target	Achieved
1	No of student outreached	1759	2321	2400	1200	1000	1306
2	No of Student Project supported at POC Level	39	34	28	18	0	0
3	No of IPR Filed	00	03	10	0	01	01
4	No of Start-Up	00	03	14	0	0	0
5	No of Awareness Activities	25	27	22	11	10	11

9.7 Co-curricular and Extra-curricular Activities (10)

Lukhdhirji Engineering College, Morbi provides a very encouraging environment to students for their overall development during their study period.

9.7.1 NSS (National Service Scheme):

The motto of NSS ``Not Me, But You" reflects the essence of democratic living and upholds the need for selfless service. NSS helps the students develop appreciation for other people's points of view and show consideration to other living beings. The philosophy of the NSS is well reflected in this motto, which underlines the belief that the welfare of an individual is ultimately dependent on the welfare of the society on the whole and therefore, the NSS volunteers shall strive for the well-being of the society. NSS unit was established in 2018 in the institute affiliated with Gujarat Technological University. NSS Team is composed of Prof. D.K.Mehta as NSS Program Officer, Prof. G.N.Sarvaiya as Co-Program officer with total strength of the unit 100 NSS student's volunteers.

Fig. 9.7.1.1 shows photos of NSS Republic Day Celebration and Chintan Shibir

Table 9.7.1.1 Activities of NSS Unit

Sr. No.	Name of the Activity	Number of teachers participated in such activities	Number of students participated in such activities	Date
1	"INDUSTRIAL VISIT" at Monal Laminates Pvt.Ltd. along with "tree plantation".	1	45	8/8/2019
2	Orientation program	1	96	21/8/2018
3	To know about India	3	122	11/09/2019
4	" Yellow line campaign"	7	65	19/10/2019
5	"Yuva matdar jagruti abhiyan"	15	130	04/09/2019
6	Special one week Camp organized at Juna Sadulka, Morbi.	1	73	20/1/2020 To 26/01/2020
7	Aarogya SetuApp download	1	73	19/4/2021
8	IGOT registration	1	73	19/4/2021
9	Constitution day celebration	15	12	26/11/2020
10	Matdar Sudharan karyakam-2021 (* NSS Volunteer won best campus ambassador award" for morbi district)	1	1	10/12/2020 to 20/12/2020
11	Visit to Gandhi Museum (No students because of covid-19)	26	0	20/03/2021
12	Covid awareness webinar (taken by Nss volunteers)	51	42	19/06/2021
13	Display of free vaccination banner	5	25	30/06/2021
14	Tree plantation	54	18	17/7/2021
15	Rastragan Video Recording	113	400	6/8/2021
16	Fit India Freedom Run 2.0	30	50	13/8/2021
17	Swachchhata Shapath	90	355	3/9/2021
18	Swachchhata Slogan competition	0	56	7/9/2021
19	Personal Hygene Awareness and Suppllimental Nutrition Assitance Program	18	44	8/9/2021
20	Online awareness program on "Swachchhata	84	273	8/9/2021

Sr. No.	Name of the Activity	Number of teachers participated in such activities	Number of students participated in such activities	Date
	Pakhawada"			
21	Online Awareness Program on "water conservation and elimination of single plastic use"	80	291	9/9/2021
22	Display of Swachchhata slogan on institute website	1	56	15/9/2021
23	Visit to Kartavya Jivadaya Kendra	4	11	24/9/2021
24	Swachchhata Plog Run	10	34	2/10/2021
25	Cleaning Drive and Beautification of Campus under Azadi Ka Amrut Mahotsav	60	0	22/10/2021
26	Disseminating the Traditional Methods of Rain Water Harvesting	55	0	26/10/2021
27	Collection of single used plastic waste	5	23	30/10/2021
28	Rastriya Ekta Diwas Pledge	63	23	30/10/2021
29	Awareness Program on "Swachchhata Sarvekshan App"	12	52	26/11/2021
30	Constitution day celebration	12	52	26/11/2021
31	Organ donation Pledge	45	95	8/12/2021
32	e-pledge against drugs	75	384	24/2/2022
33	Awareness Program on physical and mental abuse for girls and women	18	32	8/3/2022
34	Mask Distribution	12	39	8/3/2022
35	Celebration of Shahid Diwas	76	267	23/3/2022
36	Celebration of International Yoga Day	70	35	21/6/2022

Efficacy Analysis of NSS: NSS volunteers are able,

- To develop a sense of civic and social responsibility
- To identify the needs in the community and to develop solutions
- To engage in creative and constructive social action
- To develop the will to serve the weaker section of the community

9.7.2 NCC (National Cadet Corps):

It is also one of the biggest youth organizations of the country. Its Motto is "Unity & Discipline"

Objectives of NCC

- To develop character, comradeship, discipline, leadership, secular outlook, spirit of adventure and the ideals of selfless service amongst the youth of the country.
- To create a human resource of organized, trained and motivated youth, to provide leadership in all walks of life and always available for the service of the nation.

- To provide a suitable environment to motivate the youth to take up a career in the armed forces.

This unit was started in 2003 as 02 Gujarat NCC Battalion Rajkot. The present authorized strength of Battalion is 1 ANO and 55 cadets. NCC Team is headed by Lt. K. K.Dave and NCC Cadets.

Table 9.7.2.1 NCC Camps and participation details

Sr.	Name of Camp	Duration	Participation	Remarks
1	Army Attachment Camp	16/07/18 to 31/07/18	10 SD CADETS And 01 ANO	
2	IMA	13/06/18 to 24/06/18	01 SD CADET	
3	TSC-1	25/06/18 to 4/07/18	02 SD CADETS	Selected for next camp
4	TSC – 2	12/07/18 to 21/07/18	02 SD CADETS	Selected for next camp
5	TSC- 3	25/07/18 to 03/08/18	02 SD CADETS	Selected for next camp
6	TSC-IGC (INTERGROUP COMPETION)	04/08/18 to 13/08/18	02 SD CADETS	1 GOLD MEDAL IN HEALTH AND HYGIENE
7	PRE TSC-1	16/08/18 to 25/08/18	02 SD CADETS	SELECTED FOR THE NEXT CAMP
8	PRE TSC-2	26/08/18 to 04/09/18	02 SD CADETS	SELECTED FOR THE NEXT CAMP
9	TSC DELHI	07/09/18 to 16/09/18	02 SD CADETS	
10	CATC-RDC-1	28/08/18 to 06/09/18	12 SD and 09 SW CADETS	13 MEDALS AND 3 TROPHIES
11	RDC-2	13/09/18 to 22/09/18	02 SD CADETS	01 SELECTED FOR THE NEXT CAMP
12	RDC-3	23/09/18 to 02/10/18	01 SD CADET	SELECTED FOR THE NEXT CAMP
13	RDC IGC(AHEMEDABAD)	03/10/18 to 12/10/18	01 SD CADET	
14	ALC		01 SD CADET	
15	Army Attachment Camp	17/06/2019 to 01/07/2019	04 SD CADETS	
16	TSC-1	25/06/2019 to 04/07/2019	03 SD CADET	
17	TSC – 2	08/07/2019 to 17/07/2019	03 SD CADETS	02 SELECTED FOR THE NEXT CAMP
18	TSC- 3	03/08/2019 to 12/08/2019	02 SD CADETS	SELECTED FOR THE NEXT CAMP
19	TSC-IGC (INTERGROUP COMPETION)	13/08/19 to 22/08/19	02 SD CADETS	1 GOLD MEDAL IN HEALTH AND HYGIENE

20	PRE TSC-1	23/08/19 to 03/09/19	02 SD CADETS	SELECTED FOR THE NEXT CAMP
21	PRE TSC-2	04/08/19 to 14/09/19	02 SD CADETS	01 SELECTED FOR THE NEXT CAMP
22	TSC DELHI	14/09/19 to 27/09/19	01 SD CADETS	
23	CATC-1	28/08/2019 to 08/08/2019	12 SD CADETS and 08 SW CADETS	15 MEDALS AND 3 TROPHIES
24	CATC-2	16/09/2019 to 28/09/2019	18 SD CADETS	16 MEDALS AND 04 TROPHIES
25	RDC-1	08/09/19 to 17/09/19	03 SD CADETS	SELECTED FOR THE NEXT CAMP
26	RDC-2	18/09/19 to 27/09/19	03 SD CADETS	SELECTED FOR THE NEXT CAMP
27	CATC	22/12/2019 to 31/12/19	02 SD CADETS	1 TROPHY AND 3 MEDALS
28	EBSB	20/01/2020 TO 29/01/2020	01 SD CADET	
29	CATC 21	15-02-21 to 17-02-21	13 SD ,3 SW	Selected for next camp
30	CATC 21	18-02-21 to 22-02-21	15 SD,3 SW	
31	Online EBSB	26-07-21 to 31-07-21	1 ANO,10 SD	
32	CATC	28/11/2022 To 02/12/2022	17 SD Cadets	All the major events were won by Our cadets. 1- Best Drill 2 - Best Cadet 3 - Volley Ball 4 – Cricket 5 – Tug off War
33	CATC	05/01/2022 to 09/01/2022	2 SW Cadets	

Table 9.7.2.2 Activities of NCC Unit

Sr.	**Activity**	**Date**	**Students and staff involved**
1	Enrollment of new cadets (SD and SW)	16-06-2019 onwards	80
2	International Yoga Day	21-06-2019	70
3	Kargil Vijay Divas	26-07-2019	120
4	Independence Day celebration and Flag Hoisting at the institute	15-08-2018	250
5	Surgical Strike Day celebration with parade.	29-09-2019	54
6	Swachh Bharat Mission	02-10-2019	200
7	Republic Day Celebration	26-01-2021	36

8	Tree Plantation	17-07-2021	05 cadets
9	Passing Out Parade	05-07-2021	37 Cadets
10	Independence Day Celebration & Flag Hoisting	15-08-2021	50
11	Republic Day Celebration	26-01-2022	75
12	Training Program on “Risk Communication for Content Creators"	28-29 January 2022	30 Cadets 01 ANO GIDMOfficials (Virtually)

Fig. 9.7.2.1 Brochure of NCC Passing out parade and rank ceremony

9.7.3 Sports:

Institute has a very rich infrastructure for providing sports facilities to faculty and students. Students actively participate in various games and they have won several accolades at zonal level, state level, etc. Many students have represented GTU at West zone & national level.

Details of Facilities, Sports Equipment & Activities

Infrastructure:

- Gymnasium for Exercise
- Badminton Court Hall
- Table Tennis Hall
- Cricket Ground

Sports Equipment:

As per our sports equipment registers all different sports equipment details are given as below:

Table 9.7.3.1 List of Sports Equipment

Sr. No.	Name of Sports Equipment	Available Quantity
1	Cricket Bat	03
2	Cricket Ball	05
3	Batting Gloves	03 Pair
4	Wicket Keeper Gloves	01 Pair
5	Wicket Keeper Leg Guard	01 Pair
6	Batting Pad	03 pair
7	Leg Guard	02 Pair
8	Valley ball	02
9	Shuttlecocks	07
10	Football	01
11	Football Shoes	11 Pairs
12	Football Shin Guards	15 Pairs
13	Football Stoking (Gloves)	18 Pairs
14	Badminton Net	01 (in using)
15	Table Tennis Ball	12
16	Dress (T-shirts & Shorts)	54
17	Thigh Pad	02
18	Elbow Guard	05
19	Chest Guard	02
20	Abdominal Guard	02
21	Table Tennis Net	01
22	Basketball	01
23	Badminton Racket	02
24	Chessmen (Chess Pieces)	05
25	Carrom Board	04
26	Cricket Helmet	03
27	Cricket Hammer	01
28	Chess Clock	01

Gymnasium Equipment:

Table 9.7.3.2 List of Gymnasium Equipment

Sr. No.	Name of Equipment
1	Fitness Benches
2	Twister
3	Air walker
4	Gym set
5	Weighing Machine
6	Dumbbell Set
7	Mudgals Set
8	Weight Lifting Tools
9	Sitting Tools
10	Exercising Cycle
11	Double Bar
12	Trade mill Machine
13	Weightlifting Belt

Gymkhana:

Table 9.7.3.3 Staff members managing the gymkhana department

Sr. No.	Name of Staff	Designation
1	Prof. D.B. Patel	Convener
2	Prof. M.B. Baldania	Co-Convener

Please find the list for event organized by Gymkhana in year 2022:

Table 9.7.3.4 List of Winning team and runner-up team (For Staff)

Sr. No.	Event Name	Name	Branch	Rank
1	Carrom	Prof. H. M. Makdiya	General Dept.	1
2		Prof. Ashok C. Lakum	Electrical Engg.	2
3	Table Tennis (Single)	Prof. Ashok C. Lakum	Electrical Engg.	1
4		Prof. Mahesh H. Pandya	Electrical Engg.	2
5	Table Tennis (Double)	Prof. Jalpesh H. Solanki and Prof. Rupesh N. Chovatiya	Mechanical Engg.	1
6		Prof. Ashok C. Lakum and Prof. Mahesh H. Pandya	Electrical Engg.	2
7	Chess	Prof. Rajnikant H. Bhesdadiya	Electrical Engg.	1
8		Prof. Prashant K.Rathod	General Dept.	2

Table 9.7.3.5 List of Winning team and runner-up team (Boys Students)

Sr. No.	Event Name	Name	Enrollment No.	Branch	Semester	Rank
1	Carrom	Desai Smit Manoj Kumar	200310109032	Electrical	4	1
2		Prajapati Jenishkumar Bhupendra bhai	210310105031	Chemical	2	2
3	Table Tennis (Single)	Hitarthsinh Kaintura	200310109029	Electrical	4	1
4		Navinkumar Verma	210310105044	Chemical	2	2
5	Chess	Abbas Kachwala	210310106551	Civil	4	1
6		Viradiya Tushar r.	200310116004	IT	4	2

Table 9.7.3.6 List of Winning team and runner-up team (Girls Students)

Sr. No.	Event Name	Name	Enrollment No.	Branch	Semester	Rank
1	Carrom	Hetvi Sanjaybhai Buddhbhatti	200310106059	Civil	4	1
2		Dumadiya Aarti Sagarambhai	200310106019	Civil	4	2

Fig. 9.7.3.1 Shows Various Sports Events held under Gymkhana

9.7.4 ISTE Student's Chapter:

The Indian Society for Technical Education (ISTE) is the leading national professional non-profit making society working for the benefit of the technical education system. The main motto of this society is career development of technical teachers and personality development of students and thus overall development of our technical education system. Lukhdhirji Engineering College, Morbi was duly admitted by ISTE executive council in 1981 as an institutional membership no IM-59. Formation of ISTE Chapter was started in 2004 (GU-05). Currently ISTE student's chapter is headed by Prof. A. C. Lakum, Asst. Prof. Elect. Engg. and Prof. H. N. Jani, Asst. Prof. Mech. Engg. having a total of 137 registered students performing various activities under the banner.

A webinar on Security Awareness in Emerging Technologies of IT has been organized on 26th June 2021, where Dr. B.N. Gohil, Asst. Prof. Computer Engg. Dept., SVNIT, Surat delivered a speech.

One more webinar on "Industrial Engineering: Future and Prospects" was arranged on 10/07/2021 through MS Team platform, where 80 students participated in the speech given by Mr. Raju Prasad from Hindalco Industries Ltd.

A webinar on "CONVERSION of CONVENTIONAL VEHICLE into PLUG-IN HYBRID ELECTRIC VEHICLE by RETROFITTING "was arranged by ISTE Students' Chapter (GJ005) of our institute on 01/04/20200. The webinar was arranged on M S Teams platform and more than 250 students of our institute and nearby colleges participated in that.

The details of the expert/invited faculty:

Dr. Pritam Keshavdas Gujarathi,

Director,

i-Switch Technologies and Business Services, Pune – 411046 (India)

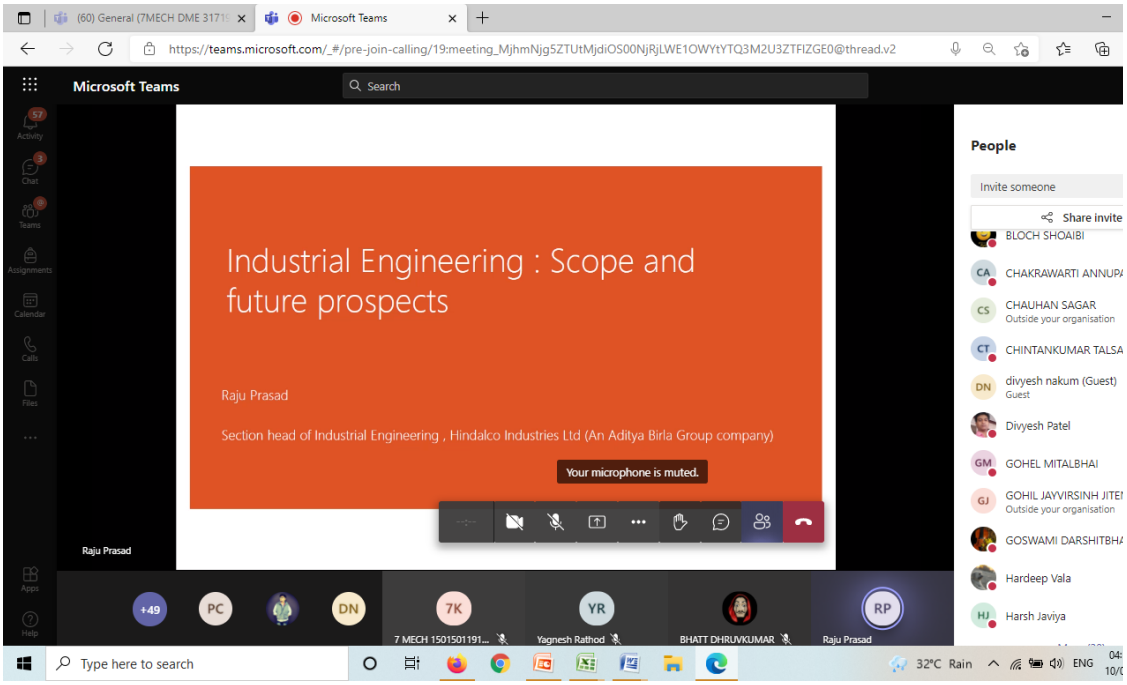


Fig. 9.7.4.1 Webinar of ISTE Student's Chapter

9.7.5 Centre of Creativity (CoC):

This center is organizing several cultural activities and event/activities such as National Voters Day, GTU Techfest, International Yoga Day Celebration, Mission Antyodaya Yojana, Matdan Jagruti Abhiyan, and National Education Day etc. The department is one of the most dynamic departments of the institute which regularly organizes curricular and extracurricular activities and thus provides the platform to the students to showcase their talents and nurture their temperament.

Table 9.7.5.1 Various activities of CoC 2021-22

Sr. No.	Title of Activity	Date	Description	No. of Participants
1.	8th International Yoga Day- Yoga for Humanity	21/06/22	To keep up the mental health and physical health L. E. College, Morbi celebrated the Yoga Day. It started with theme- Yoga for Humanity by the words of honorable prime minister and the chief minister. The activity was followed by physical yoga on the pared ground of the college.	105
2	LENCO installation ceremony	13/04/22	Lukhdhirji Engineering College, Morbi Association (LENCO), organized a huge installation ceremony of new body. The LENCO members from various places par across the state and the nation gathered for the event. The new body was formed for the betterment of college students and their prospective future. The present principal Dr.	110

Sr. No.	Title of Activity	Date	Description	No. of Participants
			S. N. Pandya was the chief guest of the event and presented the need of campus to the body and the association.	
3.	IPDC workshop	13/04/22	Lukhdhirji Engineering College, Morbi organized a workshop on Integrated Personality Development Course (IPDC). This event was organized in association with BAPS, Swaminararayan Sanstha. “Education must build character, enable learners to be ethical, rational, compassionate, and Caring, while at the same time prepare them for gainful, fulfilling employment” was the theme line for the workshop.	66
4	National Voter Awareness Contest 2022	31/03/22	To celebrate the Azadika Amrut Mahotsav and spread the awareness of voting system, Election Commission of India decided to make contest on National Voter Awareness. Under this Quiz, Poster Making, Slogan Writing, and Singing contests were announced for the students. 114 students of various branches of L. E. College, Morbi participated in the Quiz Contest and have been awarded certificates. Two certificates are pasted here for the reference.	114
5	Rastriya Uva Din 2022	12/01/22	Gujarat government organized a celebration of National Youth Day on 12/1/2022. Our honorable Chief Minister and the Prime Minister presented speech on the occasion between 10:00 to 10:30 am and 10:30 to 11:30 am respectively. Approximately 103 students registered in the event and took part enthusiastically.	103
6	National Voter’s Day-2022	25/01/22	12th National Voters' Day was celebrated on 25 January, 2022 to encourage the youth to participate in the vote in the electoral process. It not only encouraged the youth to participate in the electoral process but also focuses on the fact that the right to vote is a basic right. The event was conducted through online mode and staff and students of college took part in the event under the order and guidance of election commission.	55
7	National Mathematics Day	22/12/21	On the occasion of National Mathematics Day and year of Azadi ka Amrut Mahotsav, General Department, L. E. College, Morbi celebrated National Mathematics Day – 2021, 134th birth anniversary of great Mathematician Srinivas Ramanujan on 22 December 2021 at seminar hall. In the program all faculty members and 43 students of first year were presents and get motivated by the genius Mathematician Srinivas	43

Sr. No.	Title of Activity	Date	Description	No. of Participants
			Ramanujan (1887-1920). Faculties and students are motivated to the journey of Srinivas Ramanujan. Dr. S. K. Singhal (In charge HOD) delivered lecture about his life and research work in the field of Mathematics. A short film on Srinivas Ramanujan's life was displayed.	
8	Story and Essay Writing Competition on Cultural Heritage of Vadnagar	22/12/21	To celebrate the Azadika Amrut Mahotsav and the cultural heritage of Vadnagar and as per the orders of the Cultural Ministry, 'Story and Essay Writing Competition' was organized on 10th December, 2021. Students enthusiastically participated in the event by presenting their views in the new form. Winners were awarded certificates for the competition. Following are some of the highlights of the program.	25
9	Legal Literacy Awareness Program	25/11/21	Lukhdhirji Engineering College, Morbi organized a legal literacy awareness program on 25/11/2021 under Azadi ka Amrit Mahotsav. Shree R. K. Pandya, Secretory, District Legal Service Authority, Morbi, visited the campus and gave guidance on the theme.	80
10	Awareness Campaign on Freedom from Intoxication & Drug Prohibition	02/10/21	Lukhdhirji Engineering College, Morbi organized an awareness campaign on 'Awareness Campaign on Freedom from Intoxication & Drug Prohibition' on 2nd October, 2021, Saturday in association with District Legal Service Authority, Morbi. The function was arranged under NALSA and its pan India awareness and outreach campaign to be held from 2nd October to 14th November, 2021 under Azadi ka Amrit Mahotsav and Legal Services Week from 8th to 14th November, 2021. Chief guest- Honourable Shree R. K. Pandya, Secretory, District Legal Service Authority, Morbi, Shree Shantibhai Chanpura Saheb, Niyojak, Nashabandhi Department, Rajkot and Shree J. M. Aal Saheb, P.I., Special Operation Group, Morbi had co-chaired the function with the principal of college, Dr. S. N. Pandya. The college has organized events of speech and drama performance on the by students to spread awareness and importance of the theme.	150
11	Poetry Reciting	02/09/21	Center of Creativity, under the guidance of Acharya Shri E. College, Morbi organized an online poetry / song competition for songs composed by Shreezverchand Meghani. Mrs. Hiralben Vyas, Officer, Department of	8

Sr. No.	Title of Activity	Date	Description	No. of Participants
			Youth and Culture, Morbi, Mrs. Pravinaben Pandavadra, Officer, Department of Sports, Morbi Pamnar folk writer Ashwinbhai Barasara as well as Dr. Ashish Shukla (English) was present as the representative of the college.	
12	Kasumbi no Rang	28/08/21	To celebrate the 19th birth anniversary of Rashtriya Shire Shri Zaverchand Meghani for the purpose of giving impetus to art and literature, the decision of the Government of Gujarat was celebrated today. The event was held on August 9, 2021at Rose Townhall, Morbi.	259
13	Teachers Day	06/09/21	The teacher is always living in his students as knowledge. The student himself dreams of thinking like a teacher and teaching as his favorite teacher. With this in mind, a commemoration of Teacher's Day was organized by COC, LE College, Morbi on September 9, 2021. In this competition, students had to submit their audio file on the topic 'If I am a teacher' so that they can present their original ideas. An online platform was prepared by COC for this in which 15students participated. The three winners of this competition will be awarded certificates by COC.	16
14	Gyan Shakti Divas	01/08/21	Lukhdhirji Engineering College, Morbi celebrated the Gyan Shakti Divas on 1st August, 2021, Sunday at APMC, Morbi. The BJP government has completed the 5 years of its planned regulationin actual well custom and decided to praise and motivate the students, women, farmers and the overall development associated with them. The government decided to celebrate the first 7 days of the August. The very first day was celebrated as Gyan Shakti Divas. The main purpose of the theme was to spread the knowledge about potential schemes for the benefits of students to make career and research in their interested field of study.	427

Table 9.7.5.2 Various activities of CoC 2020-21

Sr. No.	Title of Activity	Date	Description	No. of Participants
1.	Yoga Day Celebration	21/06/20	25 families of LEC, Morbi enthusiastically participated in the event.	67
2.	Expert talk on Sangram na Fal Swarupe	12/03/21	The entire talk focused on the much struggled fight of librating India from unnecessary taxes burdened by British empire and make all of us	36

	Malyu Bharat		realizes that the fresh breath of freedom did not come easily. Thus the session was arranged to celebrate Independent India we are living in and to respect the liberty we got after rigorous fight.	
3.	Jan Andolan for COVID-19	09/10/20	In Lukhdhirji Engineering College, Morbi various department Head, Faculty members and staffs have participated in the pledge of COVID -19. Approximate 52 members have taken a pledge about COVID -19. The photographs of the programme are attached herewith. This event was conducted by Center of Creativity dated on dated on 9-10-2020 at various department location of L.E. College, Morbi.	52
4.	Essay Writing	2/04/21	Under Azadi Amrut Mahotsav, Ta. An online essay competition was organized by the Center of Creativity, LEC-Morbi on Friday, 05-02-2071. The competition was organized online for all the students of LE College for day 01in which one had to write an essay in about 1000words on a given subject and submit a pdf copy. The subjects of the essay were as follows: (1) Indian Freedom Struggle (2) Dandi: Then and Today. In which the most admirable and noble text remained of the second semester students.	78

Table 9.7.5.3 Various activities of CoC 2017-19

Sr. No.	Name of the activity	Date and Year	Description	No. of participants
1	International Yoga Day 2017	21/06/2017	Celebration of International Yoga Day	697
2	Tree Plantation Programme	05-08-2017	Tree Plantation for Green Campus	31
3	NDRF Awareness Program	29/08/2018	Awareness Program on NDRF	145
4	Commemorating 150th Birth Anniversary of Mahatma Gandhi	29/09/2018	Commemorating 150th Birth Anniversary of Mahatma Gandhi	60
5	Quiz on Science and Technology	02/08/2019	Quiz Club and Fresher Talent Hunt organized quiz on Science and Technology	25

9.7.6 Women Development Cell (WDC):

As per Section 4 of AICTE Gender Sensitization, prevention and prohibition of women employees and student redressal of grievances in technical institution regulation 2016, A women development cell has been established at the institute and is headed by Prof. S. A. Amin. Various activities related to that cell are as follows:

Table 9.7.6.1 Activities of Women Development Cell

Sr. No	Name of the Activity	Date and Year	Description	Number of Participants
1	Women's Health Awareness Programme	19-11-2019 (19th Nov, 2019)	This program was organized to aware about the importance of hemoglobin, various types of cancer, their causes and precautions to be taken to avoid it.	37
2	STEM Education (Expert lecture)	15-01-2020 (15th Jan, 2020)	Expert lecture was arranged by Cohesion Foundation Trust- Kutch inspired and supported by Quest Alliance to evoke interest of students (especially girl child) in STEM education. Prof. Jagruti B. Bheda (Asst. professor from Department of Science & Humanities) was nominated from Institute to interact with school kids to share her journey to success and motivate the girls to develop in STEM Education.	45
3	Orientation Program-Women in Engineering	12/2/2020 (12th Feb, 2020)	In this program knowledge was shared on currently available Scholarship for girls in Engineering. There was discussion about hurdles and solutions during Job by balancing personal as well professional life.	66
4	Laws Related to Women's Safety	18-02-2020 (18th Feb, 2020)	This program is about women's safety, which involves strategies' practices and policies which aim to reduce gender-based violence (or violence against women), including women fear. Women's safety involves safe spaces, financial security and autonomy was discussed.	28
5	Norta Celebration	10/21/2020 (21st Oct, 2020)	This program was organized to celebrate the arrival of Shakti and to celebrate the Navratri.	18
6	Day Celebration	08-02-2021 to 12-02-2021 (8th to 12th Feb, 2021)	To refresh from mundane but mandatory schedule of online teaching and learning mode, women cell celebrated a week of colors to lighten and brighten the moods at work place. The only aim was to cheer up and celebrate different colors of life with following all Covid-19 guidelines.	16
7	Sangath- The Harmony for Noble Cause	5/3/2021 (5th March, 2021)	The main aim was to help and support lady sweepers of our campus by donating old clothing, toys, books or anything that can be helpful to them or their families.	20
8	Happiness Programme	08-03-2021 to 10-03-2021 (8th to 10th March, 2021)	To add and ensure wellbeing of lady faculties and girl students, Women Cell organized Happiness Programme. The programme included activities such as Pranayama, Yoga, and Sudarshan Kriya. Specifically, a breathing technique – Sudarshan Kriya taught in this workshop played a key role in dealing with stress, anxiety, depression and key to deal with Covid-19 Pandemic.	15
9	International Yoga Day Celebration	19-06-21, 20-06-21 & 21-06-21 (19th, 20th &	The International Yoga Day was organized online for 3 days to celebrate health and happiness. The sessions started with prayer following warm up exercise and then different breathing technique to	57

Sr. No	Name of the Activity	Date and Year	Description	Number of Participants
		21st June, 2021)	increase lungs capacity and immunity. It included all Asana and Pranayam The session ended with sound meditation and Omkar chanting.	
10	Prevention of Occupational Hazards & Women's Health	03-08-21 (3rd Aug, 2021)	The aim of this program was to aware girl students and lady faculty members about various health issues. The lecture includes the reasons that lead to occupational hazards, how the bad or stagnant posture leads to painful situation afterwards.	45
11	Dental Health	12-08-21 (12th Aug, 2021)	The aim of this program was to aware girl students and lady faculty members about the problem related to gum and dental health. The session covered whole area regarding how dental health is generally being taken for granted, the causes for gum problem and tooth ache, information on tools related to dental health and daily care.	40
12	Pranayam and Dhyan Shibir	28-09-2021 to 01-10-2021 (28 September to 1st October, 2021)	The aim of this program is to aware about the understandings of shastriya techniques of pranayam, the importance of time when those should be performed and when not to be performed.	34
13	Competition of resumes of graduating girl students & Webinar on " esume Building"	29-09-2021 29th Sept, 2021)	The objective of the event was to impart the necessary skills to prepare resume for desired post. Different types of resumes, structure of resumes and important of cover letter were discussed in the session.	31
14	Effective Interpersonal Business Communication	05-02-2022 (5th Feb, 2022)	The objective of this session was to develop as well as strengthen the communication especially among human networks at workplace and business. Interpersonal skills boost the communication and hence are a very important business skill. If developed carefully, it may help in building strong business relations in market and corporate sector.	35

Fig. 9.7.6.1 Celebration of yoga days and electoral day celebration under CoC

9.7.7 Ignite Club:

It is a student body interested in social, technical and cultural activities for the benefit of students of the institute. Its motto is to ignite the hidden burning potential of the students by enhancing their talent and skills through carrying out various events and providing a platform to them. It is headed by Prof. M. R. Mali.

Table 9.7.7.1 Various activities of Ignite Club

Sr. No	Name of the activity	Date and Year	Description	No. of participants
1	SHABDARTH 3.0	31/03/2022	SHABDARTH 3.0 Lafzon se mehfil talk	15
2	Chakravyuh	15/03/2022	Chakravyuh : Unlock the mystery	35
3	SHABDARTH 2.0	09/04/2019	SHABDARTH 2.0- Machine se mehfil talk	35
4	FANTASTIC 4	05/04/2019	Games like Othelo and Bomb Diffusal	40
5	Sizzling Seven	19/07/2019	Different Games with Seven Team	35
6	Treasure Hunt	16/08/2018	Finding the places with given clues	75

9.7.8 LENCO Alumni Association:

To motivate academics and all-round development of students, the Alumni Association of our institute, known as LENCO Alumni Association, felicitates students with gold medals. The 10th Gold medal function was organized on 04/05/2019 in the presence of 100 LENCO members. Similarly, the 8th Gold Medal Function was organized on 04/03/2017.

Table 9.7.8.1 Gold Medal Function of LENCO Alumni Association

Gold medal	Function date	Year	Chief Guest	Nos. of Gold medal
1st	29-03-2010	2008-09	Prof. N R Dave	2
2nd	11-04-2011	2009-10	Lenco member	10
3rd	23-03-2012	2010-11	Meerabapa, heir of His highness of Morbi, VaghjiThakor	10
4th	28-01-2013	2011-12	Prof. Akshay Agarwal, The Then VC of GTU	10
5th	21-04-2014	2012-13	Mr. Parakramsinh Jadeja	11
6th	05-01-2015	2013-14	Meerabapa, heir of His highness of Morbi, Vaghji Thakor	11
7th	22-04-2016	2014-15	P K Desai	11
8th	03-03-2017	2015-16	Dr. Navin Sheth, Honorable VC, GTU	11
9th	07-04-2018	2016-17	Col. Jani, Retired Navy Commander	12
10th	04-05-2019	2017-18	Ghanshyam Dholeria, Lenco and Founder of Noble Refectories	12
11th	27-01-2020	2018-19	LENCO Members	12

On 27th January 2020, 11th Gold Medal Function was arranged on L.E. College campus. More than 100 alumni members attended and visited the college campus to recall their golden memories with college. Like every year, 11 gold medals were awarded to the topper of various branches and 1 special gold was awarded in the category of overall performance throughout graduation. The function was gracefully accompanied by cultural function.

- Award ceremony started with the lighting of the lamp by principal sir and Lenco members. Honorable principal sir welcomed verbally and presented certificates and gold medals. LENCO alumni association also awarded certificates of merit to present students for the appreciation of their achievement. Total team of 33 cultural participants, 35 volunteers and 14 faculties along with Lenco team made this function successful. The 11th Gold Medal function brought ‘Glory’ with them. LENCO's current committee also declared their new energetic team for the upcoming program. The function was followed by lunch together and the atmosphere got more exuberant when students enjoyed garba at the end of the function. It was a moment of celebration for the gold medalist, an opportunity for current students to prove themselves at a cultural platform and a grand get-together of LENCO members. This was the GLORIOUS 11th GOLD MEDAL FUNCTION.

9.7.9 National Education Policy (NEP 2020):

Government of India has brought National Education Policy 2020 after a long 34 years gap after the last policy change. This comprises the rich heritage of ancient and eternal Indian knowledge system in pursuit of Wisdom, Truth, Realization and Liberation. LEC Morbi has conducted following programs as guided by AICTE and UGC;

Table 9.7.9.1 Various activities of NEP 2020

Sr. No.	Date	Topic	Speaker	Number of Participants
1.	23/03/2021	National Education Policy 2020	Dr. Sanjay Singhal, Assoc. Prof. (Physics), LEC, Morbi	74 faculty members of LEC, Morbi
2.	10/08/2021	'Use of Technology in Education' celebrating 1 year of transformative reforms of NEP 2020.	Dr. Ashish Sharma, Ph.D. (Computer Science),Asstt. Prof. GLA University, Mathura	127 students and faculty members of LEC, Morbi

Criterion 10: Governance, Institutional Support and Financial Resources (120)

10.1 Organization, Governance and Transparency (40)

10.1.1 State the Vision and Mission of the Institute (5)

Institute Vision

To provide quality engineering education and transforming students into professionally competent and socially responsible human beings

Institute Mission

- To provide a platform for basic and advanced engineering knowledge to meet global challenges.
- To impart state-of-art know-how with managerial and technical skills.
- To create a sustainable society through ethical and accountable engineering practices.

10.1.1. A. Availability of the Vision & Mission statements of the Institute (2)

The Institute vision and mission statements are displayed at

- Principal's Office
- H.O.D.'s Cabin in each Department
- Lobby/ passage of each department
- In various buildings like
  - Library
  - Lenco Hall
  - Student Section etc

10.1.1. B. Appropriateness/Relevance of the Statements (3)

Available with central NBA Team.

10.1.2 Governing body, administrative setup, functions of various bodies, service rules, procedures, recruitment and promotional policies (10)

10.1.2. A. Governing Body Composition, senate, and all other academic and administrative bodies; their memberships, functions and responsibilities; frequency of the meetings; participation details of external members and attendance therein (4)

Governing Body

Under the Education Department of Government of Gujarat, The Commissionerate of Technical Education is functioning as governing body of the Lukhdhirji Engineering College, MORBI. The detailed structure of Governing Body is as shown in Fig.10.1.2. A.1 and Fig.10.1.2. A.2

(Website Link: **https://dte.gujarat.gov.in/organization-chart**)

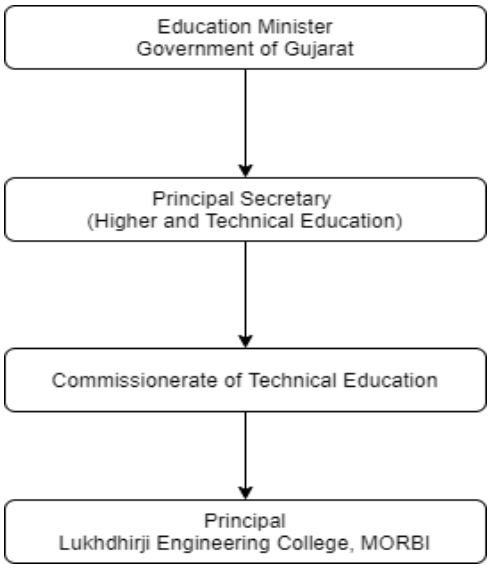


Fig. 10.1.2.A.1 Governing Body of the College

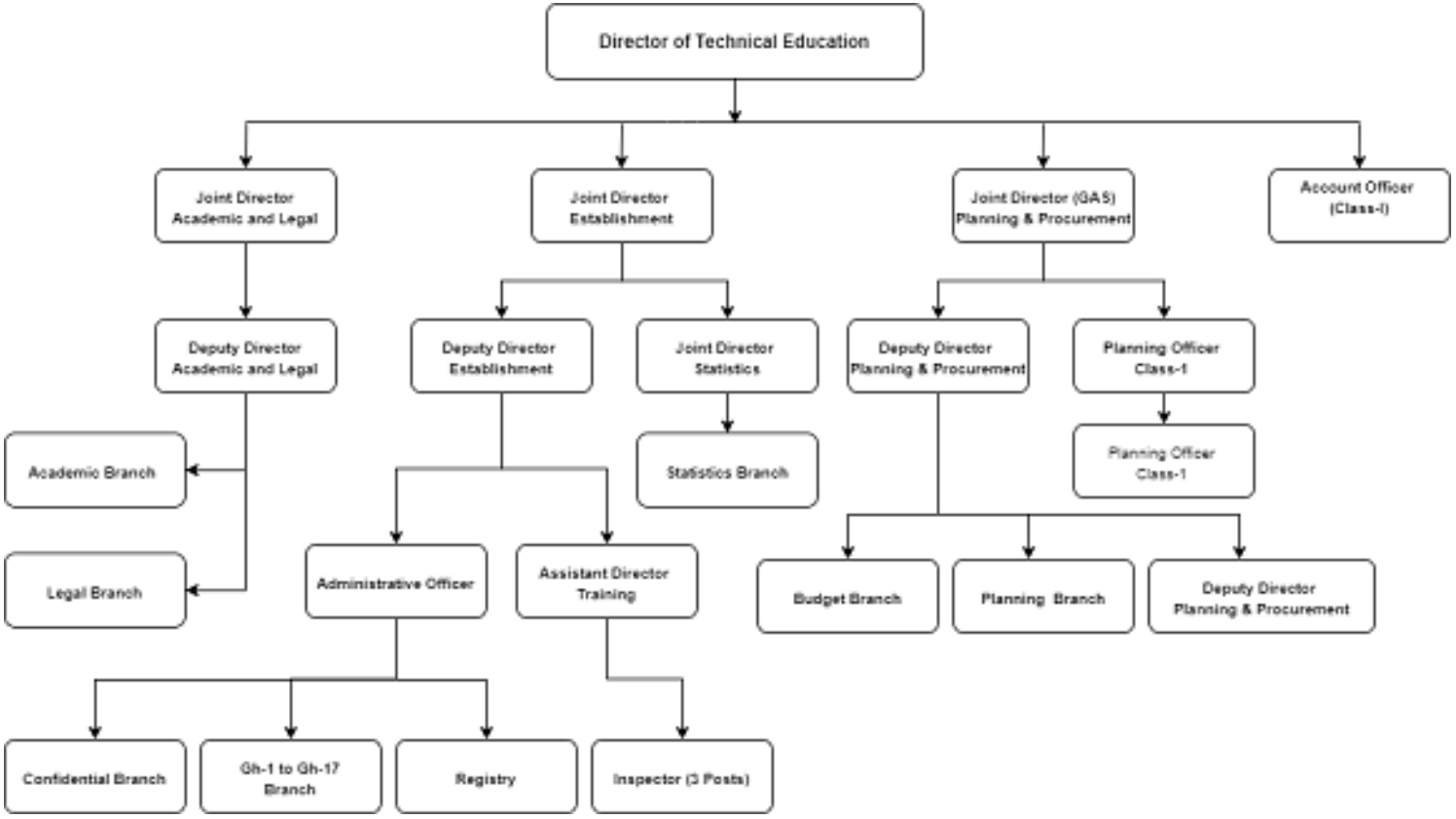


Fig. 10.1.2.A.2 Organization Chart Commissionerate of Technical Education

The Commissionerate of Technical Education (CTE) earlier known as Directorate of Technical Education was established in the new State of Gujarat in 1960. It is headed by the Director of Technical Education and function under the overall administrative control of Education Department at Secretariat level.

Table 10.1.2.A.1

Sr. No.	Name of Body	Hierarchy of Body	Brief of functions and responsibilities
1	Governing Body	1. Principal Secretary, Education Department Gujarat. 2. Commissioner, CTE. 3. Principal.	Highest authority at state level. To plan, implement and monitor the development of technical education and research with State policies. To provide and facilitate effective financial, administrative, human resource and infrastructural support for technical education in the State. To facilitate effective networking with appropriate organizations and external funding and support agencies.

Functions of various bodies:

The guideline manual for responsibilities and work distribution has been prepared under the Commissionerate of Technical Education. For accessing view, its link is also provided as below.

TEIM (https://dte.gujarat.gov.in/technical-education-institution-manual-teim-govt-engineering-colleges)

The faculty members of the institution are intended to contribute and to continue sustenance of the standards of the institution. With a view to achieve goal of the institution, a teacher has to play multiple roles in an institution. Under the

Commissionerate of Technical Education, a Technical Education Institute Manual (TEIM) has been prepared about detail guidelines for various activities and functionalities of a teacher. As per the TEIM guidelines, in institute various committees have been formed for the smooth functioning of the institutional matters as shown in the Table 10.1.2.A.2 given below vide Office Order No. LEC/EST/1064 dated: 29-06-2022.

For achievement of goals and smooth functioning of the tasks at institute the distribution of the work is assigned to various committees. Frequently meetings are called by above committees as and when required.

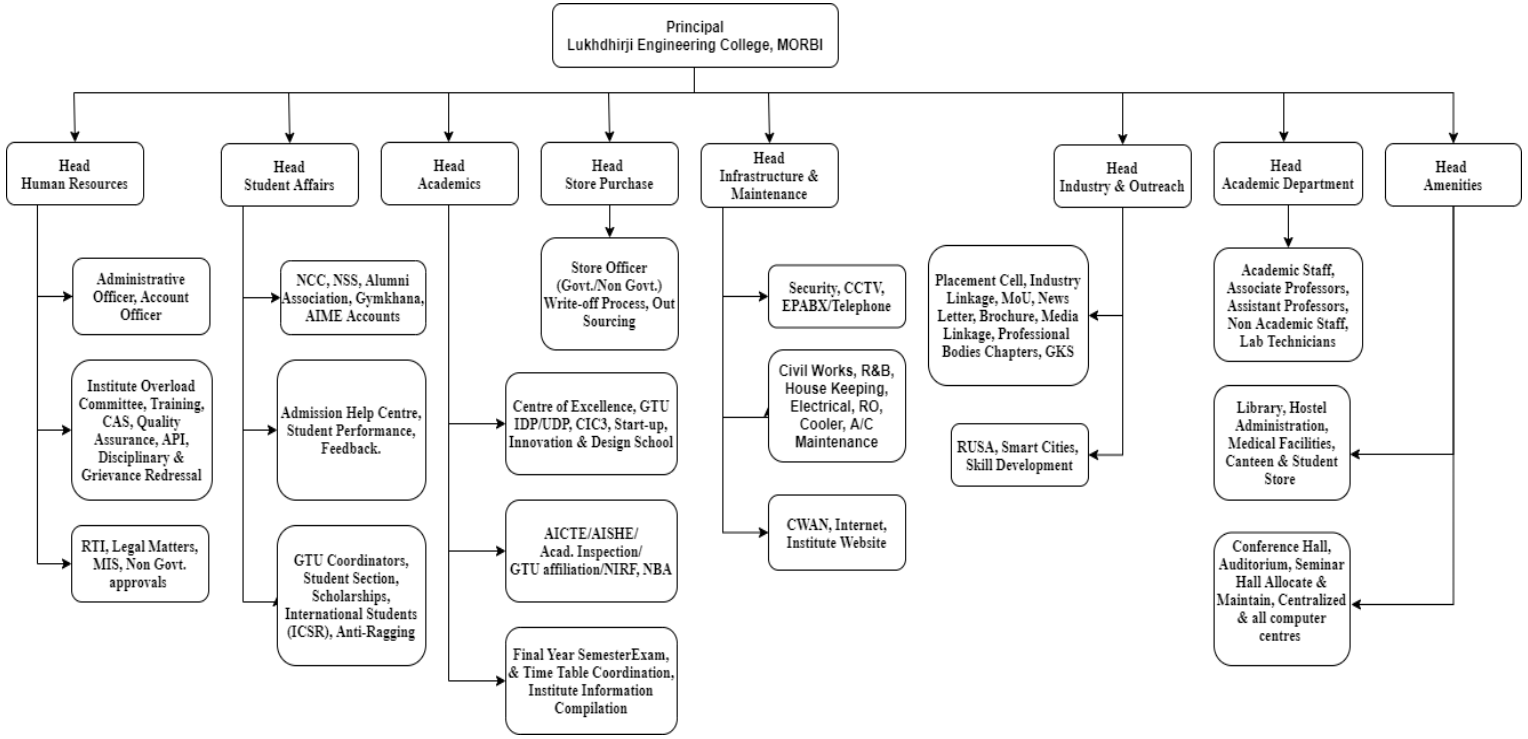


Fig. 10.1.2.A.3 Administrative Setup of the College

Table 10.1.2.A.2 TEIM work distribution institute level various committees

1. Head, Human Resource (Faculty & Staff): Prof. N M Bhatt			
Sr. No	**Activity**	**Conveners**	**Co-Convener**
1	Administrative officer	Prof. H T LORIYA	Prof. J. M. PUJARA
2	Institute Overload committee and workload calculation	Prof. M R MALI	Prof. K. P. GURJAR
3	Legal Matters	Prof. M R MALI	Prof. K. P. GURJAR
4	R T I	Prof. M R MALI	Prof. K. P. GURJAR
5	MIS / MAS / Online Teaching	HOD IT Prof. T M VASAVADA	Prof. RAHUL KESHWALA
6	Women Development cell & Internal Complaint Committee	Prof. SHITAL AMIN	Prof. S N PUROHIT
7	1) CAS, Quality Assurance, API, Disciplinary Committee (Staff) 2) Grievance redressal	1)Prof. SANJAY SINGHAL 2) Prof. A D KALARIYA	Prof. R. N. MAKADIA Prof. S R UPADHAYAY
8	Training (Faculty/Staff)	Prof. M H PANDYA	Prof. A. B. PANCHAL
9	Account Officer	Prof. HITARTH M. BUCH	Prof. R. A. PARMAR
10	Non-Government Approvals	Prof. M V MAKWANA	Prof D D BANTVA
11	Student Feedback	All HOD'S & Prof. J. M. PUJARA	-
2. Head, Student Affairs: Prof. N. N. Garvalia			
Sr. No	**Activity**	**Conveners**	**Co-Convener**
1	GTU Coordinators	Prof. M H PANDYA (B.E.)	Prof. VINAY PARIKH (M.E.)
2	Student Section	Prof. N N GARVALIA	Prof. H M KARKAR
3	Student Scholarship	Prof. S R PATEL	Prof. H D PATEL
4	Gymkhana	Prof. D B PATEL	Prof. M B BALDANIA
5	Alumni Association	Prof. M H AYALANI	Prof. M H LUNAGARIYA
6	NSS	Prof. D. K. MEHTA	Prof. G M SARVAIYA
7	NCC CTO/ANO	Prof. K K DAVE	Prof. M. D. VADHWANI
8	Anti-Ragging Committee	Prof. R K MEVADA	
9	Mentor International Student CSR	Prof. R N RATHOD	
10	Admission & Help Centre	Prof. B J MAKWANA (B.E.) Prof. B Y VYAS (M.E.) Prof. A B KHANT (D to D)	
11	Student Performance & Result Analysis	HOD'S & Prof. H D PATEL	
12	AMIE Accounts / ISTE Professional Body Chapter	Prof. H N JANI	Prof. A C LAKUM
3. Head, Store & Purchase: Prof. R.N. Chovatia			
Sr No	**Activity**	**Convener**	**Co-Convener**
1	Store Officer, New Items-Govt./ Non-Govt	Prof. R N CHOVATIYA	Prof. P H SOLANKI
2	Write-off	Prof. R N CHOVATIYA	Prof. P H SOLANKI
4. Head, Academics: Prof. A V Gohil			
Sr No	**Activity**	**Convener**	**Co-Convener**
1	First Year co-ordination and semester	Prof. R S DAMOR	Prof. SANJAY SINGHAL
2	Institute Time table coordination	Prof. A V Gohil	Prof. H N JANI
3	Institute Information Compilation	Prof. P K RATHOD	Prof. S H TRIVEDI

4	AICTE/AISHE/GTU Affiliation	Prof. A V Gohil	Other TEAM Members
5	1. Academic Inspection, 2. Institute Ranking /NBA/NIRF/GSIRF	1. Prof. A V Gohil 2. Prof. SHITAL AMIN	Prof. J B BHEDA Prof. M. H. AYALANI
6	GTU IDP/UDP, CIC3, Start up Innovation	Prof. R N CHOVATIYA	Prof. MANOJ VAGHELA
7	Centre Of Excellence (Siemens)	Prof. N M Bhatt	Prof. B Y VYAS
5. Head, Infrastructure & Maintenance: Prof. V. R. Patel			
Sr. No	**Activity**	**Convener**	**Co-Convener**
1	Civil Works and R&B (Civil) liaison	Convener	Co-Convener
2	House Keeping and Gardening, Campus Cleanliness	HOD CIVIL & RECTOR (Hostel)	Prof. S A PATEL
3	Electrical maintenance, Billing & R&B Elect) liaison, Solar Plant	HOD CIVIL (Institute) & RECTOR (Hostel)	Prof. N J BHATT
4	RO & Water cooler, AC Maintenance, Fire Extinguisher	HOD ELECTRICAL	Prof. V G JOTANGIYA
5	EPABX/Telephone	RO: Prof. A D KALARIYA, Water cooler: Prof. N J BHATT AC Maintenance: Prof. R H BHESDADIYA, Fire Extinguisher: HOD Chemical	
6	CCTV Camera- video Conferencing	HOD POWER	
7	Security	HOD IT	
8	CWAN/Internet Facility/ LAN	RECTOR	Hostel Superintendent
9	Institute Website	HOD IT	
10	KYC Update (Institute)	HOD IT	Prof. RAHUL KESHWALA
6 Head, Industry & Outreach: Prof. R. S. Damor			
Sr. No.	**Activity**	**Convener**	**Co-Convener**
1	Placement Cell, Industry Linkages and MOU/ CII	Prof. V. J. RUPAPARA	Prof. A D BALDANIYA Prof. R. N. RATHOD
2	E-Newsletter, Inst & Dept Brochure	Prof. J B BHEDA	Prof. D.K. ANJARIYA
3	Media Coordinator	Prof. M R MALI	Prof. H Z PARMAR
4	Professional bodies and Student Chapters	Prof. H N JANI	Prof. A C LAKUM
5	RUSA and Other GOI Scheme	Prof. R S DAMOR	Prof. D D BANTVA
6	1. GKS 2. Language Lab/ Skill Development 3. Finishing School	1. Prof. M H AYALANI 2. Prof. D K ANJARIYA 3. Prof. R S DAMOR	1.Prof R N MAKADIA 2.Prof. S R UPADHAYAY
7 Head, Amenities: Prof. V R PATEL			
Sr. No	**Activity**	**Convener**	**Co-Convener**
1	Library	Prof. M R MALI	Prof. M B JETHVA
2	Hostel Rector & Medical Facility	Prof. R K MEVADA	

3	1) Canteen and 2) Student Store facility	1) Prof. B J MAKWANA 2) Prof. V R PATEL	
4	Conference, Auditorium, Seminar Hall allocation and maintenance	COC: Co-ordinator	
5	Centralized and all departments computer centres	HOD IT	
OTHER			
Sr. No.	**Activity**	**Coordinator**	**Co-Coordinator**
1	NBA	Prof. N M Bhatt	Prof. B Y VYAS & Prof. SANJAY SIGHAL
2	V Lab	Prof. B Y VYAS	Prof. S. N. GOHIL
3	NAMO Tab	Prof. SANJAY SIGHAL	Prof. A. R. GAUSWAMI
4	Monthly Inspection	Prof. SHITAL AMIN	Prof. J B BHEDA
5	COC	Prof. B J MAKWANA	Prof. H M MAKADIA Prof. M. D. VADHWANI
6	MYSY Scholarship	Prof. J K JOGI	Prof. SEJAL H. KARKAR
7	SWAYAM/ NPTEL/ MOOC Local chapter	Prof. M K PATHAK	Prof. A. N. DAVE
8	Unnat Bharat Abhiyan	Prof. D K MEHTA	Prof. K B VAGHELA
9	Job Fair /Apprenticeship	Prof. V J RUPAPARA	Prof. S R PATEL Prof. A D BALDANIYA
10	Internship	ALL HOD'S	
11	IQAC_ Academic	Prof. R K MEVADA	Prof. SANJAY SIGHAL
12	Gymkhana Vice-President	Prof. N M Bhatt	

The main objective of Human Resource Committee is to look after administration as well as planning at the institute level. This committee has responsibility to look after faculty/staff service-related matters, maintain service history and service book. The treasury, IFMS and salary related matters, legal matters of institute; training need analysis like activities comes under the Human Resource committee. This committee takes care of Career Advancement Scheme (CAS) for faculty; Right to Information (RTI) related matters, non-government approvals, Institute Mobile Attendance System (MAS) and Student Attendance Information (SAI) portal etc.

The student affairs committee of the institute is looking after the activities related to the students mainly like scholarship, extracurricular activities, admission of students to the institute and help center work. The committee concerns about the university liaison and smooth function of GTU examination. This committee also takes care of Gymkhana, anti-ragging, cultural activities, Mukhyamantri Yuva Swavalamban Yojana (MYSY) help center, Alumni Association, National Social Service (NSS) activity, National Cadet Corps (NCC) and sports

The store & purchase committee of the institute looks into purchase related activities. This committee prepares and proposes new item requirements (like under vikas laxi scheme) based on the institutional departmental demands and submits to CTE office. The committee is also liable for planning for non-government funds and carries on write-off procedures in institute. The maintenance of various equipment based on requirement of departments and tendering for

outsourcing is to be taken into account by store and purchase committee. It acts as a central procurement for the institute.

Academic committee looks after the activities of Institute time table, first year time table coordination, and first year examination. It takes care of AICTE approval and GTU affiliation process, NIRF/GSIRF ranking activity, AISHE and CII survey. This committee manages work related to academic inspection by CTE/GTU and provides necessary data. This committee also ensures the quality of the academics at the institute level. Academics committee also coordinates concern work of NBA accreditation, institute academic calendar, online education, virtual lab, Centre of Excellence (COE-Siemens Lab), research & publication and start up. The end semester student feedback and activities of Internal Quality Assurance Cell (IQAC) comes under this committee**.**

The infrastructure and maintenance civil work in institute is looked after by Civil Department. The main objective is to develop and maintain the infrastructural facilities in the campus of institute. The Electrical maintenance of the institute is carried out by Electrical Engineering Department. The CCTV surveillance networks, internet facility and its security, institute website maintenance related work is facilitated by Information Technology Department. The maintenance of RO systems, water coolers and Fire extinguishers is looked after by Chemical Engineering department. The Civil and Electrical associated maintenance work of the institution is to be done in liaison with Road and Building (R&B) Department of Gujarat Government. The Property tax payment & water supply bill payment is to be done in liaison with MORBI municipality, Gujarat Water Supply and Sewage Treatment Board. The electricity bill payment is to be done in liaison with Paschim Gujarat Vij Company Limited. The important documents and drawings related to land, buildings and other facilities are required to be maintained and updated regularly by Civil Engineering Department.

The objective of the Industry Outreach committee is to look after work related to placement cell, institute-industry linkage, media and newsletter coordination, language lab SCOPE program. This committee has also responsibility to explore Internships and Trainings for the students, skill development, and finishing school of the students, RUSA and other Government schemes. It takes care of institutional activities related to professional bodies, student chapters, Gujarat Knowledge Society (GKS). The placement cell in the institute is working with the objective of imparting employability skills to students, career guidance and arranging placement drives. Also, various departments organize industrial visits for the students with a view to provide industrial application exposure to the students for use of technology.

Amenities committee looks after hostel management, library concerns, and canteen and student store facility. The work related to conference room, seminar rooms, and computer centers of all departments comes under the responsibility of Amenities committee. The Housing keeping is also taken care by this committee.

Hostel Management:

Under the hostel management, the medical facility and hostel facility is taken care by hostel rector and wardens. This committee looks into the students' hostel admission & staying in the hostel campus, hygiene and cleanliness, maintenance of hostel premises and other hostel campus related necessary facilities. The hostel welfare committee of the institute comprises of HODs, helps for smooth functioning of mentioned hostel related concerns.

For further assisting the institutional activities and smooth function, the work distribution is done as per the table.

10.1.2.B. The published service rules, policies and procedures with year of publication (3)

Service Rules:

As being the government institute, all the service rules and procedure as notified by the Government of Gujarat are followed with amendment from time to time. General Administrative Department is main division of Government of Gujarat, liable to framing up service rules may be called as GCSR 2002. These rules are published on website of finance department, Government of Gujarat with following link for availability purpose in general. Also, guideline manual for responsibilities and work distribution has been prepared under CTE. For accessing view, its link is also provided.

• Link for GCSR 2002 (https://financedepartment.gujarat.gov.in/rules.html)

Recruitment for Class –I/II and Promotion Rule for Class-I:

- The recruitment process of teaching faculty/staff is carried out by Gujarat Public service commission (GPSC) by giving notification with subsequent recruitment process. The list of selected candidates for teaching post is then recommended to education department for further process.
- The Commissionerate of Technical Education, Education Department and General Administrative Department of Government of Gujarat are the main governing division to lay down and framing the Recruitment Rules for teaching staff/faculties and supporting staff as per the norms of AICTE/UGC. The promotions are done as per Government of Gujarat norms in concerns with GPSC or as per the CAS rules, as the case may be.

- The transparent Performance Appraisal of the staff in institute is exercised online using Performance Appraisal Report (PAR) through the SATHI portal of as per Government of Gujarat guidelines. After filling the self-appraisal by staff member in PAR, the competent authority is reporting and reviewing it. At the end or the process, staff member can view it and if he/she is not satisfied with score, then staff members can represent to higher authority.

Recruitment Procedure for Class-III:

1. The recruitment process of non-teaching staff is carried out by Gujarat Gaun-Seva-Pasandgi-Mandal (Gujarat Subordinate Service Selection Board- GSSSB) and CTE. The list of selected candidates is recommended to the Education Department, Government of Gujarat.

The Various links are provided herewith for organizational Chart, Service rules, Recruitment and Promotion rules, and manual for work distribution in institute as given below:

- The organizational Chart of Governing Body (https://dte.gujarat.gov.in/organization-chart)
- Service Rules: (https://financedepartment.gujarat.gov.in/rules.html)
- The Recruitment Rules (RR) (https://dte.gujarat.gov.in/recruitment-rules)
- Promotion criterion and CAS (https://dte.gujarat.gov.in/government-resolution)
- Manual for working guideline in institute: (Institutional Manual-TEIM):
- (https://dte.gujarat.gov.in/technical-education-institution-manual-teim-govt- engineering colleges)

10.1.2.C. Minutes of the meetings and action-taken reports (3)

The following committee's minutes of meeting along with action taken are enclosed for the perusal.

1. Antiragging
2. Women cell
3. Grievance cell
4. SC/ST cell
5. IQAC
6. SSIP
7. Training & Placement cell

10.1.3 Decentralization in working and grievance redressal mechanism (10)

10.1.3. A. List the names of the faculty members who have been delegated powers for taking administrative decisions (1)

Various committees have been formed for the smooth working of the college as shown in the above Table 10.1.2.A.2 based on TEIM Guideline.

10.1.3. B. Specify the mechanism and composition of grievance redressal cell (2)

Institute has formed women cell as per the rules and regulation laid down by AICTE and MHRD. Women Cell is a mandated body and works directly under the head of the institute. Details of the Committee is also mentioned under Head, Human Resources Sr. No.6 in the Table 10.1.2.A.2. For smooth functioning of the women cell, it is subdivided into two more committees such as the Internal Complains Committee (ICC) and Gender Equality Committee (GEC). The Women Cell, ICC and GEC committees are headed by senior female faculty members whereas to implement quick action against sexual harassment, ICC committee also comprises rector, wardens, girl students and outside campus senior female lady. The basic motto of the women cell is to make the campus intolerance against sexual harassment and provide healthy environment for female faculty members and girl students. In addition to that the main functions of women cell are illustrated below.

- To look after all the activities and issues related to women at institute.
- To look into all the grievances of women students/employees of institute and provide anti-sexual harassment in the campus.
- To organize activities/seminars/etc. for sensitizing faculty and students about gender issues.

Furthermore, women cell also collect report for the grievances of women students/employees of institute regarding sexual harassment complaints. In addition to that, women cell also organize various program to boost up the moral, ethics and rights of women faculties. Women cell committee information is also available on institute website (**http://www.lecm.cteguj.in/womencell/**).

The Ministry of Human Resource Development (MHRD), Government of India has emphasized that there is a need of structure it's mechanism for online registration as well as disposal of the grievances of students, /faculty/stakeholders in every Institution approved by AICTE.

Lukhdhirji Engineering College Morbi has established a Grievance Cell as per UGC (Redress of Grievance of student Regulation-2019) guideline under the headship of Principal.

Grievances Redressal cell deals with all types of grievances, complaints and malpractices including those received from Students, Faculty and other Stakeholders.

Engrieved students can register online complain for

- Complaints of Ragging
- Non refund of fees by AICTE approved institutions
- Non return of original certificate
- Non observation of laid down norms and standards
- Delayed in according approvals
- Complain against officer and staff
- Non refund of security amount
- Violation of admission rules as per AICTE by institute
- Accommodation related facilities like hostel complains
- Delay in declaration of results by institute
- Other issues

Engrieved staff can register online for

- Grievance of staff for non-granting leave
- Non sanctioning of LTC advance
- Delay in sanctioning of advances of Provident fund
- Salary issues
- Other issues

Engrieved Stakeholders can register online complain for

- Basic facilities like water, electricity
- Application regarding results
- Basic amenities
- non receive of fees receipt
- Other issues

On disposal of grievance Engrieved person will receive an email as receipt of complains.

Procedure for Online grievance disposal is as follows:

Online complains are received at lec.degree.grievance@gmail.com

- Analyze the grievance to identify areas of new grievances
- Grievance is sent through email to concerned department with intimation of disposal time

- At department level careful analysis of grievance is to be done
- Taking of decision of grievances at fairly senior level
- Continuous monitoring of disposal status by coordinator
- If no response is received from concerned department, then reminder shall be sent and intimated to the competent authority.
- Disposal of grievance to be intimated online to Engrieved person.
- Finally, disposal is reported and noted
- Disposal report is intimated to AICTE

- Grievance cell's information is also available on institute website (http://www.lecm.cteguj.in/grievancecell/) along with grievance links for students (http://form.jotform.me/73102784470454), for staff (http://form.jotform.me/73112509070446) and for stakeholders (http://form.jotform.me/73103120970444).
- For prevention and prohibition of ragging in the Institute, an Anti-Ragging Committee as mandated by AICTE has been formed by the institute. The details of the same are mentioned under Head, Student Affairs at Sr. No. (8) in the given Table B.10.1.2(a).
- Anti-ragging information is also available on institute website **(http://www.lecm.cteguj.in/antiragging/)**

10.1.1.C. Action taken report as per 'B' above (7)

Institute Grievance report submitted as sample for Nov-21, Dec21 & June-22, July-22 is attached for - Students, Staff and stake holders.

10.1.4 Delegation of financial powers (10)

Delegations of financial power as per the State Government Rules are explained as below:

10.1.4.A. Financial powers delegated to the Principal, Heads of Departments and relevant in-charges (3)

The Controlling officer – The Principal

The Drawing and Disbursing Officer (DDO) – The Account Officer

All HODs are empowered to put the demand as per the requirement for the purchase of laboratory/utility equipment/books/furniture as follows:

- If it is above Rs.20000/-, purchase is made at the office of the CTE.
- If it is below rupees 20000/-, purchase is made at the Institute level after CTE approval by concerned department through store office. For purchase GeM portal is also used.

- Consumables as per the requirement are purchase by the HOD with due approval of Head of the Institute.
- All section heads are empowered to scrutinize proposals made by relevant Stakeholders and then purchased with due procedure.

10.1.4. B. Demonstrate the utilization of financial powers for each of the assessment years (7)

1. Principal is assisted by the Drawing and Disbursing Officer (DDO), countersign bills as controlling officer.
2. Subject to the budget allocations for expenditure, Principal is empowered to incur expenditure within the stipulated limits and adhering to the related procedure as laid down by the CTE/GOG.
3. Empowered to incur recurring contingency expenditure as per the norms prescribed by the CTE/GOG.
4. All contracts for and on behalf of the college (except himself and the college) when authorized by a CTE/GOG from me to me passed in writing and expressed to be made in the name of the college shall be executed by the principal.
5. The principal or the officer delegated with such powers shall counter sign all kinds of scholarship bills in respect of students of the college.
6. The principal has power to sanction the purchase of stationery, library books, periodicals, consumables for laboratories, and material for workshops etc. subject to the limit of powers delegated in respective areas and subject to the prescribed procedures, budget provisions under the respective heads of budget.

10.1.5 Transparency and availability of correct/unambiguous information in public domain (5)

10.1.5. A. Information on the policies, rules, processes is to be made available on web site (2)

- As being government institute, transparency and availability of correct information is emphasized by the institute in all operations and functions.
- On institute website (http://www.lecm.cteguj.in), the necessary information related to various Departments, staff, committees of the institute is available.
- The information about the admission in UG and PG professional courses (in Gujarat) is available on Admission Committee for Professional Courses (ACPC) website (http://www.jacpcldce.ac.in/).
- The institute's information regarding AICTE extension of approval (EOA) letters, affiliation letter and NIRF/GIRF reports are published on website.
- The reports of woman cell's activities and information regarding placement cell's activities are put on website.

10.1.5.B. Dissemination of the information about student, faculty and staff (3)

- The information about syllabus, student's result, and other academic relevant notifications are available on Gujarat Technological University (GTU) website. (http://www.gtu.ac.in).
- The academic calendar is prepared before the starting of each term, and is made available on institute website.
- The reports of co-curricular and extra co-curricular activities of students are placed on institute website.
- As being a Government Institute, Right to Information act has been in force since its implementation by the Government of Gujarat.
- As a government institute, the transparency in terms of policies, selection, Rules, regulation, and procedure is maintained.
- Mandatory disclosures are available on institute's website.

10.2 Budget Allocation, Utilization, and Public Accounting at Institute level (30)

Expenditure per student: As per Table 10.2**,**

Fee per student: Term Fees 1) Boys: Rs 1500/-

2) Girls: 0/-

3) TFW: 0/-

10.2.1 Adequacy of budget allocation (10)

10.2.1. A. Quantum of budget allocation for three years (5)

Table 10.2.1.A.1 for CFY (2021-22) RS. IN LAKH

Total Income				**Actual expenditure (till 31/03/2022)**			**Total No. of students: 1984**
Fee	**Govt.**	**Grant(s)**	**Other Sources (specify)**	**Recurring including Salaries**	**Non-recurring**	**Special Projects/ Any other, specify**	**Expenditure per student**
45.28	2171.9	infra – 40.04	RUSA- 0 Fin.School-1.0 SSIP-0	2172.37	infra- 10.24	RUSA- 6.13034 Fin.School-3.04423 SSIP-0.685	1.11

Table 10.2.1.A.2 for CFY m1 (2020-21) **RS. IN LAKH**

Total Income				**Actual expenditure (till 31/03/2021)**			**Total No. of students: 1621**
Fee	**Govt.**	**Grant(s)**	**Other Sources (specify)**	**Recurring including Salaries**	**Non-recurring**	**Special Projects/ Any other, specify**	**Expenditure per student**
44.544	1694.49	infra – 0	RUSA- 0 Fin.School-2.12765 SSIP-0	1645.878	infra- 20.89	RUSA- 2.04546 Fin.School-0.27856 SSIP-0.34734	1.03

Table 10.2.1.A.3 for CFYm2 (2019-20) **RS. IN LAKH**

Total Income				**Actual expenditure (till 31/03/2020)**			**Total No. of students: 1751**
Fee	**Govt.**	**Grant(s)**	**Other Sources (specify)**	**Recurring including Salaries**	**Non-recurring**	**Special Projects/ Any other, specify**	**Expenditure per student**
82.945	1503.643	infra - 122.85	RUSA-3.4385193 Fin.School-2.17391 SSIP-0	1383.454	infra – 30.49	RUSA-4.4218 Fin.School-1.92627 SSIP-1.73998	0.81

Table 10.2.1.A.4 for CFYm3 (2018-19) **RS. IN LAKH**

Total Income				**Actual expenditure (till 31/03/2019)**			**Total No. of students: 1849**
Fee	**Govt.**	**Grant(s)**	**Other Sources (specify)**	**Recurring including Salaries**	**Non-recurring**	**Special Projects/ Any other, specify**	**Expenditure per student**
68.382	1464.106	infra-202.02	RUSA- 0 Fin.School-2.17391 SSIP-0	1433.252	infra -46.46	RUSA- 2.85344 Fin.School-4.13566 SSIP-3.05162	0.80

Table 10.2.1.A.5 for CFYm4 (2017-18) **RS. IN LAKH**

Total Income				**Actual expenditure (till 31/03/2018)**			**Total No. of students: 1991**
Fee	**Govt.**	**Grant(s)**	**Other Sources (specify)**	**Recurring including Salaries**	**Non-recurring**	**Special Projects/ Any other, specify**	**Expenditure per student**
91.447	1459.05	infra-462.89	RUSA-10.86956 Fin.School-2.25 SSIP-20	1434.026	infra-151.03	RUSA- 0.024 Fin.School-3.64938 SSIP-0.73034	0.80

Table. 10.2.1.A.6 Allocated budget by the government to the institute

Items	**Budgeted in 2021-22**	**Actual Expenses in 2021-22**	**Budgeted in 2020-21**	**Actual Expenses in 2020-21**	**Budgeted in 2019-20**	**Actual Expenses in 2019-20**	**Budgeted in 2018-19**	**Actual Expenses in 2018-19**	**Budgeted in 2017-18**	**Actual Expenses in 2017-18**
Infrastructure Built-Up	40.04	10.24	0	20.89	122.85	30.49	202.021	46.46	462.89	151.03
Library	0	0	0	0	6.2	4.18029	3	2.99566	0	0
Laboratory equipment	1.02	0.484	0	0.541678	0	0.22585.	0	2.82414	0	0
Laboratory consumables	0	0	0	0.0305	0	0.27142	0	0.455	0	0.70913
Teaching and non-teaching staff salary	2169.4	2069.4	1532.04	1531.9	1330.84	1269.97	1277.5	1264.45	1239.03	1238.7
Maintenance and spares	0	0	0	0	0	0	0	0	0	0
R&D	1.64	1.625	0	0	0	0	0	0	0	0
Training and Travel	3.22	3.14	4.92	4.92	2.25	2.25	2.45	2.45	2.63	2.63
Miscellaneous Expenses (Security, House	0	0	0	0	0	0.0225	0	0	0	0
Software	0	0	0	0	0	25.96	0	0	0	0.0278
Others Specify	0	0	0	0	0	0.028	0	0	0	0.6228

Items	Budgeted in 2021-22	Actual Expenses in 2021-22	Budgeted in 2020-21	Actual Expenses in 2020-21	Budgeted in 2019-20	Actual Expenses in 2019-20	Budgeted in 2018-19	Actual Expenses in 2018-19	Budgeted in 2017-18	Actual Expenses in 2017-18
Housekeeping and Security	119.68	64.06	119.68	81.53	88.12	44.6	104.76	97.27	136.9	131.95
Contractual service	0	0	0	0	0	0	0	0	0	0
Total	2335.02	2148.959	1656.64	1639.8122	1550.26	1377.77	1589.731	1416.90	1841.45	1525.67

The Total Income mentioned above in the Table B.10.2.1.A.6, includes two major heads i.e. Government Income & Grants. Here, the Government Income includes grant received for salary, equipment, contingency, library, out-sourcing of services, travel expenditure etc, and the Grants include infrastructure, laboratory consumables, maintenance & spares etc. In the above Table, the Other Sources is referring to the Income availed for RUSA, Finishing School and SSIP purpose.

*** Maintenance and spares - Institute is using GTU and Contingency grant for this

*** R&D - For FY 2021-22, 02 faculties are selected for STEM research Grant Rs.1.0 Lacs each, out of which Rs1.625 lacs is allotted.

10.2.1. B. Justification of budget allocated for three years (5)

Table 10.2.1.B.1 Justification of budget allocated for three years

Sr. No.	Year	Allocated Budget in (Rs Lakh)	Expenditure in (Rs Lakh)	Remarks
1	CFY (2021-22)	2171.90	2172.37	Adequate
2	CFYm1 (2020-21)	1694.49	1645.878	Adequate
3	CFYm2(2019-20)	1503.643	1383.454	Adequate
4	CFYm3(2018-19)	1464.106	1433.252	Adequate
5	CFYm4(2017-18)	1459.05	1434.026	Adequate

L.E. College, Morbi is a State Government Educational Institute. The budget fund for all the items listed above is allocated totally to the institute. However, the disbursement of the allocated funds is based on the intake and program requirements as and when the need arises.

Prior to each financial year each department is preparing non-recurring budget requirement while account offices preparing the recurring budget requirement. The consolidated budget requirement is prepared at institute level and submitted to Director of Technical Education, Gandhinagar. Budget re-appropriation Process is also carried out after 3rd quarter of each financial year.

10.2.2 Budget utilization for three years (15)

Table 10.2.2.1 Budget utilization for three years

Sr. No.	Year	Allocated Budget in (Rs Lakh)	Expenditure in (Rs Lakh)	Utilization %
1	CFY (2021-22)	2171.90	2172.37	100%
2	CFYm1 (2020-21)	1694.49	1645.87823	97.13%
3	CFYm2(2019-20)	1503.643	1383.4539	92.01%
4	CFYm3(2018-19)	1464.106	1433.25219	97.89%
5	CFYm4(2017-18)	1459.05	1434.02556	98.28%

Actual expenditure comprises (Table. 10.2.1.A.6) of Recurring, Non-Recurring & Special Projects Expenditures. Here, the recurring expenditure includes only the Salaries, while the non-recurring includes infrastructure built-up, library, laboratory equipment & consumables, Maintenance & Repairs, training and travel, miscellaneous and others. As mentioned under this Head, the Special Project Expenditure is exclusively utilized for RUSA, Finishing School and SSIP activities.

10.2.3 Availability of the audited statements on the institute's website (5)

In the Government Institute Audit is carried out by the Head office i.e., Commissionerate of Technical Education every year and time to time audit is also carried out by Accountant General Office, Rajkot.

For this Integrated Financial Management System (IFMS) Report for the F.Y. 2017-18, 2018-19, 2019-20 and 2020-21 for Technical Education Department: TED -5 & TED -7 and for the F.Y :2021-22 TED -1 are available on Institute's website with CA certificate.

10.3 Program specific Budget Allocation, Utilization (30)

10.3.1 Adequacy of budget allocation (10)

10.3.1.A. Quantum of budget allocation for three years (5)

Table 10.3.1.A.1 Chemical Engineering for CFY (2021-22) in Lakhs

Total Budget:		**Actual expenditure (till 31/03/2022)**		**Total No. of students: 275**
Non-recurring	**Recurring**	**Non-recurring**	**Recurring**	**Expenditure per student**
0	150	0.3678	150	0.55

Table 10.3.1.A.2 Chemical Engineering for CFYm1 (2020-21) in Lakhs

Total Budget:		**Actual expenditure (till 31/03/2021)**		**Total No. of students: 233**
Non-recurring	**Recurring**	**Non-recurring**	**Recurring**	**Expenditure per student**
0	95.22	0.43	95.22	0.41

Table 10.3.1.A.3 Chemical Engineering for CFYm2 (2019-20) in Lakhs

Total Budget:		**Actual expenditure (till 31/03/2020)**		**Total No. of students: 256**
Non-recurring	**Recurring**	**Non-recurring**	**Recurring**	**Expenditure per student**
0	76.67	0.60	76.67	0.30

Table 10.3.1.A.4 Chemical Engineering for CFYm3 (2018-19) in Lakhs

Total Budget:		**Actual expenditure (till 31/03/2019)**		**Total No. of students: 246**
Non-recurring	**Recurring**	**Non-recurring**	**Recurring**	**Expenditure per student**
0	54.59	0.01	54.59	0.22

10.3.1.B. Justification of budget allocated for three years (5)

L.E. College, Morbi is a State Government Educational Institute. The budget fund for all the items listed above is allocated totally to the institute. However, the disbursement of the allocated funds is based on the intake and program requirements as and when the need arises.

Prior to each financial year each department is preparing non-recurring budget requirement while account offices preparing the recurring budget requirement. The consolidated budget requirement is prepared at institute level and submitted to Director of Technical Education, Gandhinagar. Budget re-appropriation Process is also carried out after 3rd quarter of each financial year.

10.3.2 Utilization of allocated funds (20)

Budget utilization for three years (20)

L.E. College, Morbi is a State Government Educational Institute. The budget fund for all the items listed above is allocated totally to the institute. However, the disbursement of the allocated funds is based on the intake and program requirements as and when the need arises.

Table 10.3.1.B.1 Program specific total income and expenditure in Lacs

Item	**Budgeted in CFY (2021-22)**	**Actual expenses in CFY (2021-22)**	**Budgeted in CFYm1 (2020-21)**	**Actual expenses in CFYm1 (2020-21)**	**Budgeted in CFYm2 (2019-20)**	**Actual expenses in CFYm2 (2019-20)**	**Budgeted in CFYm3 (2018-19)**	**Actual expenses in CFYm3 (2018-19)**
Laboratory equipment	0.0000	0.0000	0.2359	0.2359	0.0000	0.0000	0.0000	0.0000
Software	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Laboratory consumable	0.0000	0.0000	0.0000	0.0000	0.0175	0.0175	0.0058	0.0058
Maintenance and spares	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R & D	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Training and Travel	0.01094	0.01094	0.1560	0.1560	0.2222	0.2222	0.0064	0.0064
Misc. expenses	0.35686	0.35686	0.0391	0.0391	0.3605	0.3605	0.0000	0.0000
Total	0.3678	0.3678	0.4309	0.4309	0.6002	0.6002	0.0122	0.0122

10.4 Library and Internet (20)

The library acts as a key resource and learning center of the Institute. The Library and Resource Center is automated with user-friendly web-based open sources library management system (SOUL) that facilitates automated circulation (issue & return) of the books and location and availability information of the books stocked in the library. The library details are as follows.

Table.10.4.1

Total library area (in m2)	1052 S.Q.M. Approx.
Total Reading area (in m2)	277.56 S.Q.M Approx.
Library Timings	Monday to Saturday (Library Time)10.30 AM To 06.10 PM (Reading Time)10.30 AM To 05.30 PM
Number of library staff	2
Number of library staff with degree in Library Management	1
Library Management Software	SOUL 2.0
Computerized search, indexing	NO (Works Under Process)
bar coding for Issue/return	NO (Works Under Process)
Number of seats in reading space	50
Number of users issuing books per day	25
Number of readers per day	30
Library services on Internet/Intranet	YES

10.4.1 Quality of Learning Resources (hard/soft) (10)

10.4.1.A Availability of relevant learning resources including e-resources and Digital Library (7)

Titles and volumes per title:

Number of titles: 9115 Number of volumes: 41687

Table.10.4.1. A.1 No of titles and volumes

Year	Number of new titles added	Number of new volumes added
2018-19	334	698
2019-20	211	887
2020-21	Grant not allotted by DTE	Grant not allotted by DTE
2021-22	Grant not allotted by DTE	Grant not allotted by DTE

Scholarly Journal (E-Journal)

Table.10.4.1.A.2 No of E-Journal

Details	2021-22	2020-21	2019-20	2018-19	2017-18
As soft copy	43	39	39+35 (E-Journal) AICTE Funded	38 (E-Journal) AICTE Funded	36 (E-Journals) AICTE Funded
As hard copy	10	10	10	15	10

Digital Library

- Availability of digital library content: Yes (According to the E-sodhsindhu website, our institute has access to E-Resources such as NDL (National Digital Library of India), SAA (South Asia Archive), and the World E-Book Library.)
- **ASCE E-Journals** : American Society of Civil Engineering **(AICTE Funded)**
- **SCOPUS Database:** Scopus is a bibliographic database containing abstracts and citations for academic journal articles. It covers nearly 21,000 titles from over 5,000 publishers, of which 20,000 are peer-reviewed journals in the scientific, technical, medical, and social sciences. **(AICTE Funded)**
- Number of courses, Number of e-books: 00
- Exclusive server: No
- Library availability over Intranet/Internet: Yes
- Availability of exclusive space/room: Yes
- Number of users per day:30

Table.10.4.1.A.3 Library expenditure on books, magazines/journals, and miscellaneous content

Expenditure (in Rs.)					
Year	**Books**	**Magazines/journals (for hard copy subscription)**	**Magazines/journals (for softcopy subscription)**	**Misc. content**	**Comments if any**
2017-18	-NIL-	11330	-NIL-	-NIL-	-
2018-19	2,99,566	18629	-NIL-	-NIL-	-
2019-20	4,18,029	19000	-NIL-	-NIL-	-
2020-21	-NIL-	21160	-NIL-	-NIL-	-
2021-22	-NIL-	25800	-NIL-	-NIL-	-

10.4.1. B. Accessibility to students (3)

- E-journal access via college internet connection. – Institute Summary (counter) for Year 2022, 2021, 2020, 2019 is shown in sample.
- Students can also utilize hard copy of resources from library.

10.4.2 Internet (10)

10.4.2. A. Available bandwidth (4)

1. Name of the Internet Service Provider: - National Informatics Center, Gandhinagar.
2. Available Bandwidth: - 100 MBPS

10.4.2.B. Wi-Fi availability (2)

Wi-Fi availability: - Routers are available. Wi-Fi access available. Wi-Fi access points are connected to 100 MBPS lease line provided by NIC. In addition to above main building, Production engineering and Mechanical workshop are connected with routers. Wi-Fi devices are connected to BSNL lease line for Internet access.

10.4.2.C. Internet access in labs, classrooms, library and offices of all Departments (2)

Internet access: -Internet Access in Labs, classrooms, library and offices of departments, Faculty/staff offices and computer labs are connected to Wired LAN for Internet Access.

10.4.2. D. Security mechanism (2)

Security Arrangements: - Fortigate Firewall is available to control access to Internet from institute LAN.

PART C: Declaration by the Institution

GOVERNMENT OF GUJARAT
LUKHDHIRJI ENGINEERING COLLEGE, MORBI-363642
(DEGREE-COURSE)
(Approved by AICTE & Affiliated to Gujarat Technological University)
Ph. (O) (02822) 240743 (P) (02822) 240645 Fax:240645

URL:www.lecm.cteguj.in e-mail: lec-morbi-dte@gujarat.gov.in

Declaration

The head of the institution needs to make a declaration as per the format given -

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 institutes hall fully abide by them.

It is submitted that information provided in this Self-Assessment Report is factually correct.

I understand and agree that an appropriate disciplinary action against the Institute will be initiated by the NBA. In case, any false statement/information is observed during pre-visit, visit, post visit and subsequent to grant of accreditation.

Head of Institute
Designation: I/C Principal and
Professor (Electrical Engineering)
Signature

09/07/2021

Place: Morbi
Date: 09-09-2021 14:32:20

Seal of The Institution:

ANNEXURE-I: Program Outcomes (POs) & Program Specific Outcomes (PSOs)

(2 Pages)

POs (Programme Outcomes)

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, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: 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 at large, 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 multidisciplinary environments.
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.

PSOs (Programme Specific Outcomes)

1. Apply the knowledge of chemical engineering to accomplish the contemporary need of chemical & Allied Industries.
2. To execute the chemical engineering principle and modern engineering tools to design system by considering safety, cost, health, legal, cultural and environmental aspects.

ANNEXURE-II: Faculty Information

(14 Pages)

			Qualification										
Sr. NO.	Name of the Faculty Member	PAN No.	Degree (highest degree)	University	Year of Graduation	Currently Associated with the Institution	Designation	Date of Joining the Institution	Department	Specialization	Nature of Association (Regular/Contract/Adjunct))	If contractual mention Full time or Part time	Date of Leaving (In case Currently Associated is "NO")
1	Prof. (Dr.) R. K. Mewada	AGSPM8184B	Ph.D.	Uni. Of Mumbai	2009	Y	Professor	22-11-2018	Chemical	Chemical	Regular	NA	NA
2	Prof. (Dr.) S.A. Amin	AKMPP7543B	Ph.D	IITGn	2021	Y	Asso. Professor	11-03-2019	Chemical	Chemical	Regular	NA	NA
3	Prof. D. K. Mehta	APKPM2727D	ME	IITKgp	2003	Y	Asst. Professor	19-05-2009	Chemical	Chemical	Regular	NA	NA
4	Prof. A. D. Baldania	ANBPB3011A	Ph.D.	RKU	2021	Y	Asst. Professor	29-07-2016	Chemical	Chemical	Regular	NA	NA
5	Prof. A. D. Kalariya	AXKPK1550C	ME	GU	2009	Y	Asst. Professor	26-11-2010	Chemical	Chemical	Regular	NA	NA
6	Prof. G. D. Vegad	AEIPV9951M	ME	MSU	2005	Y	Asst. Professor	04-02-2020	Chemical	Chemical	Regular	NA	NA
7	Prof. D. D. Dhimmar	CHYPD6963J	ME	MSU	2015	N	Asst. Professor	02-07-2018	Chemical	Chemical	Regular	NA	29-01-2020
8	Prof. S. S. Patel	CDJPP1681G	ME	GTU	2014	Y	Asst. Professor	26-05-2014	Chemical	Chemical	Contractual	Full Time	NA
9	Prof. M. T. Chauhan	BBRPC9986J	ME	GTU	2014	Y	Asst. Professor	26-05-2014	Chemical	Chemical	Contractual	Full Time	NA
10	Prof. B. B. Kariya	BXJPK7902A	ME	GTU	2016	Y	Asst. Professor	11-11-2016	Chemical	Chemical	Contractual	Full Time	NA

ANNEXURE-III: Supporting Documents of Criterion 2

(54 Pages)

ANNEXURE-IV: Supporting Documents of Criterion 3

(18 Pages)

ANNEXURE-V: Supporting Documents of Criterion 7

(85 Pages)